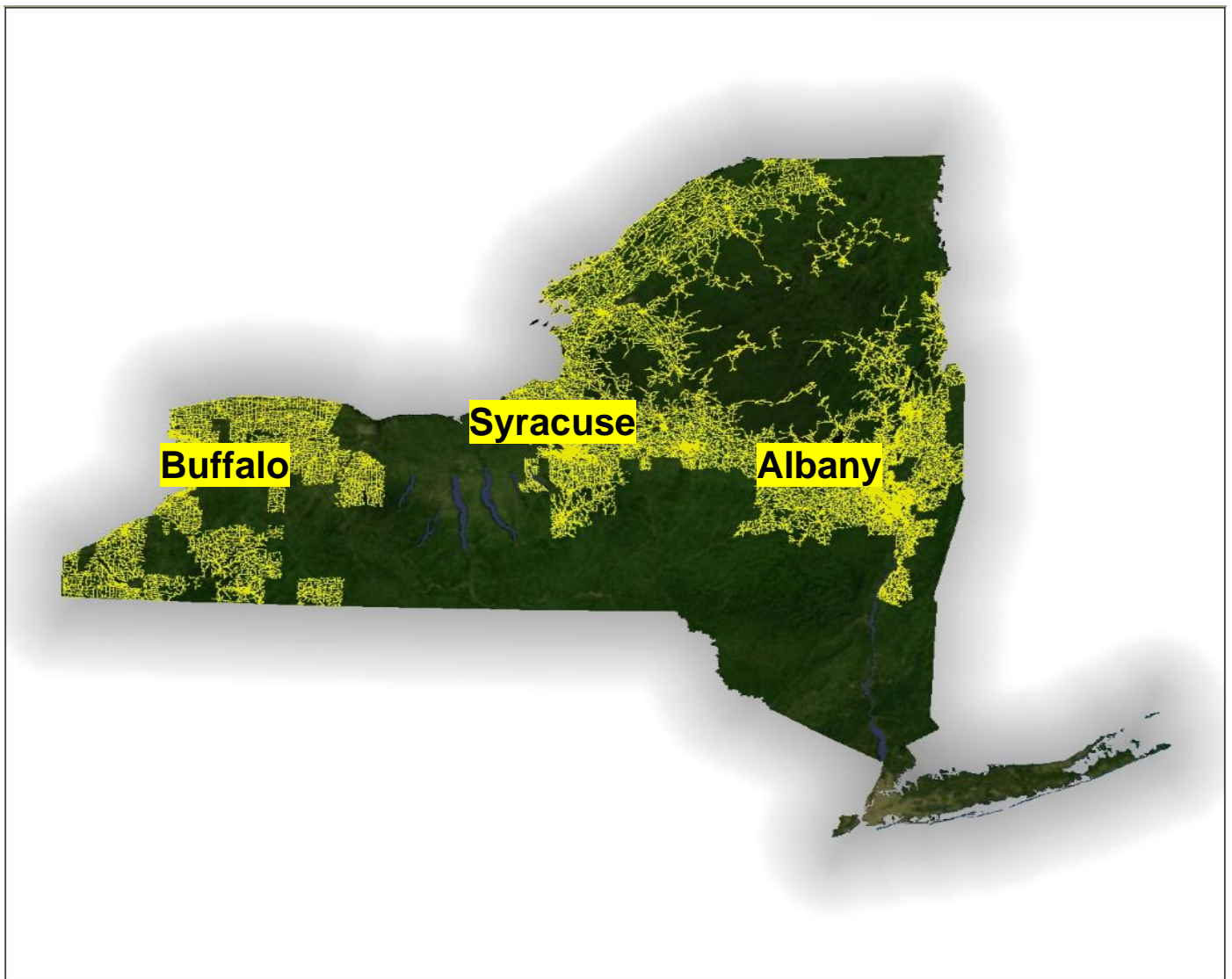


nationalgrid

ANNUAL ELECTRIC RELIABILITY REPORT



ANNUAL ELECTRIC RELIABILITY REPORT FOR 2023
PSC CASE #24-E-0140



ANNUAL ELECTRIC RELIABILITY REPORT for 2023

PSC CASES 02-E-1240 and 24-E-0140

Prepared By:

**Customer Reliability and
Electric Distribution Planning & Engineering
MARCH 2024**

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ANNUAL ELECTRIC RELIABILITY REPORT for 2023

Introduction

Enclosed is the 2023 Annual Electric Reliability Report for Niagara Mohawk Power Corporation d/b/a National Grid (“National Grid” or “Company”). This report has been prepared based on National Grid’s electric service to its customers for the year ended December 31, 2023, in compliance with New York State Public Service Commission (“PSC”) Cases 02-E-1240 and 24-E-0140.

In 2023, National Grid met both reliability targets – System Average Interruption Frequency Index (“SAIFI”) and Customer Average Interruption Duration Index (“CAIDI”) – and as a result, no penalties were incurred.

This report reviews the reliability metrics at both the system-wide and regional levels, with analyses broken down by causes and circuits. The report includes a detailed analysis for any circuit that was among the top 5% worst performing distribution circuits in 2023. For any region where the SAIFI or CAIDI reliability metric did not meet the target, we also include a detailed analysis of the factors that contributed to the below-target performance and a description of our plan to improve performance. Information on the major storms of 2023 is also included in the report.

National Grid continues its efforts to maintain reliability. This report includes a description of the Company’s Reliability, Inspection and Maintenance, and Vegetation Management Programs. We have included a summary of expenditures and information regarding the composition of our work force as requested by Department of Public Service (“DPS”) Staff.

A. SUMMARY OF PERFORMANCE AND COMMENTS

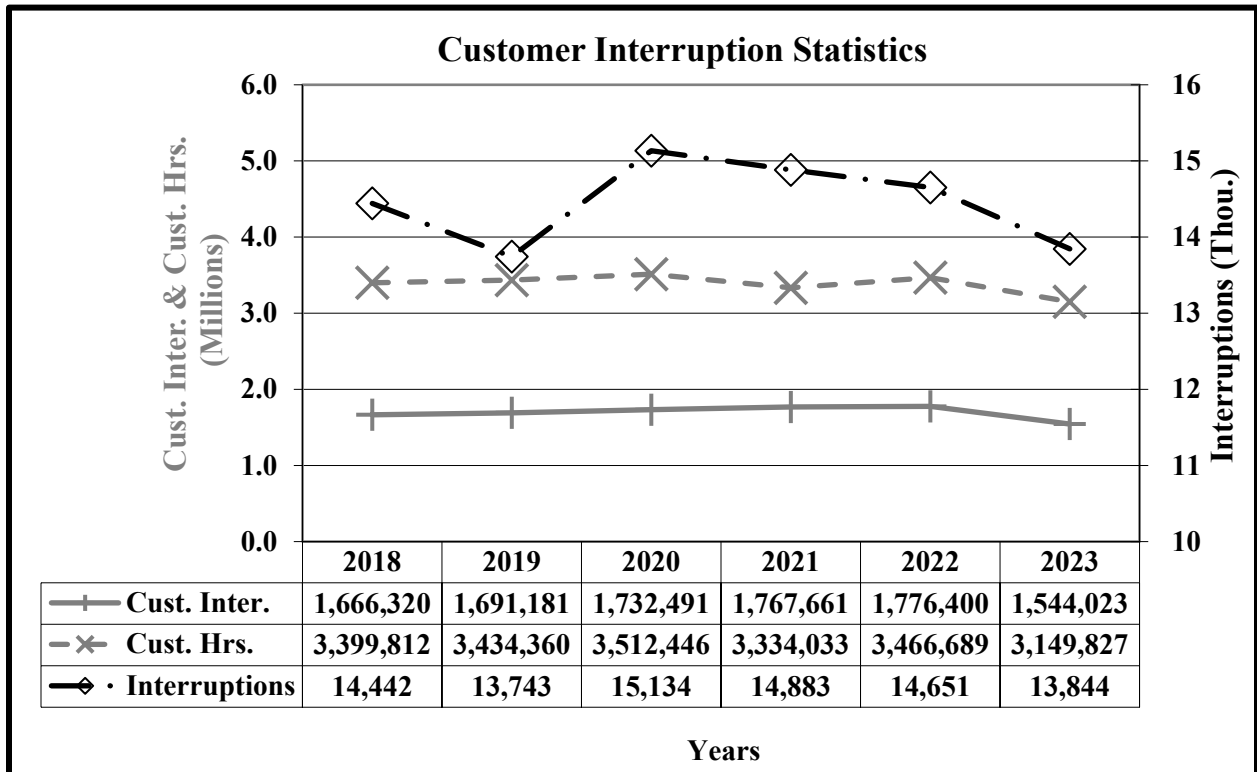
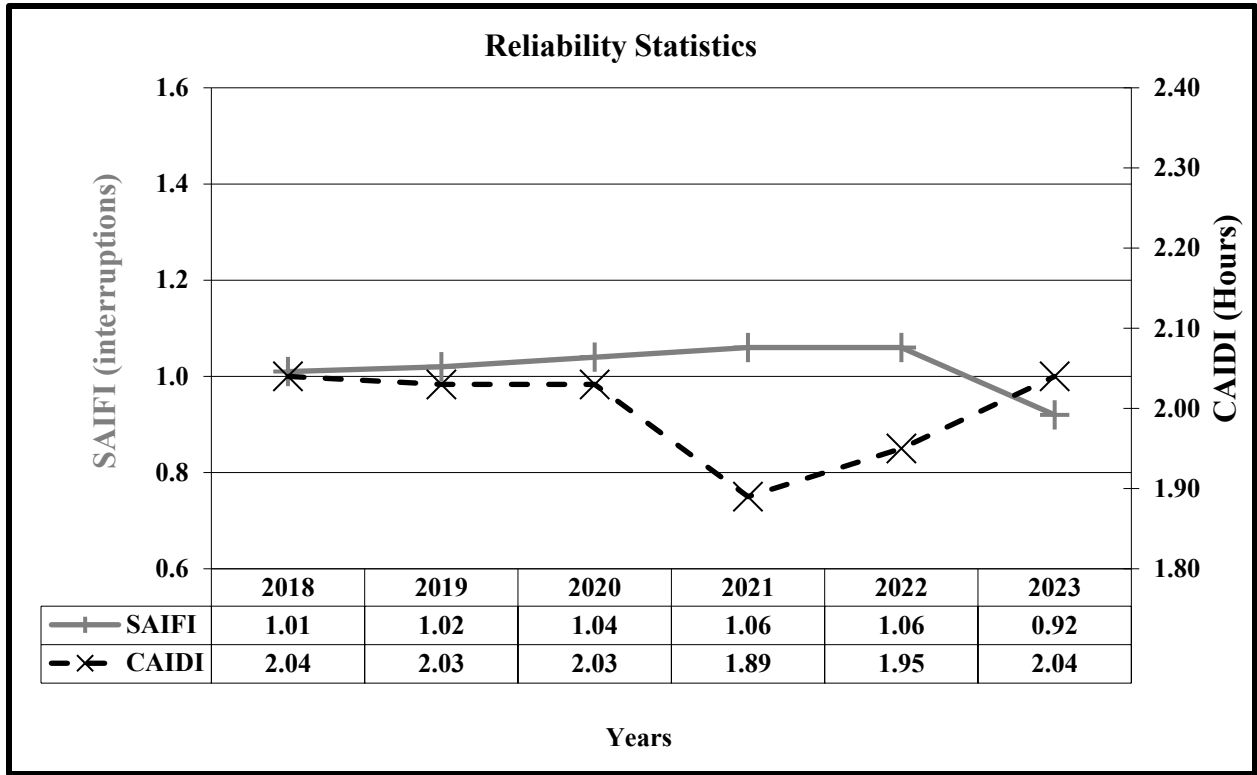
1. CORPORATE SAIFI AND CAIDI

The Company successfully met the Customer Average Interruption Duration Index (CAIDI) metric for 2023, with a value of 2.04 hours. This is 3% below the target of 2.10 hours and is 3% above the 5-year average.

The Company also successfully met the System Average Interruption Frequency Index (SAIFI) target for 2023, with a value of 0.92. This is 15% below the target of 1.08 and 11% below the 5-year average.

The number of interruptions excluding major storms was 6% below the 2022 result and was 5% below the 5-year average. The number of customers interrupted was 13% below the 2022 result and 11% below the 5-year average. The duration of customers interrupted (Customer-Hours Interrupted) was 9% below the 2022 result and was 8% below the 5-year average.

	2023	2022	2021	2020	2019	2018
CAIDI Threshold: 2.10	2.04	1.95	1.89	2.03	2.03	2.04
SAIFI Threshold: 1.08	0.92	1.06	1.06	1.04	1.02	1.01
SAIDI	1.87	2.06	1.99	2.11	2.08	2.07
Interruptions	13,844	14,651	14,883	15,134	13,743	14,442
Customers Interrupted	1,544,023	1,776,400	1,767,661	1,732,491	1,691,181	1,666,320
Customer-Hours Interrupted	3,149,827	3,466,689	3,334,033	3,512,446	3,434,360	3,399,812
Customers Served	1,679,956	1,678,863	1,673,962	,663,214	1,653,868	1,643,812
Customers per Interruption	111.53	121.25	118.77	114.48	123.06	115.38
Availability Index	99.9786	99.9764	99.9773	99.9760	99.9763	99.9764
Interruptions/1000 Customers	8.24	8.73	8.89	9.10	8.31	8.79



2. CAIDI AND SAIFI BY REGION

The tables below illustrate CAIDI and SAIFI performance for each region. Data from 2018 through 2023 is derived from the Interruption and Disturbance System (IDS).

CAIDI performance met PSC goals in 6 of 8 regions. Customers in the Central region experienced the most improvement with a 9% decrease as compared to 2022. Customers in the Mohawk Valley region also showed improvement in CAIDI from 2022.

Customers in the Capital and Frontier regions experienced CAIDI performance that did not meet the regional goal.

SAIFI performance met PSC goals in 8 of 8 regions. Customers in the Northern region experienced the most improvement with a 33% decrease from 2022. Customers in the Capital, Central, Genesee, Mohawk Valley, and Southwest regions also showed improvement in SAIFI from 2022.

CAIDI (IDS data)

Region	2023 Threshold	2023 Actual	2022 Actual	2021 Actual	2020 Actual	2019 Actual	2018 Actual
Capital	2.025	2.03*	2.00	1.86	1.92	2.28*	2.20*
Central	1.899	1.67	1.84	1.70	1.65	1.65	1.80
Frontier	1.869	2.14*	1.97*	1.63	2.58*	1.63	1.61
Genesee	2.049	1.77	1.53	1.75	1.53	1.75	2.06*
Mohawk Valley	2.150	2.07	2.20*	1.94	2.35*	1.93	2.29*
Northeast	2.578	2.57	2.43	2.40	2.29	2.72*	2.42
Northern	2.111	1.92	1.49	1.81	2.07	2.00	1.84
Southwest	1.950	1.74	1.72	1.74	1.70	1.68	1.86

SAIFI (IDS data)

Region	2023 Threshold	2023 Actual	2022 Actual	2021 Actual	2020 Actual	2019 Actual	2018 Actual
Capital	1.024	0.91	1.06*	0.99	1.07*	1.02	0.95
Central	1.226	1.00	1.15	1.40*	1.04	1.06	1.17
Frontier	0.480	0.40	0.33	0.43	0.52*	0.46	0.48
Genesee	1.037	0.99	1.00	0.98	1.20*	1.41*	1.23*
Mohawk Valley	1.483	1.06	1.49*	1.34	1.34	1.42	1.29
Northeast	1.372	1.36	1.31	1.34	1.39*	1.26	1.22
Northern	1.412	1.08	1.61*	1.29	1.28	1.15	1.34
Southwest	1.181	0.89	1.32*	1.06	0.99	1.11	1.02

Note: The numbers in these tables are based on data that excludes major storm events. An asterisk (*) indicates that the region fell short of the PSC goal for the region.

3. PSC CAUSE CODE ANALYSIS

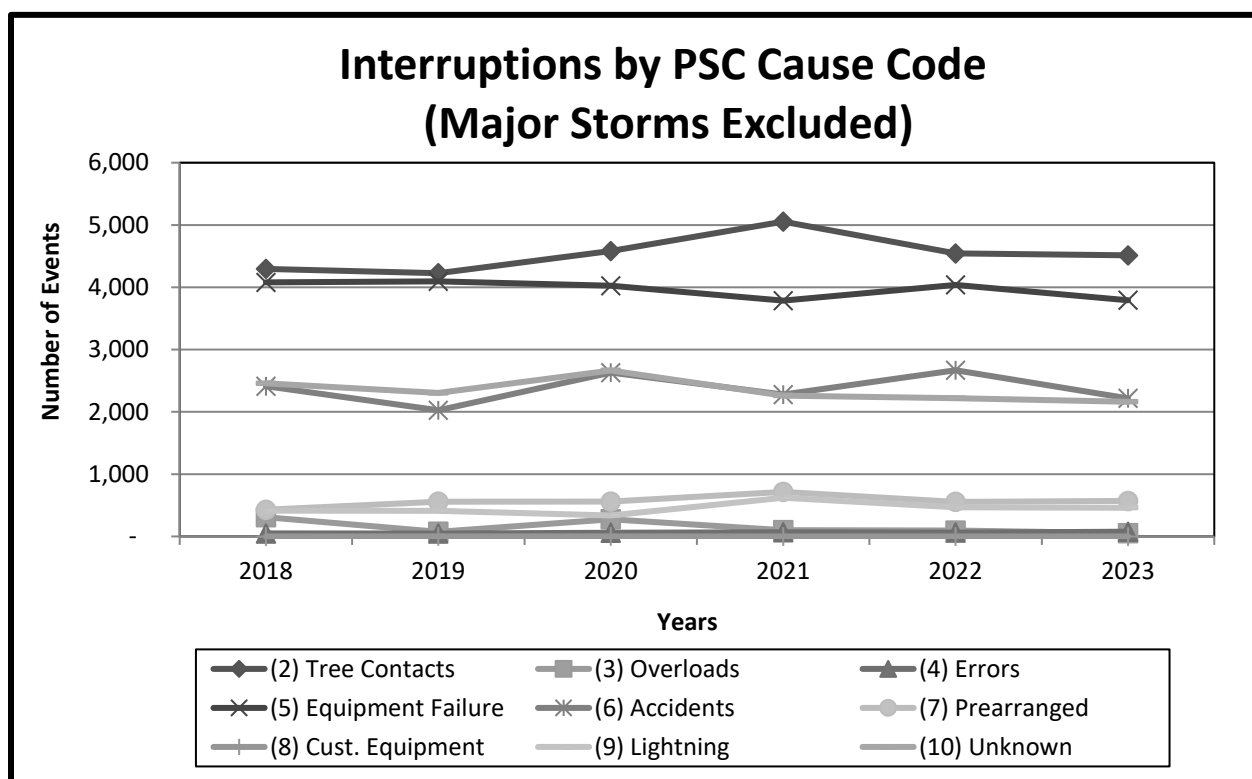
As illustrated in the table below, overall interruptions, including major storms, decreased 18% in 2023 as compared to 2022. There was a decrease in Major Storm, Tree Contact, Overload, Equipment Failure, Lightning, and Unknown events. There was an increase in Operator Error and Prearranged events.

Excluding Cause Code (1) Major Storms, the number of interruptions decreased 6% from 2022. The top three contributors to the number of interruptions were (2) Tree Contacts at 36%, (5) Equipment Failure at 32%, and (6) Accidents at 17%.

In 2023, (2) Tree Contacts decreased by 1% from 2022, the number of customers interrupted (CI) decreased by 15%, and customer-hours decreased by 8%. Despite a 1% decrease in Tree Contacts from 2022, CAIDI experienced a 7% increase in 2023 as compared to 2022. SAIDI, however, experienced a 15% decrease in 2023 as compared to 2022.

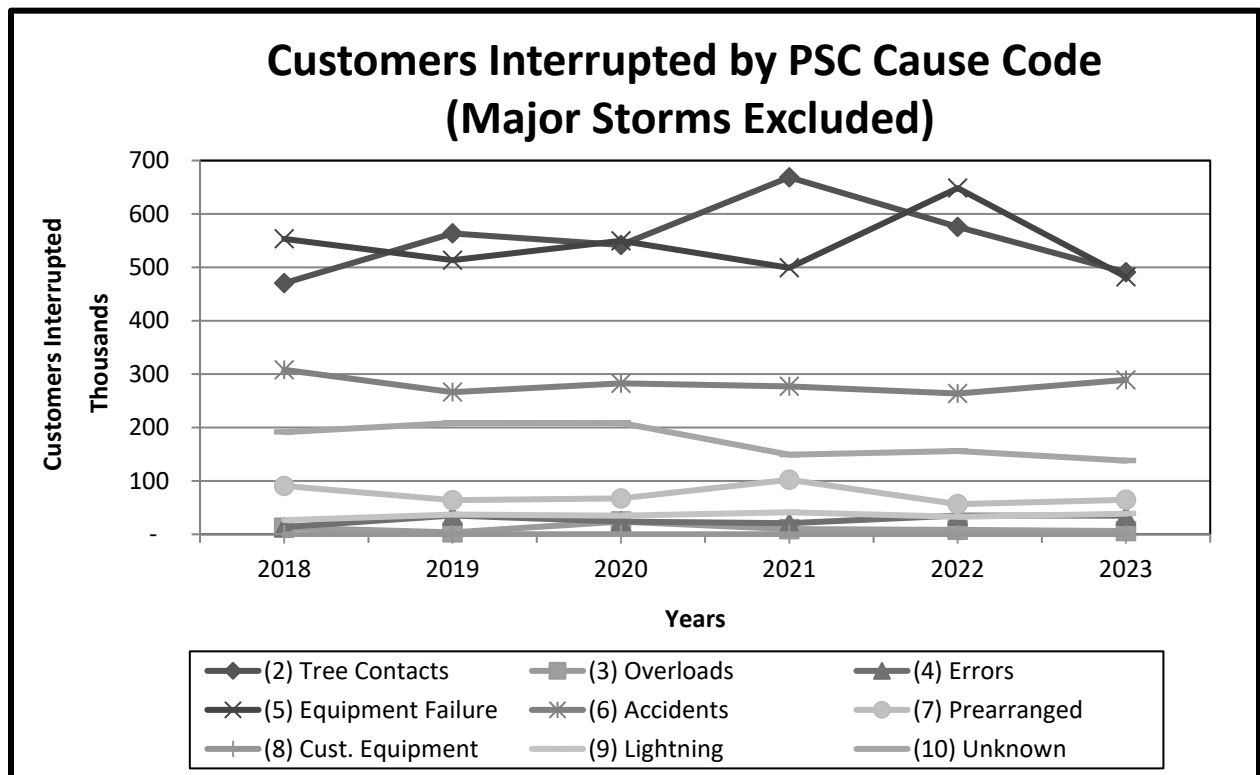
NUMBER OF INTERRUPTIONS BY CAUSE CODE

Cause Code	2023	2022	2021	2020	2019	2018
01 Major Storms	3,155	6,193	3,676	5,648	7,429	8,206
02 Tree Contacts	4,513	4,543	5,054	4,582	4,226	4,296
03 Overloads	52	95	101	275	75	309
04 Errors	76	63	67	60	47	48
05 Equipment Failure	3,792	4,039	3,786	4,025	4,095	4,078
06 Accidents	2,218	2,668	2,278	2,630	2,026	2,411
07 Prearranged	570	556	715	560	558	429
08 Customer Equipment	0	0	0	1	1	0
09 Lightning	461	468	621	337	411	413
10 Unknown	2,162	2,219	2,261	2,664	2,304	2,458
Totals	16,999	20,844	18,559	20,782	21,172	22,648



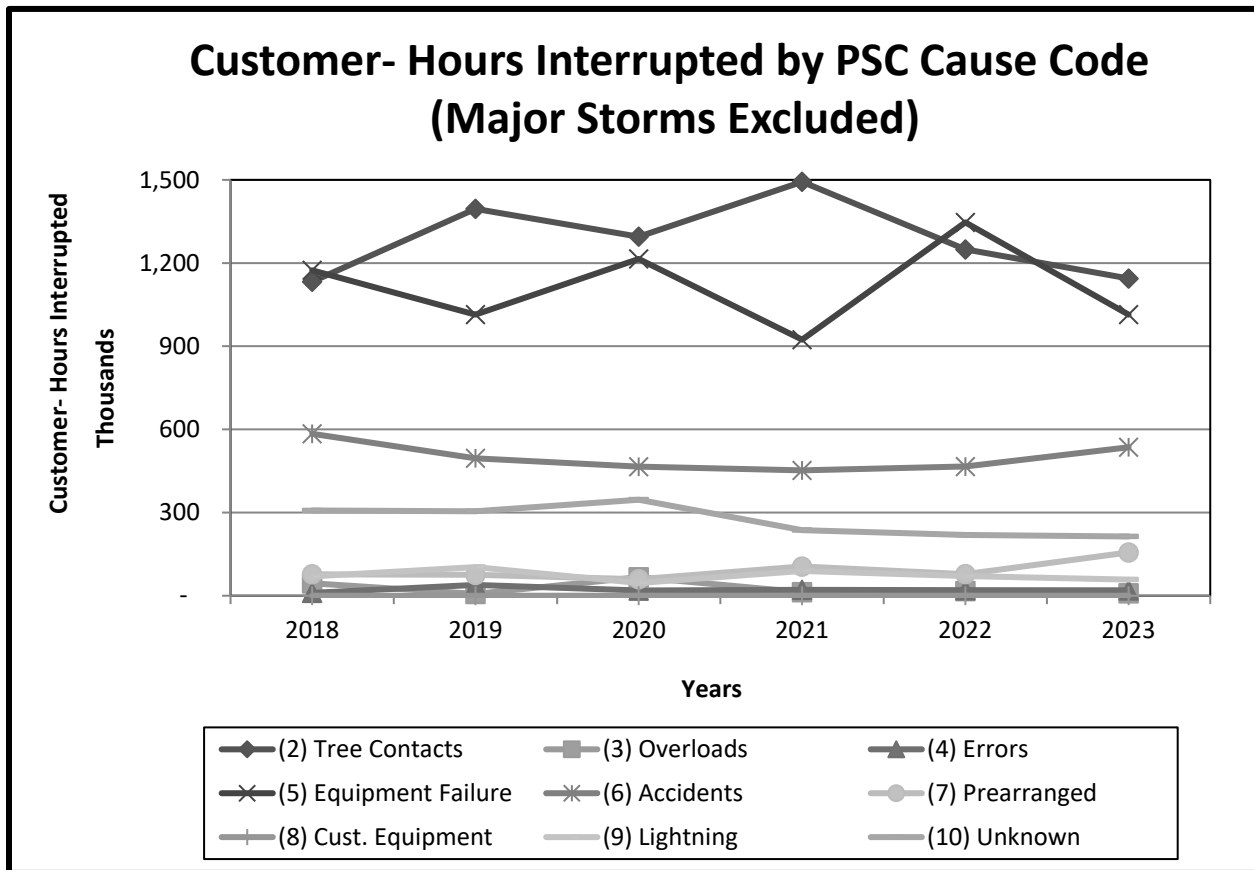
CUSTOMERS INTERRUPTED BY CAUSE CODE

Cause Code	2023	2022	2021	2020	2019	2018
01 Major Storms	371,398	711,979	422,542	762,303	766,788	839,762
02 Tree Contacts	490,817	575,679	668,684	541,885	563,621	470,432
03 Overloads	6,073	8,330	9,596	23,844	3,551	12,379
04 Errors	34,797	35,130	20,705	23,868	35,118	13,633
05 Equipment Failure	482,085	648,441	499,126	549,707	513,423	553,325
06 Accidents	289,223	263,655	277,079	282,628	266,276	308,087
07 Prearranged	64,580	56,485	102,170	67,108	63,860	90,590
08 Customer Equipment	0	0	0	18	5	0
09 Lightning	38,550	32,652	41,276	34,892	36,951	26,491
10 Unknown	137,898	156,028	149,025	208,541	208,376	191,383
Totals	1,915,421	2,488,379	2,190,203	2,494,794	2,457,969	2,506,082



CUSTOMER-HOURS INTERRUPTED BY CAUSE CODE

Cause Code	2023	2022	2021	2020	2019	2018
01 Major Storms	2,672,882	6,443,755	2,843,246	9,117,326	5,525,954	7,433,501
02 Tree Contacts	1,144,183	1,249,374	1,493,056	1,295,150	1,395,571	1,132,720
03 Overloads	8,832	16,579	12,619	66,766	6,617	44,767
04 Errors	19,430	19,776	21,224	18,648	38,914	10,263
05 Equipment Failure	1,013,994	1,346,687	923,628	1,214,969	1,014,061	1,174,011
06 Accidents	535,451	466,120	452,177	465,372	495,830	584,050
07 Prearranged	156,020	77,785	105,417	59,476	75,398	77,269
08 Cust. Equipment	0	0	0	26	8	0
09 Lightning	58,298	71,063	89,328	45,841	103,179	69,490
10 Unknown	213,617	219,303	236,584	346,198	304,782	307,243
Totals	5,822,707	9,910,443	6,177,279	12,629,772	8,960,314	10,833,312



CUSTOMERS INTERRUPTED AND CUSTOMER-HOURS
INTERRUPTED BY CAUSE CODE INCLUDING MAJOR STORMS

Code	Category	Interruptions		Customers Interrupted		Customer-Hours	
		Number	% Total	Number	% Total	Number	% Total
01	Major Storms	3,155	18.6%	371,398	19.4%	2,672,882	45.9%
02	Tree	4,513	26.5%	490,817	25.6%	1,144,183	19.7%
03	Overload	52	0.3%	6,073	0.3%	8,832	0.2%
04	Errors	76	0.4%	34,797	1.8%	19,430	0.3%
05	Equipment	3,792	22.3%	482,085	25.2%	1,013,994	17.4%
06	Accidents	2,218	13.0%	289,223	15.1%	535,451	9.2%
07	Prearranged	570	3.4%	64,580	3.4%	156,020	2.7%
08	Customers	0	0.0%	0	0.0%	0	0.0%
09	Lightning	461	2.7%	38,550	2.0%	58,298	1.0%
10	Unknown	2,162	12.7%	137,898	7.2%	213,617	3.7%
	Totals	16,999	100.0%	1,915,421	100.0%	5,822,707	100.0%

CUSTOMERS INTERRUPTED AND CUSTOMER-HOURS
INTERRUPTED BY CAUSE CODE EXCLUDING MAJOR STORMS

Code	Category	Interruptions		Customers Interrupted		Customer-Hours	
		Number	% Total	Number	% Total	Number	% Total
02	Tree	4,513	32.6%	490,817	31.8%	1,144,183	36.3%
03	Overload	52	0.4%	6,073	0.4%	8,832	0.3%
04	Errors	76	0.5%	34,797	2.3%	19,430	0.6%
05	Equipment	3,792	27.4%	482,085	31.2%	1,013,994	32.2%
06	Accidents	2,218	16.0%	289,223	18.7%	535,451	17.0%
07	Prearranged	570	4.1%	64,580	4.2%	156,020	5.0%
08	Customers	0	0.0%	0	0.0%	0	0.0%
09	Lightning	461	3.3%	38,550	2.5%	58,298	1.9%
10	Unknown	2,162	15.6%	137,898	8.9%	213,617	6.8%
	Totals	13,844	100.0%	1,544,023	100.0%	3,149,825	100.0%

Cause Code 01 - Major Storms

In 2023, Major Storms accounted for 19% of interruptions, 19% of customers interrupted, and 46% of Customer-Hours Interrupted.

Interruptions due to Major Storm were down 49% from 2022, and down 49% over the 5-year average. Customers interrupted due to Major Storms were down 48% from 2022, and down 47% over the 5-year average. Customer-Hours interrupted were down 59% from 2022 and down 57% over the 5-year average.

The remaining PSC code descriptions do not include Major Storms in the percentages.

Cause Code 02 - Tree Contacts

In 2023, Tree Contacts accounted for 33% of interruptions, 32% of customers interrupted, and 36% of Customer-Hours Interrupted.

Interruptions due to Tree Contacts were down 1% from 2022, and down 1% over the 5-year average. Customers interrupted due to Tree Contacts were down 15% from 2022, and down 13% over the 5-year average. Customer-Hours interrupted were down 8% from 2022 and down 13% over the 5-year average.

Tree Contacts were the largest cause of interruptions in 2023.

Cause Code 03 – Overloads

In 2023, Overloads accounted for 0% of interruptions, 0% of customers interrupted, and 0% of Customer-Hours Interrupted.

Interruptions due to Overloads were down 45% from 2022, and down 70% over the 5-year average. Customers interrupted due to Overloads were down 27% from 2022, and down 47% over the 5-year average. Customer-Hours interrupted were down 47% from 2022 and down 70% over the 5-year average.

Overloads were the 8th largest cause of interruptions in 2023.

Cause Code 04 - Operator Error

In 2023, Operator Error accounted for 1% of interruptions, 2% of customers interrupted, and 1% of Customer-Hours Interrupted.

Interruptions due to Operator Error were up 21% from 2022, and up 33% over the 5-year average. Customers interrupted due to Operator Error were down 1% from 2022, and up 35% over the 5-year average. Customer-Hours interrupted were down 2% from 2022 and down 11% over the 5-year average.

Operator Error was the 7th largest cause of interruptions in 2023.

Cause Code 05 - Equipment Failure

In 2023, Equipment Failures accounted for 27% of interruptions, 31% of customers interrupted, and 32% of Customer-Hours Interrupted.

Interruptions due to Equipment Failure were down 6% from 2022, and down 5% over the 5-year average. Customers interrupted due to Equipment Failure were down 26% from 2022, and down 13% over the 5-year average. Customer-Hours interrupted were down 25% from 2022 and down 11% over the 5-year average.

Equipment Failures were the 2nd largest cause of interruptions in 2023.

Cause Code 06 - Accidents

In 2023, Accidents accounted for 16% of interruptions, 19% of customers interrupted, and 17% of Customer-Hours Interrupted.

Interruptions due to Accidents were down 17% from 2022, and down 8% over the 5-year average. Customers interrupted due to Accidents were up 10% from 2022, and up 3% over the 5-year average. Customer-Hours interrupted were up 15% from 2022 and up 9% over the 5-year average.

Accidents were the 3rd largest cause of interruptions in 2023.

Cause Code 07 - Prearranged

In 2023, Prearranged outages accounted for 4% of interruptions, 4% of customers interrupted, and 5% of Customer-Hours Interrupted.

Interruptions due to Prearranged outages were up 3% from 2022, and up 1% over the 5-year average. Customers interrupted due to Prearranged outages were up 14% from 2022, and down 15% over the 5-year average. Customer-Hours interrupted were up 101% from 2022 and up 97% over the 5-year average.

Prearranged outages were the 5th largest cause of interruptions in 2023.

Cause Code 08 - Customer Equipment

In 2023, Customer Equipment accounted for 0% of interruptions, 0% of customers interrupted, and 0% of Customer-Hours Interrupted.

Customer Equipment was the 9th largest cause of interruptions in 2023.

Cause Code 09 - Lightning

In 2023, Lightning accounted for 3% of interruptions, 2% of customers interrupted, and 2% of Customer-Hours Interrupted.

Interruptions due to Lightning were down 1% from 2022, and up 2% over the 5-year average. Customers interrupted due to Lightning were up 18% from 2022, and up 12% over the 5-year average. Customer-Hours interrupted were down 18% from 2022 and down 23% over the 5-year average.

Lightning was the 6th largest cause of interruptions in 2023.

Cause Code 10 - Unknown

In 2023, Unknown causes accounted for 16% of interruptions, 9% of customers interrupted, and 7% of Customer-Hours Interrupted.

Interruptions due to Unknown causes were down 3% from 2022, and down 9% over the 5-year average. Customers interrupted due to Unknown causes were down 12% from 2022, and down 25% over the 5-year average. Customer-Hours interrupted were down 3% from 2022 and down 24% over the 5-year average.

Unknown causes were the 4th largest cause of interruptions in 2023.

4. MAJOR STORMS

National Grid’s electric system experienced 15 severe weather incidents in 2023 that qualified as major storms; an decrease of 12 major storms reported in 2022 (27). Of the 15 events in 2023, 2 impacted the Central Division (Central – 0; Mohawk Valley – 1; Northern – 1), 9 impacted the Eastern Division (Capital – 6; Northeast – 3), and 4 impacted the Western Division (Frontier – 0; Genesee – 1; Southwest – 3). To qualify as a major storm, a storm event period must affect at least ten percent of the customers in an operating region or have at least one customer out of service for 24 hours or more. The Company excludes all interruptions caused by major storms from the CAIDI and SAIFI indices. The storms occurred during 11 distinct time periods, affecting multiple regions and in many cases, lasting more than one day.

Major Interruptions Due to Major Storms

As shown in the table below, the number of major storm interruptions in 2023 was 50% lower than the 5-year average (2018 to 2022). All regions, except Capital and Southwest experienced a lower number of Major Storm interruptions in 2023 relative to the 5-year average. There was a 49% decrease in the number of 2023 interruptions as compared to 2022.

Major Storm Interruptions by Region

					(a)	(b)	(c)	(d) = (b-c)/c	(e) =(b-a)/a
Regions	2018	2019	2020	2021	2022	2023	18 - 22 Average	2023 vs. 5-year average	2023 vs. 2022
Capital	1,433	1,460	2,089	587	557	1,464	1,225	19.49%	162.84%
Central	635	698	143	157	235	0	374	-100.00%	-100.00%
Frontier	413	1,352	413	546	1000	0	745	-100.00%	-100.00%
Genesee	503	532	206	520	549	99	462	-78.57%	-81.97%
Mohawk	965	529	178	377	418	33	493	-93.31%	-92.11%
Northeast	2,304	1,749	1,810	515	1,883	962	1,652	-41.77%	-48.91%
Northern	1,144	945	101	670	1286	73	829	-91.20%	-94.32%
Southwest	809	264	708	300	264	522	469	11.30%	97.73%
Total	8,206	7,529	5,648	3,672	6,192	3,153	6,249	-49.55%	-49.08%

Major Storms – 2023

Date	Region	Storm Conditions	CI	CHI	Interruptions	Storm Duration	24 Hour Events	24 Hour Customers Interrupted	Qualification
1/23/2023	Capital	Heavy Snow	14,475	49,616	172	1D 17H 40M	4	7	24Hr
3/3/2023	Capital	Heavy Snow	52,556	431,626	326	1D 22H 9M	53	1,195	10%/24Hr
3/14/2023	Capital	High Winds, Heavy Snow	57,039	472,031	489	2D 15H 50M	57	3,402	10%/24Hr
3/14/2023	Northeast	High Winds, Heavy Snow	70,885	512,781	563	2D 15H 59M	52	1,902	10%/24Hr
3/25/2023	Southwest	High Winds	14,300	54,824	134	1D 16H 4M	3	6	10%/24Hr
3/25/2023	Genesee	High Winds	8,580	64,241	99	1D 13H 35M	5	1,276	24Hr
4/1/2023	Southwest	High Winds	19,820	195,738	240	2D 14H 13M	48	1,757	10%/24Hr
7/4/2023	Capital	High Winds, Thunderstorms	10,337	78,361	70	2D 3H 19M	1	64	24Hr
7/13/2023	Northeast	High Winds, Thunderstorms	23,377	105,997	269	2D 6H 21M	3	207	10%/24Hr
7/13/2023	Capital	High Winds, Thunderstorms	11,081	37,799	131	2D 0H 52M	4	7	24Hr
7/20/2023	Southwest	High Winds, Thunderstorms	27,491	96,068	148	1D 2H 40M	0	0	10%
9/6/2023	Capital	High Winds, Thunderstorms	36,561	376,270	276	3D 13H 4M	24	3,148	10%/24Hr
9/7/2023	Northeast	High Winds, Thunderstorms	13,005	157,155	130	1D 23H 29M	1	721	24Hr
11/21/2023	Mohawk	High Winds, Wintry Mix	4,247	13,251	33	1D 3H 3M	1	1	24Hr
12/11/2023	Northern	High Winds, Heavy Snow	7,642	23,968	73	1D 18H 39M	1	107	24Hr

5. CIRCUIT RELIABILITY

In order to identify action plans to maintain reliability, the Company ranks each circuit system-wide on the following four reliability metrics and generates an overall ranking by summing the four rankings for each feeder. This method helps to ensure that National Grid focuses on the worst performing feeders from the viewpoint of customers regardless of physical location, voltage, or configuration.

- 1) Number of Interruptions
- 2) Number of Customer-Hours Interrupted (CHI)
- 3) SAIFI (Customers Interrupted/Customers Served)
- 4) SAIDI (Customer Hours/Customers Served)

The Company performs a detailed analysis of the reliability issues for the top 5% of circuits on this list. The location, duration of the interruptions, number of customers affected, cause(s), and physical environmental characteristics of the circuits are all analyzed to develop appropriate action plans that will address the issues.

For this report, the maximum number of feeders analyzed and evaluated in any one operating region is capped at twenty feeders. If any operating region has more than twenty feeders that rank among the top 5% worst performing, the performance for a commensurate number of next highly ranked feeders in other regions are analyzed. The following table shows the number of circuits in each operating region that were among the top 5% of feeders in terms of reliability issues. More detailed information can be found in Section L.1.

Company Operating Region	Total Number of Distribution Circuits	Company Criteria	
		Worst 5% For System	Circuits Analyzed
Capital	330	13	16
Central	299	19	20
Frontier	688	1	1
Genesee	141	6	9
Mohawk	138	19	20
Northeast	204	35	20
Northern	158	9	15
Southwest	152	4	5
Grand Total	2,110	106	106

6. RELIABILITY AND OTHER PROGRAMS

The Company has made significant investments for capital improvements and maintenance activities in recent years to develop and implement programs that will maintain the long-term performance and health of network assets.

The Reliability Program is designed to significantly improve and maintain reliability through five initiatives:

- 1) Engineering Reliability Reviews (“ERRs”)
- 2) Sub-Transmission Automation & Fault Location, Isolation, & Service Restoration (“FLISR”)
- 3) Vegetation Management
- 4) Inspection and Maintenance Program (“I&M”)
- 5) Trip Saver Installation Program

The I&M program has substantially replaced some of the strategy’s program work such as feeder hardening, potted porcelain cutout replacement, recloser installation, targeted pole replacement, manhole, and vaults. Section B of this report describes the Company’s reliability programs in more detail.

New York State continues to experience volatile weather that causes interruptions for our customers. The Company maintains a reliable grid through proactive infrastructure programs and effective storm response plans. Although the Company’s reliability metrics remain relatively stable, these ‘minor storm’ days continue to place upward pressure on them. The Company monitors the impacts of these weather events to better understand risks and develop approaches to mitigate them.

New York’s Broadband Expansion Program represented a significant increase in pole attachment activity since 2018. This unprecedented growth and speed of fiber expansion also, at times, created the need for National Grid to assist in the correction of non-compliant attachments. The total reliability impact of this corrective work has not been quantified within this report, as most corrections were completed without the interruption of power to customers. In a small number of situations, there were unplanned interruptions and/or the need to proactively de-energize sections of lines to facilitate corrections to attachments, resulting in interruption of service to a limited number of customers.

7. TRANSMISSION AND DISTRIBUTION INSPECTION AND MAINTENANCE PROGRAM

The Company takes a proactive approach to asset management. The I&M program is designed to find and fix issues before they become problems. The inspections also provide detailed information about the Company's assets for further analysis of trends. In addition, planning of the transmission and distribution system assesses capacity, reliability, and asset replacement issues in the future. The overarching objective of the initiatives is to get ahead of reliability concerns before they become events. Inspection of the transmission and distribution system is performed on a comprehensive system-wide basis using four basic methods:

- 1) A comprehensive helicopter inspection is performed to determine the condition of select lines (mainly transmission) and to help establish a repair schedule. These inspections are used to gather information to evaluate the need for maintenance or capital improvement on poorly performing circuits. The inspections provide detailed information about conductors, hardware, and structures.
- 2) Infrared testing is performed to sense heat dissipation from sub-transmission and transmission lines. Infrared testing detects faulty splices and loop sleeves so the Company can take short pre-arranged interruptions to repair problems proactively thereby avoiding potentially lengthy uncontrolled emergency interruptions.
- 3) Distribution and transmission lines are manually patrolled.
- 4) Mobile surveys of underground electric distribution systems are performed in Buffalo, Albany, and Niagara Falls to detect elevated voltage.

Pursuant to the Electric Safety Standards, the performance target for inspections for 2023 was 19% (i.e., 95% of the annual 20% target). Defects that required immediate attention were addressed. Other problems were prioritized so they could be addressed in future work plans. National Grid inspected 20.3% of its electric facilities for the period ending December 31, 2023.

The results are summarized in the following tables.

2023 Facility Inspection Program Results

Category	Total System Units	2023 Units Completed	2023 Actual Inspected
Overhead Distribution	1,278,612	255,478	19.9%
Overhead Transmission	104,161	22,227	21.3%
Underground	105,009	26,293	25.0%
Pad-mounted Transformers	75,230	18,167	24.1%
Streetlight	35,471	3,420	9.6%
Totals	1,598,483	325,585	20.3%

Inspection Performance Summary

Overhead Distribution Facilities

Inspection Year	Number of Overhead Distribution Structures Inspected	% of Overall System Inspected
2023	255,478	20%
2022	263,075	21%
2021	259,312	21%
2020	257,879	20%
2019	228,478	18%

Overhead Transmission Facilities

Inspection Year	Number of Overhead Transmission Facilities Inspected	% of Overall System Inspected
2023	22,227	21%
2022	24,115	23%
2021	22,292	21%
2020	22,112	21%
2019	17,580	17%

Underground Facilities

Inspection Year	Number of Underground Facilities Inspected	% of Overall System Inspected
2023	26,293	25%
2022	20,452	20%
2021	20,573	20%
2020	18,729	18%
2019	19,015	19%

Pad-mount Transformers

Inspection Year	Number of Pad-mounted Transformers Inspected	% of Overall System Inspected
2023	18,167	24%
2022	14,672	20%
2021	15,502	21%
2020	13,061	18%
2019	13,123	19%

Streetlights*

Inspection Year	Number of Streetlights Inspected	% of Overall System Inspected
2023	3,420	10%
2022	6,032	14%
2021	12,992	27%
2020	12,974	23%
2019	15,890	24%

*Note: Streetlight Inspection completion percentages are calculated using the number of National Grid owned assets at the end of each calendar year. This number declined in 2023, as municipalities continued to purchase these assets from the Company. As a result of these Municipality purchases, the adjusted Actual % of Overall System Inspected (Cumulative) through calendar year 2023 is 92%.

In accordance with the Safety Standards, set forth in the PSC’s orders in Case 04-M-0159 National Grid uses the following severity levels to establish priority for repairs and scheduling:

Level I – Repair as soon as possible but not longer than one week. A Level I classification represents an actual or imminent safety hazard to the public or a serious and immediate threat to the delivery of power. Critical safety hazards present at the time of the inspection shall be guarded until the hazard is mitigated.

Level II – Repair within one year. A Level II classification represents conditions that are likely to fail prior to the next inspection cycle and represent a threat to safety and/or reliability should a failure occur prior to repair.

Level III – Repair within three years. A Level III classification represents conditions that do not present immediate safety or operational concerns and would likely have a minimal impact on the safe and reliable delivery of power should a failure occur prior to repair.

Level IV – A Level IV classification represents conditions found but repairs are not needed at this time. Level IV is used to track atypical conditions that do not require repair within a five-year timeframe. This level is used for future monitoring purposes and planning proactive maintenance activities.

The following table summarizes the deficiencies identified by the inspection program in 2023 for the transmission and distribution system in each category. The specific issues that were identified for each asset grouping are described in the Company’s 2023 Annual Stray Voltage Testing and Facility Inspection Report in Case 04-M-0159 filed on February 15, 2024. All Level I issues and most Level II issues have already been addressed. The remaining issues will be addressed consistent with the timeframes as discussed above.

Program	Level 1	Level 2	Level 3
Distribution	470	3,852	15,570
Underground	156	1,118	900
Transmission	10	32	907

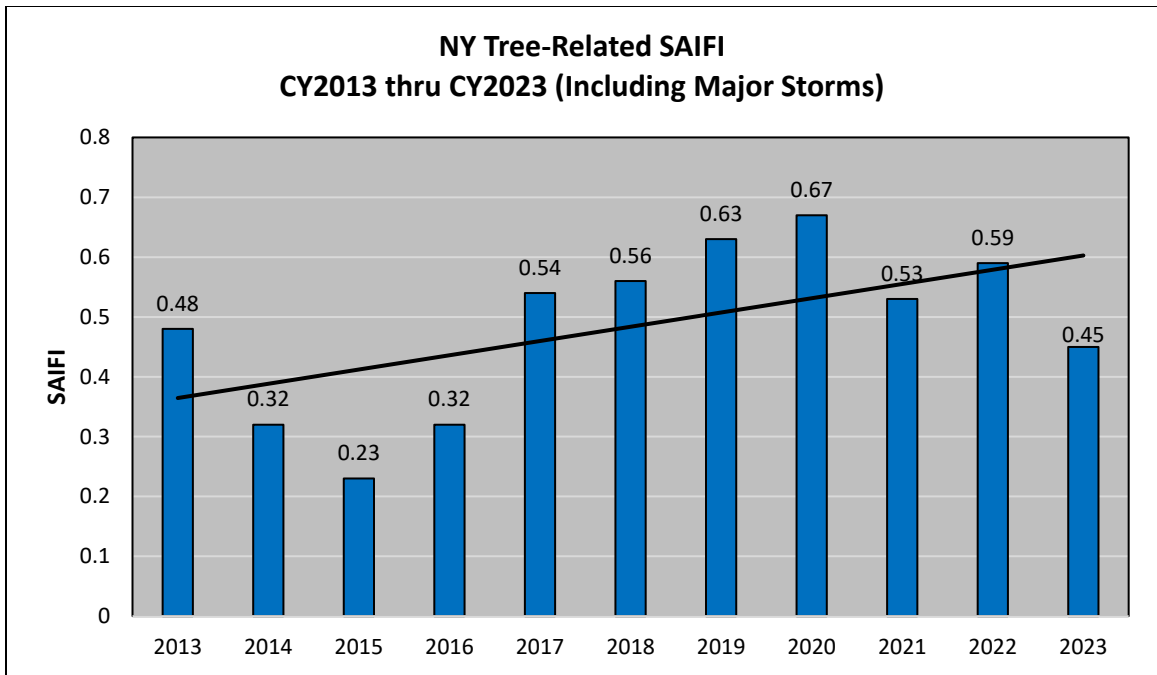
8. VEGETATION MANAGEMENT PROGRAM

National Grid's vegetation management program is divided into two sub-programs, one for the distribution system and another for the transmission system. Both programs include a time-based cycle component and a reliability improvement component to minimize tree-related interruptions from trees and limbs failing into the infrastructure as well as providing a measure of public and worker safety.

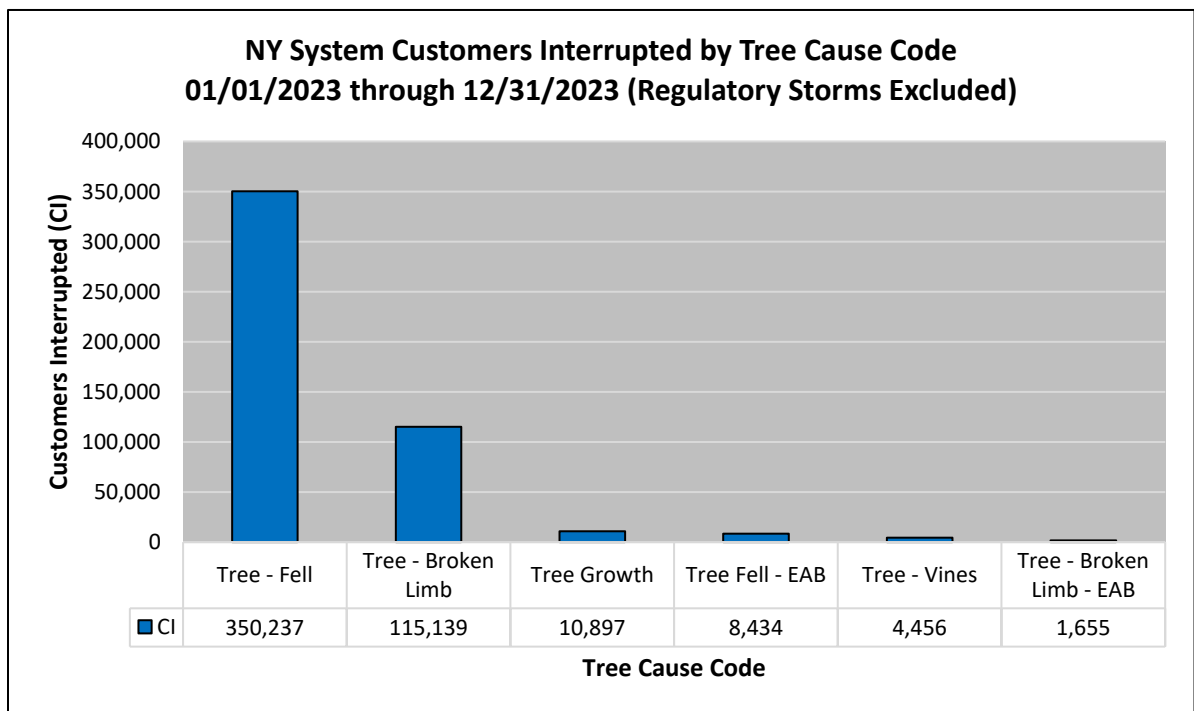
The transmission system is managed using a cycle-based integrated vegetation management ("IVM") program. This is the process used to manage vegetation along the floor of the rights-of-way ("ROW"). The ROW edges that contain tall growing species are observed during patrols on a scheduled basis and maintained as needed to minimize risk. The details regarding the transmission program performance are reported annually in a separate report to the PSC.

National Grid's distribution vegetation management process is circuit pruning, presently a time-based methodology, and is a comprehensive program that provides for the pruning of vegetation along all distribution circuit miles on an average five- and one-half year interval. An optimal cycle length is set for each circuit based on growing season, growth characteristics of predominant tree species in that area, and the appropriate clearance that can be created at the time of pruning. The National Grid has maintained a level of funding necessary to operate the program for many years allowing the completion of multiple full program cycles of pruning. In addition to pruning, hazard tree removals are performed on prioritized distribution feeders. The Company identifies feeders for the inspection and removal of hazard trees based on field inspections, tree exposure, historical interruption data, number of customers served and circuit configuration.

Shown in the chart on the next page is the New York system tree-related SAIFI including major storms for the past ten years. Although tree-related interruptions are strongly correlated with wind and weather patterns; that variability and its effect on tree interruption data is mitigated when viewed over a longer period of years. As shown by the chart, SAIFI upward through 2020 and has started to trend slightly down over the past three years.



Demonstrated in the chart below, the distribution of tree interruptions between the six tree cause categories points to the importance of a robust hazard tree program. Tree fell interruptions accounted for 71% of all tree interruptions in CY2023, followed by 24% caused by limb failures, 2% caused by tree growth, and lastly vine growth. The minimal number of tree growth and vine growth interruptions is an indication that the current pruning program and pruning specifications are effective in minimizing interruptions related to vegetation growth. Ash tree failures have been minimized through the EAB mitigation program. Over time we are seeing the failure of White pine, Sugar Maple and other species due to invasive fungi and insects that are compromising tree health and structure. Only a robust hazard tree mitigation process can address these tree failure issue.



The Company implemented a formal Ash tree removal program in 2017 to mitigate the decline of Ash trees due to Emerald Ash Borer (EAB). Based on incremental funding, approximately 30,000 infested trees are targeted for removal in FY23 and FY24. As part of the mitigation plan, an outage follow-up program was implemented to monitor the number of outage events caused by Ash trees. Below is a summary of the outage follow-up. Approximately 9.7% of the forest along the utility lines in New York State are comprised of Ash trees. In CY2023, approximately 10% of all vegetation related outages were caused by Ash trees. Ash tree failures appear to be stabilizing. National Grid will continue to monitor Ash tree failures and distribute resources appropriately to address any possible escalations.

2023 Ash Tree Interruptions by Division (Excluding major storms)

Division	Total Tree Events	Ash Tree Events	EAB Ash Tree Events	% Ash Tree Failures	%Ash Tree with EAB Failures
East	936	36	14	4%	39%
Central	766	44	16	6%	36%
West	776	179	163	23%	91%
Total	2,478	259	193	10%	75%

% of Tree Failures that were Ash

Data based on number of events reviewed

	2017	2018	2019	2020	2021	2022	2023
Division	%Ash Failures	%Ash Failures	%Ash Failures	%Ash Failures	%Ash Failures	%Ash Failures	%Ash Failures
Eastern	4%	3%	3%	3%	3%	3%	4%
Central	5%	5%	6%	8%	5%	4%	6%
Western	4%	8%	13%	13%	21%	24%	23%
System Average	4%	5%	6%	7%	8%	10%	10%

In the table below the NY Operating Regions are ranked based on 2023 tree-related SAIFI performance. Regions with the highest tree densities also had the highest distribution line tree exposure, and these regions generally have the highest number of interruptions each year. Vegetation program budget dollars, especially for hazard tree work, are oriented with these same facts in mind.

Tree Interruptions by Region – 2023 (Excluding major storms)

Rank	Region	Number of Interruptions	Customers Interrupted	SAIFI
1	Northeast	1,049	135,972	0.59
2	Capital	744	87,081	0.26
3	Central	661	100,441	0.35
4	Northern	471	34,863	0.25
5	Mohawk	454	43,805	0.31
6	Southwest	447	26,430	0.25
7	Genesee	348	35,942	0.36
8	Frontier	340	26,284	0.08

9. ELECTRIC SUBSTATION PREVENTIVE MAINTENANCE PROGRAM

The Substation Computerized Maintenance Management System (“CMMS”) covers an array of inspections, diagnostics, and maintenance activities to be completed in accordance with National Grid Substation Maintenance Standards and Procedures. These documents identify intervals and maintenance activities to be performed on different types of substation equipment (transformers, circuit breakers, Load Tap Changers (“LTC”), batteries and chargers, etc.). Protection Systems Engineering Documents provide the substation relay calibration and testing requirements for the bulk power, transmission, distribution, and communication-protection systems.

National Grid Upstate New York Substations and Protection, Telecom and Operations (“PTO”) field personnel performed and documented 15,218 discrete maintenance activities across the system in calendar year 2023. Total expenditure for the Upstate New York Substation Maintenance Program was approximately \$5.941 million. The listing of specific substation maintenance activities are as follows:

<u>Substation Maintenance Programs</u> <u>Apparatus: Activity</u>	<u>Number</u> <u>Performed</u>
Battery: Diagnostic Inspection	540
Circuit Breaker: Diagnostics	577
Circuit Breaker: Mechanism Inspection (GCB2)	3
Circuit Switcher: Diagnostics	3
Disconnect: Motor Operator Operation	214
Load Tap Changer: DGA	866
Load Tap Changer: Internal Inspections	5
Substation: Visual & Operations (V&O) Inspections	4,532
Substation: Thermographic Inspections	798
Transformer: DGA	850
Transformer: Diagnostics	8
Transformer: Oil Quality (Screen Test)	40
Transformer: Cooler Cleaning	14
Voltage Regulator: DGA	30
Relay Testing: NERC	3116
Relay Testing: Other	2232
Battery: KF-1,KF-2 Battery Diagnostic Test (ST1/ST2)	29
Substation: KF-3 Station Service Critical Load Test (ST-3)	5
Standby Generator: KF-5 E Gen Run Test (ST-5)	144
Standby Generator: KF-6 E Gen Transfer Test (ST-6)	13
Battery: NERC PRC-005-6 Battery Bi-Monthly Check	1031
Circuit Breaker: DC Trip Coil Verification Check - NERC PRC-005-6	168
Totals	15,218

The CMMS uses a Maintenance Scheduling Number (“MSN”) that provides detailed information to prioritize and schedule the substation maintenance program work tasks. The CMMS application, Cascade, is used as a data warehouse and scheduling tool to manage workloads and balance risk. It is also used to help justify decisions related to work force and budgeting requirements. Cascade is the database used to assist in the development of maintenance plans and asset replacement programs for the calendar, fiscal, or multi-year maintenance and replacement programs.

As a maintenance example, an MSN number is used to trigger maintenance notification. The MSN number continues to increase creating a prioritized backlog until the maintenance task is completed. The MSN number increases at a predetermined rate depending on the type of maintenance task. This notification allows for the scheduling of the necessary equipment outages for maintenance inspection, diagnostics, or other tests as specified by published standards or procedures. The range between 400 and 500 allows for the scheduling of outages and completion of the maintenance activity. If the equipment MSN number is greater than 500, it is considered overdue. Variance reports are generated monthly to indicate the maintenance activities performed during the reporting period and year-to-date.

The tables below are examples of the monthly reports generated by Cascade system.

Substation Maintenance Status by Equipment Class – New York

Transmission

	≥ 500 Overdue*	400-499 Due	Total Units	Month TD COMP	FYTD COMP
Animal Fence Maintenance	0	0	9	0	6
Battery & Chg: Std Insp	0	59	348	26	146
CAP PrePeak Insp	0	0	50	0	43
Circuit Breaker Diag	1	2	777	1	30
Circuit Breaker Mech Insp (GCB2)	1	0	5	2	2
CKTSW Diag	0	2	142	0	1
Disconnects: MO Diag Insp	0	2	657	0	5
EGEN Diag	0	0	15	0	0
LTC:DGA	0	55	400	27	414
Substation V&O	0	177	353	195	1614
Thermographic Insp*	0	326	326	0	121
Transf DGA	1	85	542	41	453
Transf Oil Quality	0	9	98	0	22
TRF Cooler Cleaner	0	0	22	0	22

Distribution

	≥ 500 Overdue*	400-499 Due	Total Units	Month TD COMP	FYTD COMP
Animal Fence Maintenance	0	0	71	0	38
Battery & Chg: Std Insp	0	14	216	8	115
CAP PrePeak Insp	0	0	56	0	50
Circuit Breaker Diag	24	147	3865	41	582
CKTSW Diag	0	0	7	0	0
Disconnects: MO Diag Insp	0	0	93	0	0
LTC:DGA	0	40	292	25	292
LTC: Internal Insp	0	0	6	1	3
Substation V&O Insp	0	197	429	257	1973
Thermographic Insp*	0	410	412	1	110
Transf DGA	1	58	591	27	292
Transf Oil Quality	1	5	62	0	11
TRF Cooler Cleaning	1	0	6	0	5
VREG Internal	0	0	9	0	0
VREG: DGA	0	13	70	12	56

* Testing is done by PTO Meter and Test.

* ≥ 500 Overdue column includes overdue, exemptions, and OPEX. Does not include NPCC (refer to page 10).

In addition to its functionality as an asset register, the Cascade system manages other substation maintenance work. The system generates Work Orders when maintenance is required to track follow-up work with Trouble Orders and Follow-up Work Orders. As substation mechanics perform maintenance and inspections from automatically generated Work Orders, if problems are discovered, they will have several options: fix the problem while on site, initiate a Follow-up Work Order, and/or initiate a Trouble Order. Trouble Orders track problems and failures that have occurred during normal operation of the equipment and require immediate repair. Follow-up Work Orders track problems found during Visual & Operational (V&O) Inspections or scheduled equipment inspections.

Protective relays are tested on a calendar year basis. Triggers are based on the last test date and testing interval.

B. RELIABILITY PROGRAMS AND WORK FORCE INFORMATION

1. RELIABILITY PROGRAMS

National Grid has invested in a number of capital and maintenance programs to maintain the reliability of the electric system. Programs that are specifically designed to improve reliability are described below in detail with the exception of the vegetation management program which was described in a previous section of this report.

- **Engineering Reliability Reviews (“ERRs”)**
- **Sub-Transmission Automation and Fault Location, Isolation, & Service Restoration (“FLISR”)**
- **Distribution Fault Location, Isolation, & Service Restoration (“FLISR”)**
- **Vegetation Management** – Enhanced right-of-way clearing and treatment and Enhanced Hazard Tree Maintenance (“EHTM”) removal of danger trees on critical sections of the distribution system.
- **TripSaver Installation Program** – Single-phase cutout mounted recloser installations

In addition to reliability programs, certain aspects of the I&M program contribute to improved reliability and increased likelihood that the Company will satisfy PSC reliability goals. The I&M program is designed to ensure the Company fulfills its obligation to provide safe and adequate service by inspecting its facilities and repairing identified safety and reliability issues in a timely fashion. Replacement of deteriorated overhead and underground assets helps prevent a future failure which has a cumulative effect of improving reliability over time.

ERRs

As discussed in the Company's 2020 Asset Condition Report and Capital Investment Plan filed October 1, 2020 in Case 17-E-0238, the Customer Reliability & Analytics group generates the list of Worst Performing Feeders during the preparation of the Electric Service Reliability Report. The list of feeders includes interruptions associated with supply issues (transmission or substation) and excludes major storms. From the list, a small number of geographically diverse feeders are selected for an ERR. The scope of an ERR typically includes:

- Review of one-year and multi-year historical reliability data for current issues and trends.
- Review of recently completed and/or future planned work that is expected to impact reliability.
- Review the need for the installation of radial and/or loop scheme reclosers.
- Review the need for additional line fuses to improve the sectionalization of the feeder.
- Comprehensive review of the coordination of protective devices to ensure proper operation.
- Review for equipment in poor condition.
- Review of heavily loaded equipment.
- Review for other feeder improvements such as fault indicators, feeder ties, capacitor banks, load balancing, additional switches to improve switching time, and primary reconductoring (overhead and/or underground).

This review has been in place since FY2007 with 323 feeders going through the process. To date, this program is responsible for several of the recloser installations across the Company's service territory.

Sub-Transmission Automation and Fault Location, Isolation, & Service Restoration ("FLISR")

After an initial investigation of automation and communication technologies, National Grid began a targeted Sub-Transmission Automation pilot in 2008 that deployed automation schemes on six circuits. These schemes use distributed intelligence through local controls and switches, with peer-to-peer communication through to a local substation Energy Management System ("EMS") uplink point achieved using spread spectrum 900 MHz radios. By up linking to EMS, Supervisory Control & Data Acquisition ("SCADA") capability of the automation devices is provided to the Company's Control Centers. In addition, all data is brought back to a central database warehouse for future analysis.

Following the success of pilot automation installations in 2008 and 2009, which verified the capability of advanced distribution automation enabled equipment, the Company recognized the additional benefit of identifying projects where the installation of modernized switching schemes would provide increased reliability

to the Sub-Transmission system. There are currently 12 Sub-Transmission peer-to-peer automation schemes deployed on the system.

In 2020, automation on the Sub-Transmission system was transitioned away from the peer-to-peer automation system to a centralized Fault Location, Isolation, and Service Restoration (“FLISR”) system. FLISR schemes utilize sectionalizing devices with localized protection settings and 4G cellular radio communications to a common Remote Terminal Unit (“RTU”) at the Company’s Regional Control Center. The RTU houses engineering developed logic to actively restore unaffected areas of the system during a contingency event, once the faulted section has been isolated locally, by coordinating the devices that are part of the FLISR scheme to make informed restoration actions based on the system’s status. FLISR devices will communicate to the Company’s EMS system and have full SCADA capability to allow for monitoring and control of the assets deployed, similar to the previous automation system utilized at National Grid. There are currently 3 Sub-Transmission FLISR Schemes deployed on the system.

Following successful installations and operation of FLISR using the Company’s RTU based platform, additional lines were selected for FLISR deployment and there are currently 16 Sub-Transmission FLISR schemes in the design or construction phase. Each fiscal year, Sub-Transmission lines are being reviewed by engineering for their eligibility to deploy a FLISR scheme. These circuits are selected based on their reliability performance, customer impact, and other operational considerations such as communications availability. There is a target of about 140 Sub-Transmission circuits to have active FLISR schemes in the future based on the potential impact to reduce the number of outages experienced by customers served via these circuits.

Distribution Fault Location, Isolation, & Service Restoration (“FLISR”)

After the deployment of initial Sub-T FLISR schemes, National Grid investigated the potential customer impacts for deploying automated feeder ties on the 15kV class distribution system and began deploying centralized Fault Location, Isolation, and Service Restoration (“FLISR”) schemes in 2021 using the same platform as the Sub-T FLISR schemes. These FLISR schemes utilize reclosers with localized protection settings and 4G cellular radio communications to a common Remote Terminal Unit (“RTU”) at the Company’s Regional Control Center. The RTU houses engineering developed logic to actively restore unaffected areas of the system during a contingency event. Once the faulted section has been isolated locally, the devices that are part of the FLISR scheme coordinate to make informed restoration actions based on the system’s status. FLISR devices will communicate to the Company’s EMS system and have full SCADA capability to allow for monitoring and control of the assets deployed. The Company will have 21 active Distribution FLISR schemes by mid-2024. The Company also has a target of deploying FLISR such that about 60% of its NY customers connected to circuits with FLISR, potentially reducing the impact of outages to this set of customers.

TripSaver Installation Program

The Company began installing cutout mounted reclosers system-wide in 2019. These reclosers are aimed at reducing the number of sustained interruptions related to temporary faults on fused portions of the distribution system. These devices will limit the exposure to transient faults, such as tree and animal contacts, lightning and unknown causes that have led to customer outages. Locations targeted for TripSaver installations include circuits with high customer counts and historical reliability issues.

2. CAPITAL AND O&M BUDGETS AND ACTUAL EXPENDITURES

The Company develops investment plans to meet its obligation to provide safe and adequate electric delivery service to 1.6 million customers at reasonable cost. Providing this service requires the Company to maintain a vast physical infrastructure located in 450 cities and towns across our 25,000 square mile service area.

The following tables show fiscal year Capital and Operation and Maintenance expenditure over the past five years.

Fiscal Year Capital Actual Expenditures (\$ Millions)						
System	FY 2019	FY 2020	FY2021	FY2022	FY2023	FY2024*
Distribution	\$306.2	\$341.7	\$389.2	\$416.3	\$481.8	\$625.9
Sub-transmission	\$27.6	\$38.0	\$34.2	\$33.7	\$33.3	\$39.7
Transmission	\$189.0	\$215.1	\$193.4	\$258.5	\$334.3	\$530.9
Totals	\$491.3	\$594.8	\$616.8	\$708.5	\$849.4	\$1,196.5

* Forecasted spend for FY 2024.

The following tables summarize fiscal year tree trimming operations and maintenance expenditures over the past five years.

Fiscal Year Transmission Tree Trimming Actual and Budgeted Expenditure (\$ Millions)						
Spending	FY 2019	FY 2020	FY2021	FY2022	FY2023	FY2024*
Actual	\$15.43	\$16.70	\$17.74	\$19.63	\$19.37	\$15.95
Budgeted	\$15.27	\$16.66	\$17.14	\$15.51	\$16.65	\$15.95

Fiscal Year Distribution Tree Trimming Actual and Budgeted Expenditure (\$ Millions)						
Spending	FY 2019	FY 2020	FY2021	FY2022	FY2023	FY2024*
Actual	\$56.58	\$58.00	\$58.69	\$60.95	\$63.85	\$65.96
Budgeted	\$56.57	\$57.99	\$59.08	\$62.06	\$66.58	\$65.96

* Forecasted spend for FY 2024.

3. WORK FORCE NUMBERS

The following table summarizes the work force numbers for field positions associated with overhead, underground, and substation crews. It should be noted that head counts are not tracked by reliability vs. non-reliability work.

Distribution

Title	2018	2019	2020	2021	2022	2023
Cable Splicer A	12	10	11	6	12	7
Cable Splicer B	14	14	12	12	13	14
Cable Splicer C	26	27	25	24	25	27
Cable Splicer Helper	5	5	4	6	3	5
Chief Cable Splicer A	32	33	36	31	28	30
Chief Electrician A	16	15	13	15	15	14
Chief Electrician B	1	1	1	1	1	1
Chief Equip Operator A	7	7	6	5	6	6
Chief Laborer A	1	1	1	1	2	1
Chief Line Mechanic A Hot Stick	290	305	306	302	288	288
Chief Line Mechanic B Hot Stick						
Chief Maintenance Mechanic A	33	35	35	32	31	5
Chief Mechanic A	16	14	15	16	14	14
Chief Street Light Service Mechanic A	5	7	6	5	5	5
Chief Substation Worker A						29
Chief Technician A						1
Chief Tester & Installer Elec						8
Communications Tester A						7
Communications Tester B						15
Communications Tester C						18
Distribution Inspector B						
Distribution Inspector C	25	19	16	13	8	7
Electrician A	4	3	3	2	1	4
Electrician B	7	8	7	5	8	7
Electrician C	29	30	33	33	30	35
Electrician Helper				2	3	
Equipment Operator A						
Equipment Operator B	1	1	1	1	1	1
Equipment Operator C	5	6	7	9	7	9
Field Helper	5	11	9	24	27	15
Field Tester B Electric						8
Field Tester C Electric						12
Field Tester D Electric						5
Field Tester E Electric						30

Title	2018	2019	2020	2021	2022	2023
Laborer					1	1
Line Mechanic A	36	57	40	29	50	71
Line Mechanic B	60	73	101	99	67	75
Line Mechanic C	76	48	60	73	83	86
Line Mechanic Helper	25	26	22	26	30	28
Line Mechanic-Hot Stick	177	183	164	160	151	160
Machinist C						1
Maintenance Helper	1		3		5	
Maintenance Mechanic A	8	6	5	8	8	
Maintenance Mechanic B	9	15	14	7	15	
Maintenance Mechanic C	50	44	44	47	51	7
Mechanic A	3	7	3	5	1	8
Mechanic B	2	4	4	7	4	4
Mechanic C	22	25	19	18	21	18
Mechanic Helper	4		5		7	3
One Person Line/Trouble Mechanic	62	67	69	68	67	71
Platform Attendant	7	9	1	9	3	7
Relay Tester A				12	13	11
Relay Tester B	31		33	32	28	28
Relay Tester C				40	40	44
Relief Operator P	4	3	4	5	6	6
Safety Advocate	1	1	1			
Street Light Service Mechanic Helper					1	
Street Light Service Mechanic A	1		1	4	3	2
Street Light Service Mechanic B				1	1	4
Street Light Service Mechanic C	20	23	23	18	16	17
Substation Worker A						15
Substation Worker B						16
Substation Worker C						42
Technician D						
Tech-Substation Dept.	4	5	5	3	4	3
Tool Attendant C						1
Traveling Operator A						
Traveling Operator B				2	2	3
Traveling Operator C	13	14	18	12	15	14
Traveling Operator D	26	27	24	22	21	20
Trouble Mechanic A Hot Stick						
Trouble Mechanic C Hot Stick	5	4	5	4	5	4
Trouble Mechanic D Hot Stick	5	5	5	5	5	5
Welder C						1
Distribution Total	1,186	1,198	1,220	1,261	1,252	1,404

Transmission

Title	2018	2019	2020	2021	2022	2023
Chief Electrician B						
Chief Live Line Bare Hand Specialist	5	5	5	5	12	14
Chief Line Mechanic A Hot Stick						
Chief Line Mechanic B Hot Stick						
Electrician A						
Electrician B						
Electrician C						
Equipment Operator C						
Equipment Operator D	6	6	6	6	1	1
Equipment Operator Live Line					11	11
Line Worker A/3rd Class	5	8	8	8	20	
Line Worker B/2nd Class	1	2	2	2	1	16
Line Worker C/1st Class	1				7	12
Line Worker Hot Stick	10	5	5	5	15	16
Live Line Bare Hand Specialist	26	35	35	35	21	20
Safety Advocate Electric	1	1	1	1	1	1
Transmission Total	55	62	62	62	89	91

Distribution & Transmission Grand Total	1,241	1,260	1,282	1,323	1,341	1,495
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4. CONTRACTOR CREW SERVICES

The following table represents the average monthly contractor head counts utilized by the Company to implement its work plans for distribution and sub-transmission overhead and underground line work during the past six years. It should be noted that contractor head counts are not tracked by reliability vs. non-reliability work.

Distribution & Sub-transmission	2018	2019	2020	2021	2022	2023
Contractor average monthly head count	32	60	74	79	88	70

The following table represents the average monthly contractor head counts utilized by the Company to implement its work plans for transmission. It should be noted that contractor head counts are not tracked by reliability vs. non-reliability work.

Transmission	2018	2019	2020	2021	2022	2023
Contractor average monthly head count	47	51	49	86	58	49

The following table represents the average monthly contractor head counts utilized by the Company to implement its work plans for distribution vegetation management during the past six years. It should be noted that contractor head counts are not tracked by reliability vs. non-reliability work.

Distribution Vegetation Management	2018	2019	2020	2021	2022	2023
Contractor average monthly head count	423	534	580	612	610	584

C. CAPITAL REGION

1. OPERATING REGIONAL PERFORMANCE

a. HISTORIC CAIDI AND SAIFI INDICES

IDS Info:

	2023	2022	2021	2020	2019	2018
CAIDI (Threshold 2.025)	2.03	2.00	1.86	1.92	2.28	2.20
SAIFI (Threshold 1.024)	0.91	1.06	0.99	1.07	1.02	0.95
SAIDI	1.86	2.11	1.83	2.05	2.33	2.09
Interruptions	2,747	2,946	3,014	3,347	2,881	3,088
Customers Interrupted	309,984	356,687	331,968	354,996	337,576	311,134
Customer-Hours Interrupted	630,734	712,899	616,176	683,031	769,961	685,218
Customers Served	339,254	337,761	335,992	332,797	331,016	328,413
Customers Per Interruption	112.84	121.08	110.14	106.06	117.17	100.76
Availability Index	99.9788	99.9759	99.9791	99.9766	99.9734	99.9762
Interruptions/1000 Customers	8.10	8.72	8.97	10.06	8.70	9.40

b. DISCUSSION OF REGIONAL PERFORMANCE

In 2023, the Capital Region did not meet its CAIDI reliability target and met its SAIFI reliability target as set forth by the New York Public Service Commission (PSC). The final System Average Interruption Frequency Index (SAIFI) result was 0.91 interruptions, 11% below the PSC goal of 1.024 interruptions. As shown in the table above, the Customer Average Interruption Duration index (CAIDI) was 2.03 in 2023, 0.2% above the PSC's regional target of 2.025 hours.

The 2023 CAIDI result was 1% above the 2022 result of 2 hours, and 1% below the previous 5-year average of 2.05 hours. The 2023 SAIFI was 14% below the 2022 result of 1.06 interruptions, and 11% below the previous 5-year average of 1.02 interruptions.

In 2023, excluding major storms, the Capital Region experienced 11 transmission interruptions. These interruptions accounted for 0.4% of the region's total interruptions (11 of 2,747), 17% of the region's total customers interrupted (CI), (52,274 of 309,984), and 12% (75,126 of 630,735) of the region's total customer-hours interrupted (CHI). Overall, transmission interruptions had a CAIDI of 1.44 hours, and a SAIFI of 0.15 interruptions.

The number of transmission-related interruptions remained the same from 11 in 2022 to 11 in 2023 (no change). The number of customers interrupted increased from 30,206 in 2022, to 52,274 in 2023 (an increase of 73%), while the customer-hours interrupted increased from 44,739 in 2022, to 75,126 in 2023 (an increase of 68%).

In 2023, excluding major storms, the Capital Region experienced 8 substation interruptions. These interruptions accounted for 0.3% of the region's total interruptions (8 of 2,747), 9% of the region's total customers interrupted, (28,348 of 309,984), and 8% (50,881 of 630,735) of the region's total customer-hours interrupted. Overall, substation interruptions had a CAIDI of 1.79 hours, and a SAIFI of 0.08 interruptions.

The number of substation-related interruptions decreased from 9 to 8 from 2022 to 2023 (a decrease of 11%). The number of customers interrupted decreased from 42,763 in 2022, to 28,348 in 2023 (a decrease of 34%), while the customer-hours interrupted decreased from 114,270 in 2022, to 50,881 in 2023 (a decrease of 55%).

In 2023, excluding major storms, the Capital Region experienced 2,728 distribution interruptions. These interruptions accounted for 99% of the region's total interruptions (2,728 of 2,747), 74% of the region's total customers interrupted, (229,362 of 309,984), and 80% (504,728 of 630,735) of the region's total customer-hours interrupted. Overall, distribution interruptions had a CAIDI of 2.2 hours, and a SAIFI of 0.68 interruptions.

The number of distribution-related interruptions decreased from 2,926 to 2,728 from 2022 to 2023 (a decrease of 7%). The number of customers interrupted decreased from 283,718 in 2022, to 229,362 in 2023 (a decrease of 19%), while the customer-hours interrupted decreased from 553,889 in 2022, to 504,728 in 2023 (a decrease of 9%).

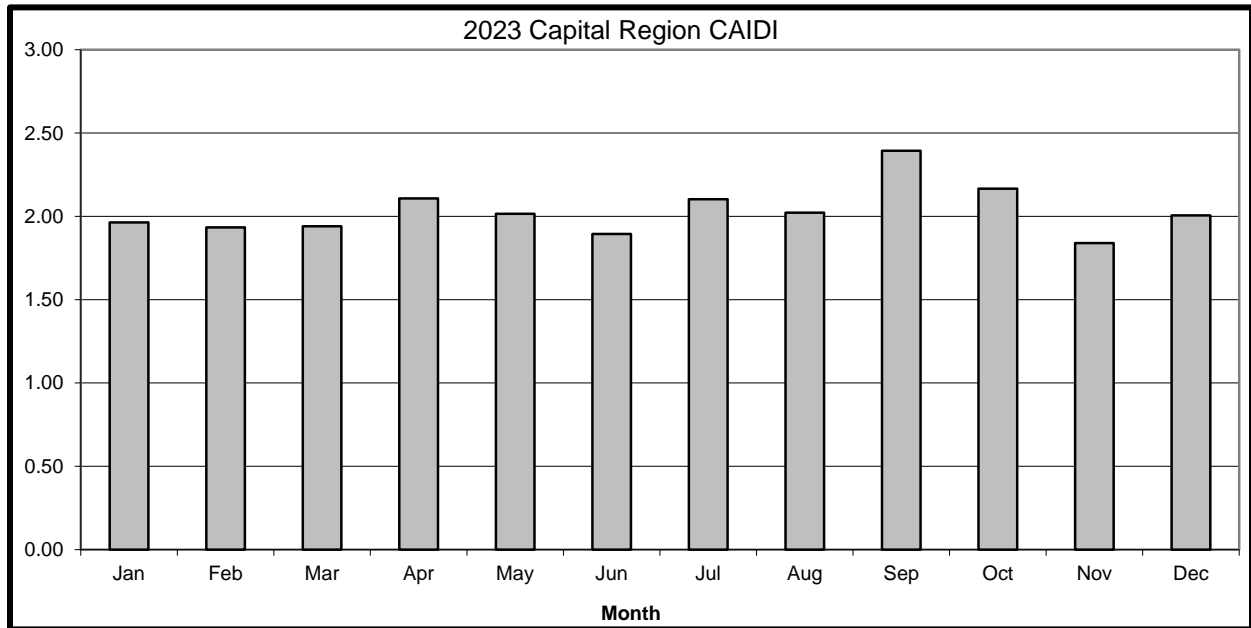
c. MONTHLY CAIDI AND SAIFI GRAPHS

The graphs on the following page show the monthly CAIDI and SAIFI for the Capital Region for 2023 (excluding Major Storms).

The CAIDI graph shows the individual CAIDI, by month, for the Capital Region for 2023. The year-end CAIDI was above the CAIDI threshold of 2.025 hours. The Capital Region ended 2023 with a CAIDI of 2.03, approximately 0.2% above the threshold. The three (3) best-performing months were February (1.93), June (1.89), and November (1.84). CAIDI was above the threshold for four (4) months in 2023; April (2.11), July (2.10), September (2.39), and October (2.17).

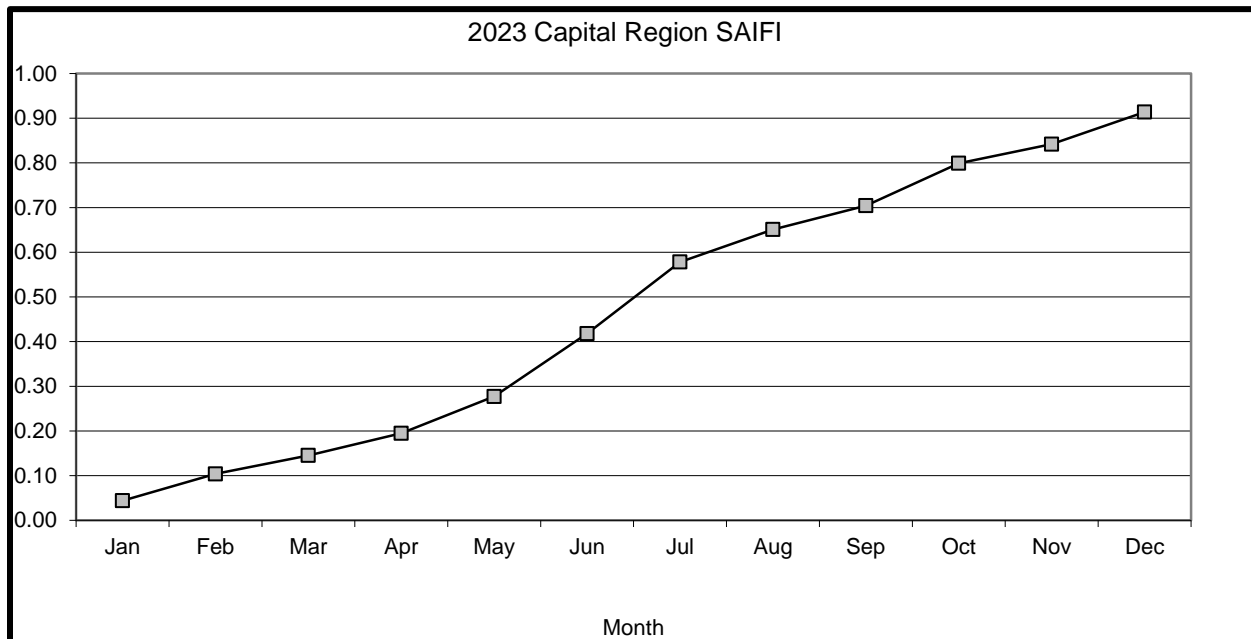
The SAIFI graph shows the cumulative SAIFI, by month, for the Capital Region for 2023. The year-end SAIFI was below the SAIFI threshold of 1.024 for the year. The Capital Region ended 2023 with a SAIFI of 0.91, approximately 11% below the threshold. The greatest increases occurred during the months of June (0.14), July (0.16), and October (0.10); these months accounted for 44% of the total SAIFI accrued. The lowest three (3) months for SAIFI were January (0.04), April (0.04), and November (0.04); these months contributed to only 13% of the total SAIFI accrued.

GRAPH OF MONTHLY CAIDI AND SAIFI FOR THE CAPITAL REGION



PSC CAIDI Goal:	
Threshold	2.025
2023 Actual	2.03

PSC SAIFI Goal:	
Threshold	1.024
2023 Actual	0.91



d. PSC CAUSE CODES

1) Number of Events by Cause – Historical

IDS Info

Cause Code	2023	2022	2021	2020	2019	2018
01 Major Storms	1,464	557	587	2,089	1,459	1,433
02 Tree Contacts	744	829	914	934	770	791
03 Overloads	9	14	13	33	12	82
04 Operator Error	18	6	8	7	12	9
05 Equipment	835	854	808	886	835	954
06 Accidents	438	502	445	607	487	503
07 Prearranged	193	161	215	131	161	106
08 Customer Equip.	-	-	-	-	-	-
09 Lightning	36	37	66	23	53	65
10 Unknown	474	543	545	726	551	578
Total	4,211	3,503	3,601	5,436	4,340	4,521

2) Customers Interrupted by Cause – Historical

IDS Info

Cause Code	2023	2022	2021	2020	2019	2018
01 Major Storms	182,049	93,574	97,510	314,863	161,241	130,354
02 Tree Contacts	87,081	117,674	127,913	121,887	119,201	93,234
03 Overloads	1,760	2,287	3,382	3,701	874	4,675
04 Operator Error	5,343	3,918	1,057	6,433	14,097	775
05 Equipment	116,254	124,395	90,765	117,049	87,827	102,951
06 Accidents	62,235	52,438	50,726	64,581	70,772	68,240
07 Prearranged	11,330	11,016	19,032	9,597	8,814	9,677
08 Customer Equip.	-	-	-	-	-	-
09 Lightning	547	10,268	2,133	6,306	17,483	3,437
10 Unknown	25,434	34,691	36,960	25,442	18,508	28,145
Total	492,033	450,261	429,478	669,859	498,817	441,488

3) Customer-Hours Interrupted by Cause – Historical

IDS Info

Cause Code	2023	2022	2021	2020	2019	2018
01 Major Storms	1,447,305	344,535	327,224	4,969,123	892,262	848,107
02 Tree Contacts	176,338	212,266	260,838	283,408	301,946	238,510
03 Overloads	2,821	1,490	4,120	7,366	736	24,662
04 Operator Error	4,741	2,864	942	3,718	19,637	396
05 Equipment	261,392	317,987	170,220	231,855	200,229	240,622
06 Accidents	116,562	92,871	86,652	99,616	135,777	108,626
07 Prearranged	17,023	15,067	21,955	6,984	13,040	7,289
08 Customer Equip.	-	-	-	-	-	-
09 Lightning	1,887	13,324	6,748	5,907	57,520	14,599
10 Unknown	49,970	57,030	64,700	44,176	41,074	50,514
Total	2,078,040	1,057,433	943,399	5,652,152	1,662,220	1,533,325

4) Interruptions, Customers Interrupted, and Customer-Hours Interrupted – 2023

Cause Code	Interruptions		Customers Interrupted		Customer-hours Interrupted	
	Number	% Total	Number	% Total	Number	% Total
01 Major Storms	1,464	34.8%	182,049	37.0%	1,447,305	69.6%
02 Tree Contacts	744	17.7%	87,081	17.7%	176,338	8.5%
03 Overloads	9	0.2%	1,760	0.4%	2,821	0.1%
04 Operator Error	18	0.4%	5,343	1.1%	4,741	0.2%
05 Equipment	835	19.8%	116,254	23.6%	261,392	12.6%
06 Accidents	438	10.4%	62,235	12.6%	116,562	5.6%
07 Prearranged	193	4.6%	11,330	2.3%	17,023	0.8%
08 Customer Equip.	0	0.0%	0	0.0%	0	0.0%
09 Lightning	36	0.9%	547	0.1%	1,887	0.1%
10 Unknown	474	11.3%	25,434	5.2%	49,970	2.4%
Total	4,211	100.0%	492,033	100.0%	2,078,040	100.0%

e. **INTERRUPTION REVIEW BY PSC CAUSE CODES**

Cause Code 01 - Major Storms

In 2023, Major Storms accounted for 35% of interruptions, 37% of customers interrupted, and 70% of Customer-Hours Interrupted.

Interruptions due to Major Storms were up 163% from 2022, and up 20% over the 5-year average. Customers interrupted due to Major Storms were up 95% from 2022, and up 14% over the 5-year average. Customer-Hours interrupted were up 320% from 2022 and down 2% over the 5-year average.

The remaining PSC code descriptions do not include Major Storms in the percentages.

Cause Code 02 - Tree Contacts

In 2023, Tree Contacts accounted for 27% of interruptions, 28% of customers interrupted, and 28% of Customer-Hours Interrupted.

Interruptions due to Tree Contacts were down 10% from 2022, and down 12% over the 5-year average. Customers interrupted due to Tree Contacts were down 26% from 2022, and down 25% over the 5-year average. Customer-Hours interrupted were down 17% from 2022 and down 32% over the 5-year average.

Tree Contacts were the 2nd largest cause of interruptions in 2023.

Cause Code 03 - Overloads

In 2023, Overloads accounted for 0% of interruptions, 1% of customers interrupted, and 0% of Customer-Hours Interrupted.

Interruptions due to Overloads were down 36% from 2022, and down 71% over the 5-year average. Customers interrupted due to Overloads were down 23% from 2022, and down 41% over the 5-year average. Customer-Hours interrupted were up 89% from 2022 and down 63% over the 5-year average.

Overloads were the 8th largest cause of interruptions in 2023.

Cause Code 04 - Operator Error

In 2023, Operator Error accounted for 1% of interruptions, 2% of customers interrupted, and 1% of Customer-Hours Interrupted.

Interruptions due to Operator Error were up 200% from 2022, and up 125% over the 5-year average. Customers interrupted due to Operator Error were up 36% from 2022, and up 2% over the 5-year average. Customer-Hours interrupted were up 66% from 2022 and down 14% over the 5-year average.

Operator Error was the 7th largest cause of interruptions in 2023.

Cause Code 05 - Equipment Failure

In 2023, Equipment Failures accounted for 30% of interruptions, 38% of customers interrupted, and 41% of Customer-Hours Interrupted.

Interruptions due to Equipment Failure were down 2% from 2022, and down 4% over the 5-year average. Customers interrupted due to Equipment Failure were down 7% from 2022, and up 11% over the 5-year average. Customer-Hours interrupted were down 18% from 2022 and up 13% over the 5-year average.

Equipment Failures were the largest cause of interruptions in 2023.

Cause Code 06 - Accidents

In 2023, Accidents accounted for 16% of interruptions, 20% of customers interrupted, and 18% of Customer-Hours Interrupted.

Interruptions due to Accidents were down 13% from 2022, and down 14% over the 5-year average. Customers interrupted due to Accidents were up 19% from 2022, and up 1% over the 5-year average. Customer-Hours interrupted were up 26% from 2022 and up 11% over the 5-year average.

Accidents were the 4th largest cause of interruptions in 2023.

Cause Code 07 - Prearranged

In 2023, Prearranged accounted for 7% of interruptions, 4% of customers interrupted, and 3% of Customer-Hours Interrupted.

Interruptions due to Prearranged were up 20% from 2022, and up 25% over the 5-year average. Customers interrupted due to Prearranged were up 3% from 2022, and down 3% over the 5-year average. Customer-Hours interrupted were up 13% from 2022 and up 32% over the 5-year average.

Prearranged was the 5th largest cause of interruptions in 2023.

Cause Code 08 - Customer Equipment

There were no Customer Equipment interruptions in 2023.

Cause Code 09 - Lightning

In 2023, Lightning accounted for 1% of interruptions, 0% of customers interrupted, and 0% of Customer-Hours Interrupted.

Interruptions due to Lightning were down 3% from 2022, and down 27% over the 5-year average. Customers interrupted due to Lightning were down 95% from 2022, and down 93% over the 5-year average. Customer-Hours interrupted were down 86% from 2022 and down 90% over the 5-year average.

Lightning was the 6th largest cause of interruptions in 2023.

Cause Code 10 - Unknown

In 2023, Unknown causes accounted for 17% of interruptions, 8% of customers interrupted, and 8% of Customer-Hours Interrupted.

Interruptions due to Unknown causes were down 13% from 2022, and down 20% over the 5-year average. Customers interrupted due to Unknown causes were down 27% from 2022, and down 13% over the 5-year average. Customer-Hours interrupted were down 12% from 2022 and down 5% over the 5-year average.

Unknown causes were the 3rd largest cause of interruptions in 2023.

f. DISCUSSION OF REGIONAL CAPEX PROJECTS WITH 2023/24 SPENDS:

The Company continues to work on capital projects in the Capital Region to maintain customer satisfaction and future reliability. Engineering works with Field Operations to address localized concerns raised through PSC complaints and other customer inquiries in the Capital Region. These solutions were varied and included fusing, installing reclosers, installing cutout-mounted reclosers, replacing bare wire for tree wire, rebuilds, conversions, installing animal guards, and tree trimming.

Some specific projects that were either constructed in CY2023 or are scheduled to be designed and/or constructed in CY2024 are listed below.

Bethlehem Area Conversions and Transfers

The southern Bethlehem area has seen a large growth in residential developments that is driving the need for load relief. The Bethlehem 02155 load has been partially transferred to the new Bethlehem 02157 out of the Bethlehem substation.

A capital improvement project was completed in 2023 to transfer load to the new Bethlehem 02157, from the Delmar substation and the Elsmere substation, allowing for the construction of the new Elsmere substation and the retirement of the Delmar substation.

A separate capital improvement project will be completed in 2024 to transfer load to the Unionville 27652 which will pick up load from the Delmar substation in the Bethlehem/Delmar area.

An additional capital improvement project will allow the Bethlehem 02155 to pick up load from the Quail Hollow substation which will enable the retirement of the Quail Hollow substation. Quail Hollow distribution will be converted from 4.8 kV delta to 13.2 kV which will create a feeder tie with the Selkirk 14952 that will be capable of picking up more of the Selkirk 14952 load in the event of an N-1 condition.

Sand Creek

The 34.5 kV / 4.16 kV, Karner substation currently serves portions of the Town of Colonie. The Karner substation has been identified as a substation in need of reconstruction or retirement based on its most recent asset condition report; the determination was made to retire Karner substation. As part of this retirement, three (3) of the six (6) Karner distribution feeders will be transferred to the Ruth Road 38151 and the Ruth Road 38152 after the substation and overhead distribution work is completed. The Karner 31715, Karner 31716, and Karner 31718 will be transferred to the Sand Creek substation via a new 13.2 kV feeder breaker and distribution getaway will be constructed out of the Sand Creek Substation.

The existing distribution on Sand Creek Road will be rebuilt to double-circuit construction to accommodate the future Sand Creek 45254. The future Sand Creek 45254 will continue south, along Peter Drive, and will target conversion work from 4.16 kV to 13.2 kV along Locust Park and Central Avenue. This will allow the Sand Creek 45254 to offload the entirety of the Karner 31715, the Karner 31716, and the Karner 31718 from the Karner substation. The existing Sand Creek 45253 will continue down Sand Creek Road, feeding the remainder of the customers already served from that feeder. Construction for the Sand Creek breaker, R540, is scheduled to begin in 2024 with the distribution work scheduled to begin in 2025.

Chrisler Avenue Substation Project

The Chrisler Avenue Substation Project will serve the Schenectady, NY area by increasing the capacity and improving the reliability of electrical service to our customers within the city of Schenectady and the town of Rotterdam.

The primary driver for this project is to resolve the asset condition issues on major substation equipment within the Chrisler Avenue and Emmet Street substations. The plan involves rebuilding Chrisler Avenue substation, from 34.5 kV / 4.16 kV to 34.5 kV / 13.2 kV, with a 12/16/20 MVA power transformer with four (4) distribution feeders through a 5-bay, metal-clad switchgear. This will serve the distribution needs of the surrounding community and allow for the retirement of the Emmet Street substation.

This project converts a 4.16 kV island to 13.2 kV creating more operational flexibility during contingency conditions. Construction and energization of the substation was completed in 2023.

While the construction upgrades of the Chrisler Avenue substation are nearing completion, much work remains before the Chrisler Avenue 25751, 25752, 25753, and 25754 distribution feeders are in their final configuration at 13.2 kV.

Ultimately, the Chrisler Avenue 25751 will continue north on Chrisler Avenue, to Norwood Avenue, where it will absorb load currently served by the Emmet Street 25605 and Emmet Street 25609, converting a majority of the mainline to 13.2 kV. The Chrisler Avenue 25752 will head west down Catalyn Street, to Crane Street, where it will pick up all load previously served by the Chrisler Avenue 25737, at 4.16 kV. The Chrisler Avenue 25753 will head east on Altamont Avenue where it will absorb load currently served by the Watt Street 23051 and the McClellan 30452. Finally, the Chrisler Avenue 25754 will head south on Altamont Avenue where it will absorb load from the Curry Road 36557 and Curry Road 36553.

Construction on the distribution portion of the Chrisler Avenue substation project began in October 2022 and is expected to be completed in 2027.

Delaware Avenue Getaway and Conversion

The Delaware Avenue getaway work and the McCarty Avenue conversion work is now complete. Subsequent Delaware Avenue conversion work was also completed. The spare 13.2 kV breaker in the Delaware Avenue substation is in service and has pushed into the Delaware Avenue 33033 feeder with this feeder having converted to 13.2 kV in 2022. Further conversions on the 33052 were completed in 2023 and ties between 16456 and 16452 are being created in 2023 that will be used for further transfers to Delaware Station in 2025.

Elnora Future R550 Breaker and Feeder Getaway

The 34.5 kV / 4.8 kV, Shore Road substation currently serves portions of the Ballston Spa and Charlton areas. The Shore Road substation has been identified as a substation in need of reconstruction or retirement based on its most recent asset condition report; the determination was made to retire the Shore Road substation. As part of this retirement, two (2) of the three (3) distribution feeders are in the process of being transferred to the recently completed Lasher Road substation via the Lasher Road 322152 and the Lasher Road 322153. The remaining Shore Road 28186 load will be transferred to a new distribution feeder out of the Elnora substation.

As part of this project, a new 13.2 kV feeder breaker and distribution getaway will be constructed out of the Elnora Substation. The existing distribution on Ballston Lake Road will be rebuilt to double-circuit construction with the existing Elnora 44256 and the future Elnora 44255. The future Elnora 44255 feeder will continue west along Ballston Lake Road and absorb a portion of the Elnora 44256 via Ashdown Road and Waite Road. The existing 1-phase, 4.8 kV section of the Shore Road 28186, along Ballston Lake Road north to Schaubert Road, will be rebuilt and converted to 3-phase, 13.2 kV. The newly-built Elnora 44255 will then absorb the remaining load at the Shore Road substation.

Construction for the Elnora 44255 breaker, R550, was completed in 2023. The feeder getaway and the first phase of the overhead distribution construction is scheduled for 2025. The second phase of the overhead distribution construction of the Elnora 44255 is scheduled for 2026 which will allow for the retirement of the Shore Road substation.

Lasher Road Station Project

The Lasher Road Substation Project will serve the growing Ballston, NY area by increasing the capacity and improving the reliability of electrical service to our customers in the Towns of Ballston and Glenville. The primary driver for this project is to relieve exposure to post-contingency thermal overloading of the Luther Forest - Eastover Road #308, 115 kV line with the planned Global Foundries expansion, however, the project includes a 115 kV / 13.2 kV, 15/20/25 MVA power transformer with four (4) feeders through a 7-bay, metal-clad switchgear to serve the distribution needs of the surrounding community and to enable the retirement of the Shore Road substation. Construction of the substation was completed in March of 2020.

Construction of the distribution to be attached to the Lasher Road substation began in 2019, starting with the distribution work closest to the substation. The first of the new feeders, the Lasher Road 322151, began serving load previously served from the Randall Road 46356 in June of 2020. By September 2020, the Lasher Road 322152 began serving load previously served by the Ballston 01252. In December of 2020, the Lasher 332153 absorbed all the remaining load on the Randall Road substation, previously served by the Randall Road 46357 feeder, allowing for the future retirement of the Randall Road substation.

Work on the Lasher 322152 is nearing completion. In 2023, the Lasher Rd 322152 was constructed down Midline Road and Saratoga Road, allowing the feeder to offload portions of Shore Road 28185 and 28187. The Midline Road conversion work, allowing the Lasher 322152 to completely offload the Shore Road 28185, will be completed in September of 2024. A majority of the construction on Lasher 322153 has been completed, allowing for the feeder to completely offload Shore Road 28185 in February of 2023. The remainder of the Lasher 322153 work is a conversion of Goode Street, from 4.8 kV to 13.2 kV, which is scheduled for completion in 2025.

Corliss Park Substation Project

The City of Troy is powered by antiquated infrastructure, with every substation serving our customers at our old voltage of 4.16 kV. Not only is the infrastructure aging, but the City of Troy has also seen significant load growth; growth of which the 4.16 kV cannot handle when compared to our current standard of 13.2 kV. Adding to the significant load growth, thus requiring significant upgrades, is an increased installation of EV chargers, rising residential loading, new commercial businesses, and the electrification of city buses.

This project upgrades the Corliss Park substation to 13.2 kV with a larger transformer to accommodate the significant load growth. Additionally, all Corliss Park feeders, presently operating at 4.16 kV, will be converted to 13.2 kV. This will create critical 13.2 kV feeder ties, thereby reducing restoration times and minimizing customer-hours interrupted. These upgrades will also allow for the retirement of the Lansingburgh substation which has critical asset condition concerns.

Williams Street Conversion Project – Valkin 42753

The Williams Street Conversion Project will serve the growing area of Hudson, NY by converting over a mile of overhead distribution to 13.2 kV. The Village of Kinderhook was originally an island of 4.8 kV infrastructure which resulted in limited feeder ties in the area. This Williams Street Conversion Project is the second of three (3) phases to eliminate this 4.8 kV island.

In the second phase to convert the Village of Kinderhook to 13.2 kV, Williams Street will be converted in its entirety. A half-mile section of Chatham Street and a quarter-mile section of Railroad Avenue will also be converted. Once this phase is complete, this section of overhead distribution will be fed from the south via Hudson Street. This section being fed from the south is temporary until phase three, the Kinderhook Street Conversion Project, is complete. At that time, it will once again be fed from the north.

Kinderhook Street Conversion Project – Valkin 42753

The Kinderhook Street Conversion Project is the third phase of the plan to eliminate the 4.8 kV island in the Village of Kinderhook. The scope of this project includes the removal of a 2,500 kVA, pad-mounted ratio transformer, converting approximately 5,000' of overhead distribution to 13.2 kV, and creating an internal 13.2 kV tie. This pad-mounted ratio transformer is located off Kinderhook Street.

The second phase of this project, Williams Street Conversion Project, opened a switch on Chatham Street to feed this section of overhead distribution from the south temporarily until phase three, this project, is complete. Upon completion, this job will close the switch on Chatham Street and open the switch at the intersection of Williams Street and Hudson Street. This will create an internal 13.2 kV tie that can be utilized to manually isolate and restore power from an alternate direction in the event of a sustained outage.

Liberty Street Substation Project

The City of Troy is powered by antiquated infrastructure, with every substation serving our customers at our old voltage of 4.16 kV. Not only is the infrastructure aging, but the City of Troy has also seen significant load growth; growth of which the 4.16 kV cannot handle when compared to our current standard of 13.2 kV. Adding to the significant load growth, thus requiring significant upgrades, is an increased installation of EV chargers, rising residential loading, new commercial businesses, and the electrification of city buses.

This project upgrades the Liberty Street substation to 13.2 kV and installs a second 13.2 kV transformer to accommodate the significant load growth. Additionally, all Liberty Street overhead feeders, presently operating at 4.16 kV, will be converted to 13.2 kV. This will create critical 13.2 kV feeder ties, thereby reducing restoration times and minimizing customer-hours interrupted. These upgrades will also allow for the retirement of the Tibbits Avenue substation which has critical asset condition concerns.

Newtonville Area Study

This area study will serve the growing area north of Albany by increasing system capacity and significantly improving reliability. There are numerous aging assets surrounding the Newtonville area, including the Newtonville substation itself, needing replacement in the next five (5) to ten (10) years based on substation asset condition reports. Additionally, assets are nearing their Summer Normal rating. Lastly, the Newtonville substation is the only 4.16 kV substation in the area, making it a 4.16 kV island, thus requiring bottlenecked, ratioed field ties, which puts a considerable strain on reliability.

To enable the retirement of the Newtonville substation, surrounding substations will be upgraded. Most notably, the Johnson substation and the Maplewood substation will have their transformers upsized from 25 MVA to 40 MVA. Additionally, a new 13.2 kV feeder will be commissioned out of both the Johnson substation and the Forts Ferry substation.

This additional capacity will be critical, as assets are already nearing their Summer Normal ratings. Additionally, being a more urban environment, EV adoption is forecasted to be high with minimal opportunity for large, distributed energy resources for load mitigation, making these larger transformers and new 13.2 kV feeders all that much more critical in serving the significant load growth.

Capital Region Capital Projects in Excess of \$1M Completed in 2023:

Region	Project Name	Project Type	Fin Sys Project No.	Finish	Total Spend
Capital	Krumkill-Delmar-Bethlehem 9/8 34.5kvE	D-Line	C046463	5/2/2023	\$3,500,000
Capital	Menands 10151/ 52 Relocations	D-Line	C049998	8/31/2023	\$3,500,000
Capital	Chrisler Rebuilt Station - Dist get	D-Line	C064766	5/11/2023	\$2,128,000
Capital	CHRISLER AVENUE REBUILT	D-Sub	C068290	3/21/2023	\$2,440,000
Capital	Lasher Road - 53 Feeder	D-Line	C068348	9/22/2023	\$8,154,000
Capital	Maplewood #19/#31Reconductoring	T-Line	C069466	8/4/2023	\$19,772,000
Capital	FRONT STREET STATION 360 - DSCADA (REPLACE CPU & DUAL PORT)	D-Sub	C077972	9/21/2023	\$2,344,000
Capital	GROOMS ROAD STATION 345 - DSCADA (REPLACE CPU & DUAL PORT)	D-Sub	C077972	9/21/2023	\$2,344,000
Capital	RIVERSIDE STATION 288 - DSCADA (REPLACE CPU & DUAL PORT 2 RTU'S)	D-Sub	C077972	10/10/2023	\$2,344,000
Capital	SAND CREEK STATION 452 - DSCADA (FULL RTU UPGRADE) (ENG FY22, CONST FY23)	D-Sub	C077972	10/27/2023	\$2,344,000
Capital	Lafarge Relocation	T-Line	C079454	1/4/2023	\$10,885,000
Capital	Lansingburgh 13 - Conversion	D-Line	C080462	4/21/2023	\$1,026,042
Capital	Menands 10151 Conversion	D-Line	C080883	5/17/2023	\$1,379,967
Capital	Corliss Park - West Feeder Conversion	D-Line	C081385	10/20/2023	\$3,162,000
Capital	EHI SEGMENT A New Scotland - Alps Line 2 Shift	T-Line	C084708	5/3/2023	\$4,418,000
Capital	EHI SEGMENT A SUBSTATIONS- NEW SCOTLAND UPGRADES	T-Sub	C084709	4/27/2023	\$32,464,000
Capital	EHI - SEGMENT A SUBSTATIONS - LEEDS UPGRADES	T-Sub	C084709	1/20/2023	\$32,464,000
Capital	EHI SEGMENT B SUBSTATIONS- GREENBUSH UPGRADES	T-Sub	C084710	8/4/2023	\$3,354,000
Capital	EHI SEGMENT B SUBSTATIONS- NEW SCOTLAND UPGRADES	T-Sub	C084710	4/26/2023	\$3,354,000
Capital	EHI SEGMENT B SUBSTATIONS - ALPS UPGRADES	T-Sub	C084710	4/26/2023	\$3,354,000
Capital	EHI - SEGMENT B - LEEDS	T-Sub	C084710	6/15/2023	\$3,354,000
Capital	EHI - SEGMENT B - ATHENS	T-Sub	C084710	5/31/2023	\$3,354,000
Capital	EHI SEGMENT B Line 14 Fort Orange Tap	T-Line	C084722	8/4/2023	\$2,152,000
Capital	DG NY 208829 - 2579 Brookview Rd Castleton	D-Line	C084835	9/1/2023	\$1,603,465
Capital	RC-MOD GE R&D - Inman Rd - WO 29746068	T-Line	C085492	6/29/2023	\$1,200,000
Capital	Albany 1 Solar T-Line	T-Line	C086825	12/21/2023	\$3,767,000
Capital	Albany 2 Solar T-Line	T-Line	C086841	12/21/2023	\$3,713,000
Capital	RESIDENCE_HIGHLAND_SQUARE_URD	D-Line	C087642	5/2/2023	\$1,910,109
Capital	Valkin 53 Hudson St Conversion	D-Line	C088431	9/12/2023	\$1,081,221
Capital	Re-Insulate - Bethlehem-Albany #18	T-Line	C090189	10/30/2023	\$2,000,000
Capital	6AutoPark_LathamNY	D-Line	C091016	8/4/2023	\$1,218,265
Capital	Adirondack Beverage 34.5kV Tap*	D-Line	C091410	7/17/2023	\$1,500,000

g. DISCUSSION OF REGIONAL PERFORMANCE OF LOW VOLTAGE AC (LVAC) NETWORK DISTRIBUTION SYSTEM(S)

Albany Secondary LVAC Network

The Albany secondary network serves the downtown area of Albany, NY and is supplied by ten (10) 13.2 kV feeders that originate from the Riverside and Trinity substations. This system serves approximately 3,055 customers and experienced a peak load of approximately 24.2 MVA in 2023.

The table below lists each distribution circuit serving the Albany secondary network with the number of events that caused an operation of the substation breaker.

Substation	Feeder	# Breaker Operations from Faults / Failures
Riverside	28801	0
Riverside	28802	0
Riverside	28805	1
Trinity	16406	0
Riverside	28807	0
Trinity	16408	0
Trinity	16410	0
Riverside	28811	0
Riverside	28812	0
Riverside	28815	0

As shown above, the Albany secondary network experienced one (1) unplanned distribution circuit outage in 2023.

Major equipment replacements in 2023 consisted of one (1) transformer vault roof, one (1) network transformer, and four (4) network protectors. Annual maintenance consisted of manhole and vault inspections, network protector and transformer inspections, and network protector operation checks.

Troy Secondary LVAC Network

The Troy secondary network serves the downtown area bound by River Street, Congress Street, and Union Street. This network is supplied by six (6) 4.16 kV and two (2) 13.2 kV feeders that originate from the Liberty Street substation. This system serves approximately 1,480 customers and experienced a peak load of approximately 8.1 MVA in 2023.

The table below lists each distribution circuit serving the Troy secondary network with the number of events that caused an operation of the substation breaker.

Substation	Feeder	# Breaker Operations from Faults / Failures
Liberty	09425	0
Liberty	09427	0
Liberty	09431	0
Liberty	09432	0
Liberty	09442	0
Liberty	09444	0
Liberty	09451	1
Liberty	09411	0

As shown above, the Troy secondary network experienced one (1) unplanned distribution circuit outage in 2023.

Annual maintenance consisted of manhole and vault inspections, network protector and transformer inspections, and network protector operation checks.

Schenectady Secondary LVAC Network

The Schenectady secondary network serves the downtown area around State Street from Nott Terrace to Washington Avenue, Erie Boulevard from State Street to River Road, and Broadway to Smith Street. This network is supplied by five (5) 13.2 kV feeders that originate from the Front Street substation. This system serves approximately 1,200 customers and experienced a peak load of approximately 9.8 MVA in 2023.

The table below lists each distribution circuit serving the Schenectady secondary network with the number of events that caused an operation of the substation breaker.

Substation	Feeder	# Breaker Operations from Faults / Failures
Front Street	36002	1
Front Street	36003	0
Front Street	36006	0
Front Street	36007	0
Front Street	36008	2

As shown above, the Schenectady secondary network experienced a total of three (3) unplanned distribution circuit outages in 2023.

Major equipment replacements in 2023 consisted of one (1) network transformer and one (1) network protector. Annual maintenance consisted of manhole and vault inspections, network protector and transformer inspections, and network protector operation checks.

2. OPERATING CIRCUIT LISTS

The next three (3) tables will provide the following information for the Capital Region.

- a. Worst Performing Circuit List
- b. Worst Performing Circuits with 3 Year History for CAIDI and SAIFI Indices
- c. Worst Performing Circuits by # of Momentary Interruptions

a. NATIONAL GRID WORST PERFORMING CIRCUIT LIST

CAPITAL REGION

FEEDER #	A CUST. SERVED	B TOTAL INTER.	C # CUST. INTER.	D CUST. HRS. INTER.	C/A SAIFI	D/A SAIDI	D/C CAIDI	NUMBER OF MOMENTARIES
CURRY ROAD 36552	1,989	37	8,581	19,315	4.31	9.71	2.25	2
BRUNSWICK 26453	1,798	29	6,463	15,860	3.59	8.82	2.45	1
EVERETT ROAD 42051	1,754	37	4,838	9,003	2.76	5.13	1.86	0
BRUNSWICK 26452	1,998	33	5,445	9,673	2.73	4.84	1.78	0
BLUE STORES 30353	1,422	32	3,328	7,830	2.34	5.51	2.35	3
NORTH TROY 12353	2,720	18	7,193	16,607	2.64	6.11	2.31	5
CURRY ROAD 36557	1,693	13	5,036	14,713	2.97	8.69	2.92	0
BURDECK STREET 26553	1,698	28	3,239	7,676	1.91	4.52	2.37	0
HEMSTREET 32851	1,886	33	3,167	7,726	1.68	4.10	2.44	1
BOYNTONVILLE 33351	2,129	42	3,529	7,867	1.66	3.70	2.23	0
FRONT STREET 36051	3,326	30	5,663	11,056	1.70	3.32	1.95	0
HOAGS CORNERS 22151	971	22	1,446	6,849	1.49	7.05	4.74	1
SWAGGERTOWN 36451	1,778	17	4,470	6,057	2.51	3.41	1.36	0
OATHOUT LANE 40251	1,011	14	2,355	5,017	2.33	4.96	2.13	2
LANSINGBURG 09313	519	7	1,519	9,221	2.93	17.77	6.07	1
WATT STREET 23052	2,450	19	5,049	6,458	2.06	2.64	1.28	2

Regional Goals:

CAIDI: 2.025

SAIFI: 1.024

b. NATIONAL GRID WORST PERFORMING CIRCUITS WITH 3 YEAR HISTORY FOR CAIDI AND SAIFI INDICES

CAPITAL REGION

FEEDER #	2023 CAIDI	2022 CAIDI	2021 CAIDI	2020 CAIDI	2023 SAIFI	2022 SAIFI	2021 SAIFI	2020 SAIFI
CURRY ROAD 36552	2.25	4.08	2.63	0.61	4.31	0.28	0.01	3.95
BRUNSWICK 26453	2.45	2.37	2.34	2.50	3.59	0.83	3.24	1.35
EVERETT ROAD 42051	1.86	1.26	1.38	1.03	2.76	1.39	0.92	1.67
BRUNSWICK 26452	1.78	1.67	3.20	3.24	2.73	0.89	3.39	0.21
BLUE STORES 30353	2.35	1.91	2.75	3.06	2.34	2.03	2.88	1.48
NORTH TROY 12353	2.31	1.07	1.26	1.81	2.64	1.44	2.60	0.43
CURRY ROAD 36557	2.92	1.49	2.51	3.29	2.97	0.14	0.30	0.53
BURDECK STREET 26553	2.37	5.21	1.77	0.77	1.91	0.84	1.77	2.55
HEMSTREET 32851	2.44	1.90	1.62	2.57	1.68	2.55	2.48	1.58
BOYNTONVILLE 33351	2.23	1.84	2.58	2.17	1.66	2.52	2.42	2.79
FRONT STREET 36051	1.95	3.08	1.25	1.46	1.70	0.54	0.25	3.16
HOAGS CORNERS 22151	4.74	2.40	2.74	2.24	1.49	1.15	1.89	2.17
SWAGGERTOWN 36451	1.36	1.58	2.19	1.34	2.51	1.29	1.48	1.22
OATHOUT LANE 40251	2.13	3.99	1.75	3.65	2.33	0.16	0.81	1.37
LANSINGBURG 09313	6.07	1.30	0.00	3.18	2.93	0.94	0.00	1.01
WATT STREET 23052	1.28	1.95	1.60	1.65	2.06	1.29	0.31	0.29

Regional Goals:

CAIDI 2.025

SAIFI 1.024

c. NATIONAL GRID WORST PERFORMING CIRCUITS BY # OF MOMENTARY INTERRUPTIONS

CAPITAL REGION

Feeders			Customer Momentaries				Ranks		
Volts (kV)	Station Name	Ckt/F No.	Substation	Transmission	Distribution	Total	Within Region	Within System	Reliability Ranking
No circuits experienced 10 or more momentary interruptions in 2023.									

d. WORST PERFORMING CIRCUIT ANALYSIS

This year, the Capital Region's list of Worst Feeders consists of sixteen (16) 13.2 kV feeders.

For the Capital Region the CAIDI performance threshold is 2.025 and SAIFI performance threshold is 1.024.

1. CURRY ROAD 36552 – 13.2 kV

Profile: 1,989 Customers, 24.7 Circuit Miles

Indices: CAIDI = 2.25, SAIFI = 4.31

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	4	10.81%	5,975	69.63%	7,089	36.70%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	19	51.35%	951	11.08%	9,914	51.33%
6	ACCIDENTS	6	16.22%	1,404	16.36%	1,808	9.36%
7	PREARRANGED	3	8.11%	224	2.61%	448	2.32%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	5	13.51%	27	0.31%	55	0.29%
Totals		37	100.00%	8,581	100.00%	19,315	100.00%

Problem Analysis:

- There were 37 interruptions on the Curry Road 36552 in 2023.
- There was 1 transmission interruption.
 - This Transmission interruption occurred on July 24, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 23% of the total customers interrupted (1,987 of 8,581), and 5% of the total customer-hours interrupted (1,060 of 19,315).
- There were no substation interruptions.
- The remaining 36 events occurred at the distribution level.
- The distribution circuit breaker for the Curry Road 36552 experienced 2 momentary operations in 2023.
- The distribution circuit breaker for the Curry Road 36552 experienced 2 sustained operations (lockouts) in 2023. These interruptions accounted for 46% of the total amount of customers interrupted (3,983 out of 8,581) and 31% of the total amount of the customer-hours interrupted (6,015 out of 19,315).
 - The first lockout occurred on February 07, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 23% of the total customers interrupted (1,987 of 8,581), and 6% of the total customer-hours interrupted (1,063 of 19,315).
 - The second lockout occurred on October 07, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 23% of the total customers interrupted (1,996 of 8,581), and 26% of the total customer-hours interrupted (4,952 of 19,315).

- Equipment Failures were the leading cause of interruptions on the Curry Road 36552 in 2023, accounting for 51% of total interruptions (19 of 37). Accidents were the 2nd leading cause of interruptions, accounting for 16% of total interruptions (6 of 37). Unknown were the 3rd leading cause of interruptions, accounting for 14% of total interruptions (5 of 37).
- Trees were the leading cause of customers interrupted (CI) on the Curry Road 36552 in 2023, accounting for 70% of total customers interrupted (5,975 of 8,581). Accidents were the 2nd leading cause of customers interrupted, accounting for 16% of total customers interrupted (1,404 of 8,581). Equipment Failures were the 3rd leading cause of customers interrupted, accounting for 11% of total customers interrupted (951 of 8,581).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the Curry Road 36552 in 2023, accounting for 51% of total customer-hours interrupted (9,914 of 19,315). Trees were the 2nd leading cause of customer-hours interrupted, accounting for 37% of total customer-hours interrupted (7,089 of 19,315). Accidents were the 3rd leading cause of customer-hours interrupted, accounting for 9% of total customer-hours interrupted (1,808 of 19,315).
- Of the 37 interruptions on this circuit, 12 affected 10 customers or less, with 3 being single customer outages.

Actions Taken:

- There are two (2) 3-phase reclosers on the Curry Road 36552. These reclosers have assisted with minimizing customers interrupted and customer-hours interrupted since they were installed.
- A maintenance foot patrol was completed on the Curry Road 36552 in 2022 and all identified level 1 and 2 maintenance has been completed.
- Tree trimming and a hazard tree review was completed on the Curry Road 36552 in 2020.

Action Plan:

- Complete all identified level 3 maintenance on the Curry Road 36552.
- Tree trimming and a hazard tree review are scheduled to be performed on the Curry Road 36552 in 2025.
- Engineering to review if additional 3-phase reclosers will assist in minimizing customers interrupted and customer-hours interrupted; to install if warranted.
- Engineering to review if fast-trip settings within existing 3-phase reclosers are viable to reduce momentary outages.
- Engineering to review if the addition of fault indicators can be used to help restoration crews locate and isolate underground cable faults on the Curry Road 36552.
- A capital improvement project is scheduled for 2028 to create a feeder tie between the Curry Road 36552 and Pinebush 37153 by building approximately 1,500' of new distribution.

2. BRUNSWICK 26453 – 13.2 kV

Profile: 1,798 Customers, 102.5 Circuit Miles

Indices: CAIDI = 2.45, SAIFI = 3.59

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	Total	Number	% Total	Number	% Total
2	TREE	14	48.28%	3,239	50.12%	9,463	59.66%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	1	3.45%	6	0.09%	10	0.06%
5	EQUIPMENT	8	27.59%	3,012	46.60%	5,104	32.18%
6	ACCIDENTS	3	10.34%	197	3.05%	1,211	7.64%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	3	10.34%	9	0.14%	72	0.45%
Totals		29	100.00%	6,463	100.00%	15,860	100.00%

Problem Analysis:

- There were 29 interruptions on the Brunswick 26453 in 2023.
- There were no transmission interruptions.
- There was 1 substation interruption.
 - This Substation interruption occurred on June 30, 2023, when a CT within the substation faulted (PSC cause code 05). Feeder ties allowed all customers to be reenergized in only 97 minutes. This lockout accounted for 28% of the total customers interrupted (1,804 of 6,463) and 18% of the total customer-hours interrupted (2,916 of 15,860).
- The remaining 28 events occurred at the distribution level.
- The distribution circuit breaker for the Brunswick 26453 experienced 1 momentary operation in 2023.
- The distribution circuit breaker for the Brunswick 26453 experienced 0 sustained operations (lockouts) in 2023.
- The Brunswick 26453 experienced four (4) sustained 3-phase recloser operations in 2023. These interruptions accounted for 63% of the total amount of customers interrupted (4,061 of 6,463) and 59% of the total amount of the customer-hours interrupted (9,380 of 15,860).
 - The first lockout occurred on May 20, 2023, when a tree (PSC cause code 02) took down primary between pole 3 and pole 4 on Babcock Lake Road. This lockout accounted for 13% of the total customers interrupted (831 of 6,463) and 5% of the total customer-hours interrupted (841 of 15,860).
 - The second lockout occurred on June 12, 2023, when a tree (PSC cause code 02) took down primary at pole 10 on Long Pond Road. This lockout accounted for 13%

- of the total customers interrupted (831 of 6,463) and 10% of the total customer-hours interrupted (1,533 of 15,860).
- The third lockout occurred on December 11, 2023, when an insulator broke (PSC cause code 05) on pole 366 on NY-2. This lockout accounted for 19% of the total customers interrupted (1,199 of 6,463) and 14% of the total customer-hours interrupted (2,154 of 15,860).
- The fourth lockout occurred on December 18, 2023, when a tree (PSC cause code 02) took down primary on NY-2. This lockout accounted for 19% of the total customers interrupted (1,200 of 6,463) and 31% of the total customer-hours interrupted (4,852 of 15,860).
- The single substation interruption, combined with the four (3) 3-phase recloser lockouts, accounted for 91% of the total customers interrupted (5,865 of 6,463) and 47% of the total customer-hours interrupted (7,444 of 15,860).
- Trees were the leading cause of interruptions on the Brunswick 26453 in 2023, accounting for 48% of total interruptions (14 of 29). Equipment Failures were the 2nd leading cause of interruptions, accounting for 28% of total interruptions (8 of 29). Accidents were the 3rd leading cause of interruptions, accounting for 10% of total interruptions (3 of 29).
- Trees were the leading cause of customers interrupted (CI) on the Brunswick 26453 in 2023, accounting for 50% of total customers interrupted (3,239 of 6,463). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 47% of total customers interrupted (3,012 of 6,463). Accidents were the 3rd leading cause of customers interrupted, accounting for 3% of total customers interrupted (197 of 6,463).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Brunswick 26453 in 2023, accounting for 60% of total customer-hours interrupted (9,463 of 15,860). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 32% of total customer-hours interrupted (5,104 of 15,860). Accidents were the 3rd leading cause of customer-hours interrupted, accounting for 8% of total customer-hours interrupted (1,211 of 15,860).
- Of the 29 interruptions on this circuit, 14 affected 10 customers or less, with 9 being single customer outages.

Actions Taken:

- There are three (3) 3-phase reclosers and three (3) cutout-mounted reclosers on the Brunswick 26453. These reclosers have assisted with minimizing customers interrupted and customer-hours interrupted since they were installed.
- A maintenance foot patrol was completed on the Brunswick 26453 in 2021 and all identified level 1 and 2 maintenance has been completed.
- Tree trimming and a hazard tree review was completed on the Brunswick 26453 in 2020.
- Capital improvement work was completed to improve reliability and protection coordination on the Brunswick 26453 via the reconfiguration and installation of switches, fuses, and cutout-mounted reclosers.

Action Plan:

- Complete all identified level 3 maintenance on the Brunswick 26453.
- Tree trimming and a hazard tree review are scheduled to be performed on the Brunswick 26453 in 2025.
- Capital improvement work is scheduled to further improve reliability and protection coordination on the Brunswick 26453 via the reconfiguration and installation of switches, fuses, and cutout-mounted reclosers.
- Capital improvement work is scheduled to install a recloser on NY-2 which will assist in minimizing customers interrupted and customer-hours interrupted in the event of a sustained outage as well as prevent sustained outages that, otherwise, would have been momentary in nature.
- Capital improvement work is scheduled to tie two (2) 1-phase radial taps together on Taconic Lake Road which will significantly improve operational flexibility by providing additional switching opportunities which will assist in minimizing customer-hours interrupted in the event of a sustained outage.
- A capital improvement project is scheduled to extend 3-phase, 13.2 kV along the entirety of White Church Road which will significantly improve operational flexibility by providing additional opportunities to internally reroute distribution, thereby minimizing customer-hours interrupted in the event of a sustained outage.
- A capital improvement project is scheduled to extend 3-phase, 13.2 kV down Moonlawn Road and McChesney Avenue Extension which will enable the creation of a new 13.2 kV feeder tie to significantly improve operational flexibility and backfeed capabilities, thereby minimizing customer-hours interrupted in the event of a sustained outage.
- A capital improvement project is scheduled to extend 3-phase, 13.2 kV down Tamarac Road to relieve an overloaded ratio transformer, thereby mitigating customers interrupted and customer-hours interrupted in the event of equipment failure due to overload.

3. EVERETT ROAD 42051 – 13.2 kV

Profile: 1,754 Customers, 26.2 Circuit Miles

Indices: CAIDI = 1.86, SAIFI = 2.76

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	9	24.32%	341	7.05%	963	10.70%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	6	16.22%	1,634	33.77%	3,189	35.43%
6	ACCIDENTS	10	27.03%	2,611	53.97%	4,385	48.70%
7	PREARRANGED	4	10.81%	30	0.62%	36	0.40%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	8	21.62%	222	4.59%	430	4.78%
Totals		37	100.00%	4,838	100.00%	9,003	100.00%

Problem Analysis:

- There were 37 interruptions on the Everett Road 42051 in 2023.
- There were no transmission interruptions.
- There was 1 substation interruption.
 - This Substation interruption occurred on June 18, 2023, coded as a cause of animal (PSC cause code 06). This lockout accounted for 36% of the total customers interrupted (1,748 of 4,838), and 27% of the total customer-hours interrupted (2,465 of 9,003). The squirrel entered the station on a tree branch that had grown over the substation animal fence; the branch was subsequently removed by National Grid forestry.
- The remaining 36 events occurred at the distribution level.
- The distribution circuit breaker for the Everett Road 42051 experienced 0 momentary operations in 2023.
The distribution circuit breaker for the Everett Road 42051 experienced 0 sustained operations (lockouts) in 2023.
- Accidents were the leading cause of interruptions on the Everett Road 42051 in 2023, accounting for 27% of total interruptions (10 of 37). Trees were the 2nd leading cause of interruptions, accounting for 24% of total interruptions (9 of 37). Unknown were the 3rd leading cause of interruptions, accounting for 22% of total interruptions (8 of 37).
- Accidents were the leading cause of customers interrupted (CI) on the Everett Road 42051 in 2023, accounting for 54% of total customers interrupted (2,611 of 4,838). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 34% of total

customers interrupted (1,634 of 4,838). Trees were the 3rd leading cause of customers interrupted, accounting for 7% of total customers interrupted (341 of 4,838).

- Accidents were the leading cause of customer-hours interrupted (CHI) on the Everett Road 42051 in 2023, accounting for 49% of total customer-hours interrupted (4,385 of 9,003). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 35% of total customer-hours interrupted (3,189 of 9,003). Trees were the 3rd leading cause of customer-hours interrupted, accounting for 11% of total customer-hours interrupted (963 of 9,003).
- Of the 37 interruptions on this circuit, 17 affected 10 customers or less, with 3 being single customer outages.

Actions Taken:

- There is one (1) 3-phase recloser on the Everett Road 42051. This recloser has assisted with minimizing customers interrupted and customer-hours interrupted since it was installed.
- A maintenance foot patrol was completed on the Everett Road 42051 in 2021 and all identified level 1 and 2 maintenance has been completed.
- Tree trimming and a hazard tree review was completed on the Everett Road 42051 in 2022.
- The tree branch that allowed a squirrel to cross over the animal fence was removed.

Action Plan:

- Complete all identified level 3 maintenance on the Everett Road 42051.
- Tree trimming and a hazard tree review are scheduled to be performed on the Everett Road 42051 in 2026.
- Engineering to review the settings for the 3-phase recloser to ensure proper device coordination; to update if warranted.
- Capital improvement work is scheduled to install 1-phase, cutout-mounted reclosers that will assist in minimizing customers interrupted and customer-hours interrupted; to be designed and installed in 2024.

4. BRUNSWICK 26452 – 13.2 kV

Profile: 1,998 Customers, 95.3 Circuit Miles

Indices: CAIDI = 1.78, SAIFI = 2.73

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	11	33.33%	700	12.86%	1,177	12.17%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	11	33.33%	4,221	77.52%	7,900	81.67%
6	ACCIDENTS	5	15.15%	297	5.45%	132	1.37%
7	PREARRANGED	1	3.03%	4	0.07%	6	0.06%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	5	15.15%	223	4.10%	457	4.73%
Totals		33	100.00%	5,445	100.00%	9,673	100.00%

Problem Analysis:

- There were 33 interruptions on the Brunswick 26452 in 2023.
- There were no transmission interruptions.
- There was 1 substation interruption.
 - This Substation interruption occurred on June 30, 2023, when a CT within the substation faulted (PSC cause code 05). Feeder ties allowed all customers to be reenergized in only 94 minutes. This lockout accounted for 37% of the total customers interrupted (2,003 of 5,445), and 32% of the total customer-hours interrupted (3,138 of 9,673).
- The remaining 32 events occurred at the distribution level.
- The distribution circuit breaker for the Brunswick 26452 experienced 0 momentary operations in 2023.
- The distribution circuit breaker for the Brunswick 26452 experienced 1 sustained operation (lockout) in 2023. This interruption accounted for 37% of the total amount of customers interrupted (2,002 out of 5,445) and 40% of the total amount of the customer-hours interrupted (3,839 out of 9,673).
 - This lockout occurred on December 19, 2023, when a crossarm broke (PSC cause code 05) just outside the substation. This lockout accounted for 37% of the total customers interrupted (2,002 of 5,445), and 40% of the total customer-hours interrupted (3,839 of 9,673).
- The single substation interruption, combined with the single circuit breaker lockout, accounted for 74% of the total customers interrupted (4,005 of 5,445) and 72% of the total customer-hours interrupted (6,977 of 9,673).

- Trees were the leading cause of interruptions on the Brunswick 26452 in 2023, accounting for 33% of total interruptions (11 of 33). Equipment Failures were the 2nd leading cause of interruptions, accounting for 33% of total interruptions (11 of 33). Accidents were the 3rd leading cause of interruptions, accounting for 15% of total interruptions (5 of 33).
- Equipment Failures were the leading cause of customers interrupted (CI) on the Brunswick 26452 in 2023, accounting for 78% of total customers interrupted (4,221 of 5,445). Trees were the 2nd leading cause of customers interrupted, accounting for 13% of total customers interrupted (700 of 5,445). Accidents were the 3rd leading cause of customers interrupted, accounting for 5% of total customers interrupted (297 of 5,445).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the Brunswick 26452 in 2023, accounting for 82% of total customer-hours interrupted (7,900 of 9,673). Trees were the 2nd leading cause of customer-hours interrupted, accounting for 12% of total customer-hours interrupted (1,177 of 9,673). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 5% of total customer-hours interrupted (457 of 9,673).
- Of the 33 interruptions on this circuit, 13 affected 10 customers or less, with 4 being single customer outages.

Actions Taken:

- There are three (3) 3-phase reclosers and five (5) cutout-mounted reclosers on the Brunswick 26452. These reclosers have assisted with minimizing customers interrupted and customer-hours interrupted since they were installed.
- A maintenance foot patrol was completed on the Brunswick 26452 in 2023 and all identified level 1 maintenance has been completed.
- Tree trimming and a hazard tree review was completed on the Brunswick 26452 in 2020.
- Capital improvement work was completed to improve reliability and protection coordination on the Brunswick 26452 via the reconfiguration and installation of switches, fuses, and cutout-mounted reclosers.

Action Plan:

- Complete all identified level 2 and 3 maintenance on the Brunswick 26452.
- Tree trimming and a hazard tree review are scheduled to be performed on the Brunswick 26452 in 2025.
- Capital improvement work is scheduled to further improve reliability and protection coordination on the Brunswick 26452 via the reconfiguration and installation of switches, fuses, and cutout-mounted reclosers.
- Capital improvement work is scheduled to install a recloser on Weatherwax Road which will assist in minimizing customers interrupted and customer-hours interrupted in the event of a sustained outage as well as prevent sustained outages that, otherwise, would have been momentary in nature.
- Capital improvement work is scheduled to relieve an overloaded ratio transformer on Blue Factory Road, thereby mitigating customers interrupted and customer-hours interrupted in the event of equipment failure due to overload.
- Capital improvement work is scheduled to tie two (2) 1-phase radial taps together on Blue Factory Road which will significantly improve operational flexibility by providing additional switching opportunities which will assist in minimizing customer-hours interrupted in the event of a sustained outage.
- Capital improvement work is scheduled to remove approximately 0.38 miles of rear-lot distribution and installing new distribution along Swankey Road, thereby significantly reducing sustained, tree-related outages as well as decreasing restoration times due to the distribution being more accessible to restoration crews.
- Capital improvement work is scheduled to remove approximately 0.59 miles of rear-lot distribution and installing new distribution along Fifty Six Road, thereby significantly reducing sustained, tree-related outages as well as decreasing restoration times due to the distribution being more accessible to restoration crews.
- Capital improvement work is scheduled to convert the entirety of Abbott Drive to 7.62 kV which will remove a ratio transformer, thereby mitigating customers interrupted and customer-hours interrupted in the event of equipment failure.
- Capital improvement work is scheduled to convert the entirety of Clement Drive to 7.62 kV which will remove a ratio transformer, thereby mitigating customers interrupted and customer-hours interrupted in the event of equipment failure.
- A capital improvement project is scheduled to remove an overloaded ratio transformer on Averill Park Road, thereby mitigating customers interrupted and customer-hours interrupted in the event of equipment failure due to overload.

- A capital improvement project is scheduled to extend 3-phase, 13.2 kV down White Church Road to relieve an overloaded ratio transformer, thereby mitigating customers interrupted and customer-hours interrupted in the event of equipment failure due to overload. This extension will also enable the creation of a new 13.2 kV feeder tie to significantly improve operational flexibility and backfeed capabilities, thereby minimizing customer-hours interrupted in the event of a sustained outage.

5. BLUE STORES 30353 – 13.2 kV

Profile: 1,429 Customers, 113.6 Circuit Miles

Indices: CAIDI = 2.35, SAIFI = 2.34

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	13	40.63%	2,132	64.06%	4,022	51.37%
3	OVERLOADS	1	3.13%	14	0.42%	114	1.46%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	9	28.13%	642	19.29%	2,596	33.15%
6	ACCIDENTS	2	6.25%	6	0.18%	21	0.27%
7	PREARRANGED	3	9.38%	405	12.17%	570	7.28%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	4	12.50%	129	3.88%	508	6.48%
Totals		32	100.00%	3,328	100.00%	7,830	100.00%

Problem Analysis:

- There were 32 interruptions on the Blue Stores 30353 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 32 events occurred at the distribution level.
- The distribution circuit breaker for the Blue Stores 30353 experienced 3 momentary operations in 2023.
- The distribution circuit breaker for the Blue Stores 30353 experienced 1 sustained operation (lockout) in 2023. This lockout occurred on June 24, 2023, when a tree limb fell on the primary just outside the station (PSC cause code 02). This interruption accounted for 43% of the total amount of customers interrupted (1,420 out of 3,328) and 20% of the total amount of the customer-hours interrupted (1,532 out of 7,830).
- The Blue Stores 30353 experienced two (2) sustained 3-phase recloser operations in 2023. These interruptions accounted for 19% of the total amount of customers interrupted (616 of 3,328) and 32% of the total amount of the customer-hours interrupted (2,518 of 7,830).
 - The first lockout occurred on January 15, 2023, when a 1,500 kVA, step-down ratio transformer failed on State Highway 82 (PSC cause code 05). This lockout accounted for 9% of the total customers interrupted (308 of 3,328) and 28% of the total customer-hours interrupted (2,160 of 7,830).
 - The second lockout occurred on January 16, 2023, after the replacement ratio transformer, installed on the 15th, failed again (PSC cause code 05). This lockout accounted for 9% of the total customers interrupted (308 of 3,328) and 5% of the total customer-hours interrupted (358 of 7,830).

- The single substation interruption, combined with the two (2) 3-phase recloser lockouts, accounted for 61% of the total customer interrupted (2,036 of 3,328) and 52% of the total customer-hours interrupted (4,050 of 7,830).
- Trees were the leading cause of interruptions on the Blue Stores 30353 in 2023, accounting for 41% of total interruptions (13 of 32). Equipment Failures were the 2nd leading cause of interruptions, accounting for 28% of total interruptions (9 of 32). Unknown were the 3rd leading cause of interruptions, accounting for 13% of total interruptions (4 of 32).
- Trees were the leading cause of customers interrupted (CI) on the Blue Stores 30353 in 2023, accounting for 64% of total customers interrupted (2,132 of 3,328). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 19% of total customers interrupted (642 of 3,328). Prearranged were the 3rd leading cause of customers interrupted, accounting for 12% of total customers interrupted (405 of 3,328).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Blue Stores 30353 in 2023, accounting for 51% of total customer-hours interrupted (4,022 of 7,830). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 33% of total customer-hours interrupted (2,596 of 7,830). Prearranged were the 3rd leading cause of customer-hours interrupted, accounting for 7% of total customer-hours interrupted (570 of 7,830).
- Of the 32 interruptions on this circuit, 17 affected 10 customers or less, with 10 being single customer outages.

Actions Taken:

- There are three (3) 3-phase reclosers and three (3) cutout-mounted reclosers on the Blue Stores 30353. These reclosers have assisted with minimizing customers interrupted and customer-hours interrupted since they were installed.
- A maintenance foot patrol was completed on the Blue Stores 30353 in 2022 and all identified level 1 and 2 maintenances has been completed.
- Tree trimming and a hazard tree review was completed on the Blue Stores 30353 in 2019.
- A capital improvement project was completed to remove an overloaded, 1,500 kVA, step-down ratio transformer on Proper Road and convert 4,400' of 4.8 kV delta to 13.2 kV. This project also included removing a 23-year-old Cooper Form 4C 3-phase recloser and installing a new Viper 6IVS 3-phase recloser on Bells Pond Road. Additionally, a cutout-mounted recloser on State Highway 82 was installed which will prevent sustained outages that, otherwise, would have been momentary in nature.
- A capital improvement project was completed to install a 3-phase recloser on County Highway 19 which will prevent sustained outages that, otherwise, would have been momentary in nature.
- A capital improvement project was completed to install a cutout-mounted recloser on County Highway 15 and improve fusing coordination on State Highway 82 which will assist in minimizing customers interrupted and customer-hours interrupted as well as prevent sustained outages that, otherwise, would have been momentary in nature.

Action Plan:

- Complete all identified level 3 maintenance on the Blue Stores 30353.
- Tree trimming and a hazard tree review are scheduled to be performed on the Blue Stores 30353 in 2024.
- A capital improvement project is scheduled to improve reliability by relocating distribution from the rear-lot to along Bells Pond Road.
- A capital improvement project is scheduled to improve reliability by relocating rear-lot distribution to the road and extending 3-phase along County Route 27.
- A capital improvement project is scheduled to improve reliability by relocating distribution from the rear-lot to along Albany Post Road.
- A capital improvement project is scheduled to improve reliability by installing new switches on the Blue Stores 30353 which will allow additional opportunity to isolate faults, thereby significantly decreasing outage times in the event of a sustained outage.

6. NORTH TROY 12353 – 13.2 kV

*Profile: 2,720 Customers, 54.9
Indices: CAIDI = 2.31, SAIFI = 2.64*

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	3	16.67%	93	1.29%	264	1.59%
3	OVERLOADS	1	5.56%	35	0.49%	101	0.61%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	6	33.33%	1,810	25.16%	4,732	28.49%
6	ACCIDENTS	5	27.78%	5,244	72.90%	11,491	69.19%
7	PREARRANGED	1	5.56%	4	0.06%	6	0.03%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	2	11.11%	7	0.10%	13	0.08%
Totals		18	100.00%	7,193	100.00%	16,607	100.00%

Problem Analysis:

- There were 18 interruptions on the North Troy 12353 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 18 events occurred at the distribution level.
- The distribution circuit breaker for the North Troy 12353 experienced 5 momentary operations in 2023.
- The distribution circuit breaker for the North Troy 12353 experienced 1 sustained operation (lockout) in 2023. This interruption accounted for 38% of the total amount of customers interrupted (2,708 out of 7,193) and 37% of the total amount of the customer-hours interrupted (6,130 out of 16,607).
 - This lockout occurred on September 24, 2023, when a vehicle (PSC cause code 06) struck pole 137 on Hoosick Street. This lockout accounted for 38% of the total customers interrupted (2,708 of 7,193), and 37% of the total customer-hours interrupted (6,130 of 16,607).
- The North Troy 12353 experienced two (2) sustained 3-phase recloser operations in 2023. These interruptions accounted for 34% of the total amount of customers interrupted (2,449 of 7,193) and 31% of the total amount of the customer-hours interrupted (5,221 of 16,607).
 - The first lockout occurred on August 19, 2023, when a vehicle (PSC cause code 05) struck pole 72 on Oakwood Avenue. This lockout accounted for 15% of the total customers interrupted (1,073 of 7,193) and 7% of the total customer-hours interrupted (1,176 of 16,607).

- The second lockout occurred on August 26, 2023, when a vehicle (PSC cause code 05) struck pole 66 on Oakwood Avenue. This lockout accounted for 19% of the total customers interrupted (1,376 of 7,193) and 24% of the total customer-hours interrupted (4,045 of 16,607).
- The single circuit breaker lockout, combined with the two (2) 3-phase recloser lockouts, accounted for 72% of the total customers interrupted (5,157 of 7,193) and 68% of the total customer-hours interrupted (11,351 of 16,607).
- Equipment Failures were the leading cause of interruptions on the North Troy 12353 in 2023, accounting for 33% of total interruptions (6 of 18). Accidents were the 2nd leading cause of interruptions, accounting for 28% of total interruptions (5 of 18). Trees were the 3rd leading cause of interruptions, accounting for 17% of total interruptions (3 of 18).
- Accidents were the leading cause of customers interrupted (CI) on the North Troy 12353 in 2023, accounting for 73% of total customers interrupted (5,244 of 7,193). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 25% of total customers interrupted (1,810 of 7,193). Trees were the 3rd leading cause of customers interrupted, accounting for 1% of total customers interrupted (93 of 7,193).
- Accidents were the leading cause of customer-hours interrupted (CHI) on the North Troy 12353 in 2023, accounting for 69% of total customer-hours interrupted (11,491 of 16,607). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 28% of total customer-hours interrupted (4,732 of 16,607). Trees were the 3rd leading cause of customer-hours interrupted, accounting for 2% of total customer-hours interrupted (264 of 16,607).
- Of the 18 interruptions on this circuit, 7 affected 10 customers or less, with 3 being single customer outages.

Actions Taken:

- There are three (3) 3-phase reclosers and one (1) cutout-mounted reclosers on the North Troy 12353. These reclosers have assisted with minimizing customers interrupted and customer-hours interrupted since they were installed.
- A maintenance foot patrol was completed on the North Troy 12353 in 2020 and all identified level 1, 2, and 3 maintenance has been completed.
- Tree trimming and a hazard tree review was completed on the North Troy 12353 in 2019.
- Capital improvement work was completed to improve reliability and protection coordination on the North Troy 12353 via the reconfiguration and installation of switches, fuses, and cutout-mounted reclosers.

Action Plan:

- Tree trimming and a hazard tree review are scheduled to be performed on the North Troy 12353 in 2028.
- A thorough review of all protective device settings will be conducted to ensure proper coordination between the substation breaker and all downstream reclosers; corrections to settings will be made should it be discovered that a miscoordination exists.
- A switching plan has been developed to transfer customers off the North Troy 12353 to a more reliable feeder, thereby minimizing customers interrupted and customer-hours interrupted in the event of a sustained outage.
- Capital improvement work is scheduled to further improve reliability and protection coordination via the reconfiguration and installation of switches, fuses, and cutout-mounted reclosers.
- Capital improvement work is scheduled to relieve an overloaded ratio transformer on Frear Park View, thereby mitigating customers interrupted and customer-hours interrupted in the event of equipment failure due to overload.
- A capital improvement project is scheduled to remove approximately 0.32 miles of rear-lot distribution and installing new distribution along Gypsy Lane, thereby significantly reducing sustained, tree-related outages as well as decreasing restoration times due to the distribution being more accessible to restoration crews.
- A capital improvement project is scheduled to relieve an overloaded ratio on Bellview Road, thereby mitigating customers interrupted and customer-hours interrupted in the event of equipment failure due to overload.

7. CURRY ROAD 36557 – 13.2 kV

Profile: 1,693 Customers, 18.3 Circuit Miles

Indices: CAIDI = 2.92, SAIFI = 2.97

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	3	23.08%	1,719	34.13%	939	6.38%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	4	30.77%	1,568	31.14%	12,975	88.19%
6	ACCIDENTS	2	15.38%	1,720	34.15%	737	5.01%
7	PREARRANGED	1	7.69%	7	0.14%	6	0.04%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	3	23.08%	22	0.44%	56	0.38%
Totals		13	100.00%	5,036	100.00%	14,713	100.00%

Problem Analysis:

- There were 13 interruptions on the Curry Road 36557 in 2023.
- There was 1 transmission interruption.
 - This Transmission interruption occurred on July 24, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 34% of the total customers interrupted (1,691 of 5,036), and 6% of the total customer-hours interrupted (902 of 14,713).
- There were no substation interruptions.
- The remaining 12 events occurred at the distribution level.
- The distribution circuit breaker for the Curry Road 36557 experienced 0 momentary operations in 2023.
- The distribution circuit breaker for the Curry Road 36557 experienced 0 sustained operations (lockouts) in 2023.
- Equipment Failures were the leading cause of interruptions on the Curry Road 36557 in 2023, accounting for 31% of total interruptions (4 of 13). Trees were the 2nd leading cause of interruptions, accounting for 23% of total interruptions (3 of 13). Unknown were the 3rd leading cause of interruptions, accounting for 23% of total interruptions (3 of 13).
- Accidents were the leading cause of customers interrupted (CI) on the Curry Road 36557 in 2023, accounting for 34% of total customers interrupted (1,720 of 5,036). Trees were the 2nd leading cause of customers interrupted, accounting for 34% of total customers interrupted (1,719 of 5,036). Equipment Failures were the 3rd leading cause of customers interrupted, accounting for 31% of total customers interrupted (1,568 of 5,036).

- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the Curry Road 36557 in 2023, accounting for 88% of total customer-hours interrupted (12,975 of 14,713). Trees were the 2nd leading cause of customer-hours interrupted, accounting for 6% of total customer-hours interrupted (939 of 14,713). Accidents were the 3rd leading cause of customer-hours interrupted, accounting for 5% of total customer-hours interrupted (737 of 14,713).
- Of the 13 interruptions on this circuit, 5 affected 10 customers or less, with 2 being single customer outages.

Actions Taken:

- There is one (1) 3-phase recloser on the Curry Road 36557. This recloser has assisted with minimizing customers interrupted and customer-hours interrupted since it was installed.
- A maintenance foot patrol was completed on the Curry Road 36557 in 2021 and all identified level 1, 2, and 3 maintenance has been completed.
- Tree trimming and a hazard tree review was completed on the Curry Road 36557 in 2020.

Action Plan:

- A maintenance foot patrol is scheduled to be performed on the Curry Road 36557 in 2026.
- Tree trimming and a hazard tree review is scheduled to be performed on the Curry Road 36557 in 2025.
- Engineering to review fusing coordination on the Curry Road 36557.

8. BURDECK STREET 26553 – 13.2 kV

Profile: 1,698 Customers, 88.7 Circuit Miles

Indices: CAIDI = 2.37, SAIFI = 1.91

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	9	32.14%	2,017	62.27%	3,445	44.88%
3	OVERLOADS	1	3.57%	15	0.46%	19	0.24%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	7	25.00%	789	24.36%	3,309	43.11%
6	ACCIDENTS	2	7.14%	29	0.90%	128	1.67%
7	PREARRANGED	1	3.57%	120	3.70%	237	3.09%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	8	28.57%	269	8.31%	538	7.01%
Totals		28	100.00%	3,239	100.00%	7,676	100.00%

Problem Analysis:

- There were 28 interruptions on the Burdeck Street 26553 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 28 events occurred at the distribution level.
- The distribution circuit breaker for the Burdeck Street 26553 experienced 0 momentary operations in 2023.
- The distribution circuit breaker for the Burdeck Street 26553 experienced 1 sustained operation (lockout) in 2023. This interruption accounted for 52% of the total amount of customers interrupted (1,675 out of 3,239) and 36% of the total amount of the customer-hours interrupted (2,749 out of 7,676).
 - This lockout occurred on February 03, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 52% of the total customers interrupted (1,675 of 3,239), and 36% of the total customer-hours interrupted (2,749 of 7,676).
- Trees were the leading cause of interruptions on the Burdeck Street 26553 in 2023, accounting for 32% of total interruptions (9 of 28). Unknown were the 2nd leading cause of interruptions, accounting for 29% of total interruptions (8 of 28). Equipment Failures were the 3rd leading cause of interruptions, accounting for 25% of total interruptions (7 of 28).

- Trees were the leading cause of customers interrupted (CI) on the Burdeck Street 26553 in 2023, accounting for 62% of total customers interrupted (2,017 of 3,239). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 24% of total customers interrupted (789 of 3,239). Unknown were the 3rd leading cause of customers interrupted, accounting for 8% of total customers interrupted (269 of 3,239).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Burdeck Street 26553 in 2023, accounting for 45% of total customer-hours interrupted (3,445 of 7,676). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 43% of total customer-hours interrupted (3,309 of 7,676). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 7% of total customer-hours interrupted (538 of 7,676).
- Of the 28 interruptions on this circuit, 8 affected 10 customers or less, with 6 being single customer outages.

Actions Taken:

- There are three (3) 3-phase reclosers on the Burdeck Street 26553. These reclosers have assisted with minimizing customers interrupted and customer-hours interrupted since they were installed.
- A maintenance foot patrol was completed on the Burdeck Street 26553 in 2020 and all identified level 1 and 2 maintenance has been completed.
- Tree trimming and a hazard tree review was completed on the Burdeck Street 26553 in 2020.

Action Plan:

- Complete all identified level 3 maintenance on the Burdeck Street 26553.
- Tree trimming and a hazard tree review is scheduled to be performed on the Burdeck Street 26553 in 2025.
- A maintenance foot patrol is scheduled to be performed on the Burdeck Street 26553 in 2025.
- Engineering to review if additional 3-phase reclosers will assist in minimizing customers interrupted and customer-hours interrupted; to install if warranted.
- Engineering to review opportunities to relocate rear-lot distribution to roadside to mitigate future, tree-related outages.

9. HEMSTREET 32851 – 13.2 kV

*Profile: 1,886 Customers, 123.6 Circuit Miles
Indices: CAIDI = 2.44, SAIFI = 1.68*

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	15	45.45%	1,834	57.91%	3,501	45.31%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	6	18.18%	1,147	36.22%	3,630	46.98%
6	ACCIDENTS	2	6.06%	7	0.22%	36	0.46%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	2	6.06%	7	0.22%	21	0.27%
10	UNKNOWN	8	24.24%	172	5.43%	539	6.98%
Totals		33	100.00%	3,167	100.00%	7,726	100.00%

Problem Analysis:

- There were 33 interruptions on the Hemstreet 32851 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 33 events occurred at the distribution level.
- The distribution circuit breaker for the Hemstreet 32851 experienced 1 momentary operation in 2023.
- The distribution circuit breaker for the Hemstreet 32851 experienced 0 sustained operations (lockouts) in 2023.
- The Hemstreet 32851 experienced four (4) sustained 3-phase recloser operations in 2023. These interruptions accounted for 72% of the total amount of customers interrupted (2,266 of 3,167) and 68% of the total amount of the customer-hours interrupted (5,257 of 7,726).
 - The first lockout occurred on January 4, 2023, when a tree limb (PSC cause code 02) took down primary between pole 38 and pole 40 on NY-67. This lockout accounted for 10% of the total customers interrupted (330 of 3,167) and 11% of the total customer-hours interrupted (830 of 7,726).
 - The second lockout occurred on January 27, 2023, when a tree (PSC cause code 02) fell at pole 170 on Baum Street. This lockout accounted for 26% of the total customers interrupted (829 of 3,167) and 15% of the total customer-hours interrupted (1,155 of 7,726).

- The third lockout occurred on April 10, 2023, when a tree (PSC cause code 02) fell at pole 170 on Baum Street. This lockout accounted for 8% of the total customers interrupted (269 of 3,167) and 3% of the total customer-hours interrupted (244 of 7,726).
- The fourth lockout occurred on December 3, 2023, when a regulator failed (PSC cause code 05) on pole 21-½ on Master Street. This lockout accounted for 26% of the total customers interrupted (838 of 3,167) and 39% of the total customer-hours interrupted (3,028 of 7,726).
- Trees were the leading cause of interruptions on the Hemstreet 32851 in 2023, accounting for 45% of total interruptions (15 of 33). Unknown were the 2nd leading cause of interruptions, accounting for 24% of total interruptions (8 of 33). Equipment Failures were the 3rd leading cause of interruptions, accounting for 18% of total interruptions (6 of 33).
- Trees were the leading cause of customers interrupted (CI) on the Hemstreet 32851 in 2023, accounting for 58% of total customers interrupted (1,834 of 3,167). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 36% of total customers interrupted (1,147 of 3,167). Unknown were the 3rd leading cause of customers interrupted, accounting for 5% of total customers interrupted (172 of 3,167).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the Hemstreet 32851 in 2023, accounting for 47% of total customer-hours interrupted (3,630 of 7,726). Trees were the 2nd leading cause of customer-hours interrupted, accounting for 45% of total customer-hours interrupted (3,501 of 7,726). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 7% of total customer-hours interrupted (539 of 7,726).
- Of the 33 interruptions on this circuit, 13 affected 10 customers or less, with 5 being single customer outages.

Actions Taken:

- There are seven (7) 3-phase reclosers and four (4) cutout-mounted reclosers on the Hemstreet 32851. These reclosers have assisted with minimizing customers interrupted and customer-hours interrupted since they were installed.
- A maintenance foot patrol was completed on the Hemstreet 32851 in 2020 and all identified level 1, 2, and 3 maintenance has been completed.
- Tree trimming and a hazard tree review was completed on the Hemstreet 32851 in 2023.
- Capital improvement work was completed to improve reliability and protection coordination on the Hemstreet 32851 via the reconfiguration and installation of switches, fuses, and cutout-mounted reclosers.
- Capital improvement work was completed to install a recloser on Master Street which will assist in minimizing customers interrupted and customer-hours interrupted in the event of a sustained outage as well as prevent sustained outages that, otherwise, would have been momentary in nature.

Action Plan:

- Tree trimming and a hazard tree review are scheduled to be performed on the Hemstreet 32851 in 2029.
- A thorough review of all protective device settings will be conducted to ensure proper coordination between the substation breaker and all downstream reclosers; corrections to settings will be made should it be discovered that a miscoordination exists.
- Capital improvement work is scheduled to further improve reliability and protection coordination via the reconfiguration and installation of switches, fuses, and cutout-mounted reclosers.
- Capital improvement work is scheduled to reconfigure the Hemstreet 51 downstream of the recloser on Master Street, just east of Bunker Hill Road, and to install a 3-phase recloser on Johnsonville Road, thereby minimizing customers interrupted and customer-hours interrupted in the event of a sustained outage.
- Capital improvement work is scheduled to close a gap on Hemstreet Road which will improve operational flexibility, thereby minimizing customer-hours interrupted in the event of a sustained outage.
- Capital improvement work is scheduled to remove approximately 0.58 miles of rear-lot distribution and installing new distribution along Ridge Road, thereby significantly reducing sustained, tree-related outages as well as decreasing restoration times due to the distribution being more accessible to restoration crews.
- A capital improvement project is scheduled to remove approximately 0.80 miles of rear-lot distribution, including a river crossing, and installing new distribution along Farm to Market Road, thereby significantly reducing sustained, tree-related outages as well as decreasing restoration times due to the distribution being more accessible to restoration crews.

10. BOYNTONVILLE 33351 – 13.2 kV

Profile: 2,129 Customers, 153.9 Circuit Miles

Indices: CAIDI = 2.23, SAIFI = 1.66

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	18	42.86%	1,591	45.08%	3,959	50.33%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	12	28.57%	661	18.73%	839	10.67%
6	ACCIDENTS	3	7.14%	561	15.90%	934	11.88%
7	PREARRANGED	1	2.38%	90	2.55%	211	2.68%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	1	2.38%	2	0.06%	6	0.07%
10	UNKNOWN	7	16.67%	624	17.68%	1,918	24.38%
Totals		42	100.00%	3,529	100.00%	7,867	100.00%

Problem Analysis:

- There were 42 interruptions on the Boyntonville 33351 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 42 events occurred at the distribution level.
- The distribution circuit breaker for the Boyntonville 33351 experienced 0 momentary operations in 2023.
- The distribution circuit breaker for the Boyntonville 33351 experienced 0 sustained operations (lockouts) in 2023.
- The Boyntonville 33351 experienced six (6) sustained 3-phase recloser operations in 2023. These interruptions accounted for 50% of the total amount of customers interrupted (1,754 of 3,529) and 60% of the total amount of the customer-hours interrupted (4,722 of 7,867).
 - The first lockout occurred on April 7, 2023, due to an unknown cause (PSC cause code 10). This lockout accounted for 9% of the total customers interrupted (335 of 3,529) and 12% of the total customer-hours interrupted (917 of 7,867).
 - The second lockout occurred on April 23, 2023, due to an unknown cause (PSC cause code 10). This lockout accounted for 6% of the total customers interrupted (199 of 3,529) and 10% of the total customer-hours interrupted (816 of 7,867).
 - The third lockout occurred on July 1, 2023, when a tree (PSC cause code 02) fell and broke the crossarm of pole 18 on Kautz Hollow Road. This lockout accounted for 9% of the total customers interrupted (335 of 3,529) and 14% of the total customer-hours interrupted (1,112 of 7,867).

- The fourth lockout occurred on July 7, 2023, when a tree (PSC cause code 02) fell on primary at pole 48 on Babcock Lake Road. This lockout accounted for 9% of the total customers interrupted (335 of 3,529) and 9% of the total customer-hours interrupted (718 of 7,867).
- The fifth lockout occurred on July 24, 2023, when a tree (PSC cause code 02) fell and broke pole 643 on NY-7. This lockout accounted for 6% of the total customers interrupted (210 of 3,529) and 3% of the total customer-hours interrupted (209 of 7,867).
- The sixth lockout occurred on December 30, 2023, when a tree limb (PSC cause code 02) broke at pole 42 on Kautz Hollow Road. This lockout accounted for 10% of the total customers interrupted (340 of 3,529) and 12% of the total customer-hours interrupted (950 of 7,867).
- Trees were the leading cause of interruptions on the Boyntonville 33351 in 2023, accounting for 43% of total interruptions (18 of 42). Equipment Failures were the 2nd leading cause of interruptions, accounting for 29% of total interruptions (12 of 42). Unknown were the 3rd leading cause of interruptions, accounting for 17% of total interruptions (7 of 42).
- Trees were the leading cause of customers interrupted (CI) on the Boyntonville 33351 in 2023, accounting for 45% of total customers interrupted (1,591 of 3,529). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 19% of total customers interrupted (661 of 3,529). Unknown were the 3rd leading cause of customers interrupted, accounting for 18% of total customers interrupted (624 of 3,529).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Boyntonville 33351 in 2023, accounting for 50% of total customer-hours interrupted (3,959 of 7,867). Unknown were the 2nd leading cause of customer-hours interrupted, accounting for 24% of total customer-hours interrupted (1,918 of 7,867). Accidents were the 3rd leading cause of customer-hours interrupted, accounting for 12% of total customer-hours interrupted (934 of 7,867).
- Of the 42 interruptions on this circuit, 21 affected 10 customers or less, with 11 being single customer outages.

Actions Taken:

- There are six (6) 3-phase reclosers and eight (8) cutout-mounted reclosers on the Boyntonville 33351. These reclosers have assisted with minimizing customers interrupted and customer-hours interrupted since they were installed.
- A maintenance foot patrol was completed on the Boyntonville 33351 in 2023 and all identified level 1 maintenance has been completed.
- Tree trimming and a hazard tree review was completed on the Boyntonville 33351 in 2020.
- Switching was completed to significantly reduce the number of customers downstream of the recloser on Kautz Hollow Road which will significantly minimize the number of customers interrupted and customer-hours interrupted in the event of a sustained outage.

Action Plan:

- Complete all identified level 2 and 3 maintenance on the Boyntonville 33351.
- Tree trimming and a hazard tree review are scheduled to be performed on the Boyntonville 33351 in 2026.
- Capital improvement work is scheduled to relocate an existing recloser closer to the nearby intersection, thereby adding to its zone of protection which will assist in minimizing the number of customers interrupted and customer-hours interrupted in the event of a sustained outage.
- Capital improvement work is scheduled to install a recloser on NY-7, just west of the intersection with Kautz Hollow Road, which will assist in minimizing customers interrupted and customer-hours interrupted in the event of a sustained outage as well as prevent sustained outages that, otherwise, would have been momentary in nature.
- Capital improvement work is scheduled to install a recloser on NY-7, just east of the intersection with Babcock Lake Road, which will assist in minimizing customers interrupted and customer-hours interrupted in the event of a sustained outage as well as prevent sustained outages that, otherwise, would have been momentary in nature.
- Capital improvement work is scheduled to install a recloser on Parker School Road which will assist in decreasing customers interrupted and customer-hours interrupted in the event of a sustained outage as well as prevent sustained outages that, otherwise, would have been momentary in nature.
- Capital improvement work is scheduled to install a recloser on Babcock Lake Road which will assist in minimizing customers interrupted and customer-hours interrupted in the event of a sustained outage as well as prevent sustained outages that, otherwise, would have been momentary in nature.
- Capital improvement work is scheduled to install fault indicators down Kautz Hollow Road which will significantly reduce restoration times by allowing restoration crews to better locate the cause of a sustained outage.
- Capital improvement work is scheduled to extend distribution along Lakeview Road to split the load around Babcock Lake, thereby minimizing customers interrupted and customer-hours interrupted in the event of a sustained outage.

11. FRONT STREET 36051 – 13.2 kV

Profile: 3,326 Customers, 34.7 Circuit Miles

Indices: CAIDI = 1.95, SAIFI = 1.70

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	6	20.00%	1,266	22.36%	2,632	23.80%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	13	43.33%	269	4.75%	555	5.02%
6	ACCIDENTS	4	13.33%	309	5.46%	384	3.47%
7	PREARRANGED	2	6.67%	132	2.33%	57	0.52%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	5	16.67%	3,687	65.11%	7,429	67.19%
Totals		30	100.00%	5,663	100.00%	11,056	100.00%

Problem Analysis:

- There were 30 interruptions on the Front Street 36051 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 30 events occurred at the distribution level.
- The distribution circuit breaker for the Front Street 36051 experienced 0 momentary operations in 2023.
- The distribution circuit breaker for the Front Street 36051 experienced 1 sustained operation (lockout) in 2023. This interruption accounted for 59% of the total amount of customers interrupted (3,320 out of 5,663) and 63% of the total amount of the customer-hours interrupted (6,965 out of 11,056).
 - This lockout occurred on July 09, 2023, coded as a cause of unknown (PSC cause code 10). This lockout accounted for 59% of the total customers interrupted (3,320 of 5,663), and 63% of the total customer-hours interrupted (6,965 of 11,056).
- Equipment Failures were the leading cause of interruptions on the Front Street 36051 in 2023, accounting for 43% of total interruptions (13 of 30). Trees were the 2nd leading cause of interruptions, accounting for 20% of total interruptions (6 of 30). Unknown were the 3rd leading cause of interruptions, accounting for 17% of total interruptions (5 of 30).
- Unknown were the leading cause of customers interrupted (CI) on the Front Street 36051 in 2023, accounting for 65% of total customers interrupted (3,687 of 5,663). Trees were the 2nd leading cause of customers interrupted, accounting for 22% of total customers interrupted (1,266 of 5,663). Accidents were the 3rd leading cause of customers interrupted, accounting for 5% of total customers interrupted (309 of 5,663).

- Unknown were the leading cause of customer-hours interrupted (CHI) on the Front Street 36051 in 2023, accounting for 67% of total customer-hours interrupted (7,429 of 11,056). Trees were the 2nd leading cause of customer-hours interrupted, accounting for 24% of total customer-hours interrupted (2,632 of 11,056). Equipment Failures were the 3rd leading cause of customer-hours interrupted, accounting for 5% of total customer-hours interrupted (555 of 11,056).
- Of the 30 interruptions on this circuit, 13 affected 10 customers or less, with 4 being single customer outages.

Actions Taken:

- There are three (3) 3-phase reclosers on the Front Street 36051. These reclosers have assisted with minimizing customers interrupted and customer-hours interrupted since they were installed.
- A maintenance foot patrol was completed on the Front Street 36051 in 2019 and all identified level 1 and 2 maintenance has been completed.
- Tree trimming and a hazard tree review was completed on the Front Street 36051 in 2019.

Action Plan:

- Complete all identified level 3 maintenance on the Front Street 36051.
- Tree trimming and a hazard tree review are scheduled to be performed on the Front Street 36051 in 2024.
- A maintenance foot patrol is scheduled to be performed on the Front Street 36051 in 2024.
- Engineering to review if additional 3-phase reclosers will assist in minimizing customers interrupted and customer-hours interrupted; to install if warranted.
- A capital improvement project is scheduled to relieve overloaded ratio transformers on the Front Street 36051, by 2027, by converting Glen Avenue from 4.16 kV to 13.2 kV. This will also enable the use of feeder ties to the Scotia 25577 and the Scotia 25578 in the event of a sustained outage.

12. HOAGS CORNERS 22151 – 13.2 kV

Profile: 971 Customers, 56.2 Circuit Miles

Indices: CAIDI = 4.74, SAIFI = 1.49

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	14	63.64%	1,144	79.11%	6,232	90.99%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	5	22.73%	61	4.22%	149	2.17%
6	ACCIDENTS	1	4.55%	1	0.07%	2	0.04%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	1	4.55%	44	3.04%	73	1.06%
10	UNKNOWN	1	4.55%	196	13.55%	393	5.74%
Totals		22	100.00%	1,446	100.00%	6,849	100.00%

Problem Analysis:

- There were 22 interruptions on the Hoags Corners 22151 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 22 events occurred at the distribution level.
- The distribution circuit breaker for the Hoags Corners 22151 experienced 1 momentary operation in 2023.
- The distribution circuit breaker for the Hoags Corners 22151 experienced 0 sustained operations (lockouts) in 2023.
- The Hoags Corners 22151 experienced two (2) sustained 3-phase recloser operations in 2023. These interruptions accounted for 41% of the total amount of customers interrupted (589 of 1,446) and 72% of the total amount of the customer-hours interrupted (4,913 of 6,849).
 - The first lockout occurred on July 16, 2023, when a tree limb (PSC cause code 02) fell at pole 86 on NY-66. This lockout accounted for 20% of the total customers interrupted (290 of 1,446) and 34% of the total customer-hours interrupted (2,307 of 6,849).
 - The second lockout occurred on July 27, 2023, when a tree (PSC cause code 02) took down primary at pole 4 and between pole 8 and pole 11 on Nassau Road. This lockout accounted for 21% of the total customers interrupted (299 of 1,446) and 38% of the total customer-hours interrupted (2,606 of 6,849).
- Trees were the leading cause of interruptions on the Hoags Corners 22151 in 2023, accounting for 64% of total interruptions (14 of 22). Equipment Failures were the 2nd

leading cause of interruptions, accounting for 23% of total interruptions (5 of 22). Accidents were the 3rd leading cause of interruptions, accounting for 5% of total interruptions (1 of 22).

- Trees were the leading cause of customers interrupted (CI) on the Hoags Corners 22151 in 2023, accounting for 79% of total customers interrupted (1,144 of 1,446). Unknown were the 2nd leading cause of customers interrupted, accounting for 14% of total customers interrupted (196 of 1,446). Equipment Failures were the 3rd leading cause of customers interrupted, accounting for 4% of total customers interrupted (61 of 1,446).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Hoags Corners 22151 in 2023, accounting for 91% of total customer-hours interrupted (6,232 of 6,849). Unknown were the 2nd leading cause of customer-hours interrupted, accounting for 6% of total customer-hours interrupted (393 of 6,849). Equipment Failures were the 3rd leading cause of customer-hours interrupted, accounting for 2% of total customer-hours interrupted (149 of 6,849).
- Of the 22 interruptions on this circuit, 10 affected 10 customers or less, with 5 being single customer outages.

Actions Taken:

- There are three (3) 3-phase reclosers and four (4) cutout-mounted reclosers on the Hoags Corners 22151. These reclosers have assisted with minimizing customers interrupted and customer-hours interrupted since they were installed.
- A maintenance foot patrol was completed on the Hoags Corners 22151 in 2022 and all identified level 1 and 2 maintenance has been completed.
- Tree trimming and a hazard tree review was completed on the Hoags Corners 22151 in 2020.

Action Plan:

- Complete all identified level 3 maintenance on the Hoags Corners 22151.
- Tree trimming and a hazard tree review are scheduled to be performed on the Hoags Corners 22151 in 2025.
- A thorough review of all protective device settings will be conducted to ensure proper coordination between the substation breaker and all downstream reclosers; corrections to settings will be made should it be discovered that a miscoordination exists
- Capital improvement work is scheduled to improve reliability and protection coordination via the reconfiguration and installation of switches, fuses, and cutout-mounted reclosers.
- Capital improvement work is scheduled to remove approximately 0.11 miles of rear-lot distribution and installing new distribution along Gardner Hill Road, thereby significantly reducing sustained, tree-related outages as well as decreasing restoration times due to the distribution being more accessible to restoration crews.
- Capital improvement work is scheduled to remove approximately 0.12 miles of rear-lot distribution and installing new distribution along Town Garage Road, thereby significantly reducing sustained, tree-related outages as well as decreasing restoration times due to the distribution being more accessible to restoration crews.

13. SWAGGERTOWN 36451 – 13.2 kV

Profile: 1,778 Customers, 28.8 Circuit Miles

Indices: CAIDI = 1.36, SAIFI = 2.51

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	6	35.29%	3,091	69.15%	4,429	73.12%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	7	41.18%	28	0.63%	47	0.78%
6	ACCIDENTS	1	5.88%	1,298	29.04%	1,506	24.87%
7	PREARRANGED	1	5.88%	11	0.25%	9	0.15%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	2	11.76%	42	0.94%	65	1.08%
Totals		17	100.00%	4,470	100.00%	6,057	100.00%

Problem Analysis:

- There were 17 interruptions on the Swaggertown 36451 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 17 events occurred at the distribution level.
- The distribution circuit breaker for the Swaggertown 36451 experienced 0 momentary operations in 2023.
- The distribution circuit breaker for the Swaggertown 36451 experienced 1 sustained operation (lockout) in 2023. This interruption accounted for 40% of the total amount of customers interrupted (1,777 out of 4,470) and 46% of the total amount of the customer-hours interrupted (2,808 out of 6,057).
 - This lockout occurred on August 15, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 40% of the total customers interrupted (1,777 of 4,470), and 46% of the total customer-hours interrupted (2,808 of 6,057).
- Equipment Failures were the leading cause of interruptions on the Swaggertown 36451 in 2023, accounting for 41% of total interruptions (7 of 17). Trees were the 2nd leading cause of interruptions, accounting for 35% of total interruptions (6 of 17). Unknown were the 3rd leading cause of interruptions, accounting for 12% of total interruptions (2 of 17).
- Trees were the leading cause of customers interrupted (CI) on the Swaggertown 36451 in 2023, accounting for 69% of total customers interrupted (3,091 of 4,470). Accidents were the 2nd leading cause of customers interrupted, accounting for 29% of total customers interrupted (1,298 of 4,470). Unknown were the 3rd leading cause of customers interrupted, accounting for 1% of total customers interrupted (42 of 4,470).

- Trees were the leading cause of customer-hours interrupted (CHI) on the Swaggertown 36451 in 2023, accounting for 73% of total customer-hours interrupted (4,429 of 6,057). Accidents were the 2nd leading cause of customer-hours interrupted, accounting for 25% of total customer-hours interrupted (1,506 of 6,057). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 1% of total customer-hours interrupted (65 of 6,057).
- Of the 17 interruptions on this circuit, 12 affected 10 customers or less, with 2 being single customer outages.

Actions Taken:

- There are two (2) 3-phase reclosers on the Swaggertown 36451. These reclosers have assisted with minimizing customers interrupted and customer hours interrupted since they were installed.
- A maintenance foot patrol was completed on the Swaggertown 36451 in 2023 and all identified level 1 maintenance has been completed.
- Tree trimming and a hazard tree review was completed on the Swaggertown 36451 in 2021.

Action Plan:

- Complete all identified level 2 and level 3 maintenance on the Swaggertown 36451.
- Tree trimming and a hazard tree review is scheduled to be performed on the Swaggertown 36451 in 2026.
- Engineering to review if additional 3-phase reclosers will assist in minimizing customers interrupted and customer-hours interrupted; to install if warranted.

14. OATHOUT LANE 40251 – 13.2 kV

Profile: 1,011 Customers, 18.2 Circuit Miles

Indices: CAIDI = 2.13, SAIFI = 2.33

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	5	35.71%	232	9.85%	1,459	29.07%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	5	35.71%	2,101	89.21%	3,498	69.72%
6	ACCIDENTS	0	0.00%	0	0.00%	0	0.00%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	4	28.57%	22	0.93%	61	1.21%
Totals		14	100.00%	2,355	100.00%	5,017	100.00%

Problem Analysis:

- There were 14 interruptions on the Oathout Lane 40251 in 2023.
- There were 2 transmission interruptions.
 - The first Transmission interruption occurred on October 07, 2023, coded as a cause of deterioration (PSC cause code 05). This lockout accounted for 43% of the total customers interrupted (1,017 of 2,355), and 33% of the total customer-hours interrupted (1,633 of 5,017). A 34.5 kV wire broke at pole 528 on the Maplewood - Latham #9 line during a storm in the area. All customers on the 34.5 kV were affected until this was repaired; customers were placed on neighboring feeders through the use of distribution feeder ties.
 - The second Transmission interruption occurred on October 07, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 43% of the total customers interrupted (1,017 of 2,355), and 32% of the total customer-hours interrupted (1,593 of 5,017). Upon return to service from the previous 34.5 kV-related outage on the same day, the 34.5 kV riser disconnect, 1188, to transformer bank 1 (TB1) failed. To isolate this disconnect on the 34.5 kV side of TB1, all customers were placed on distribution feeder ties for the second time that same day.
- There were no substation interruptions.
- The remaining 12 events occurred at the distribution level.
- The distribution circuit breaker for the Oathout Lane 40251 experienced 2 momentary operations in 2023.
The distribution circuit breaker for the Oathout Lane 40251 experienced 0 sustained operations (lockouts) in 2023.

- Trees were the leading cause of interruptions on the Oathout Lane 40251 in 2023, accounting for 36% of total interruptions (5 of 14). Equipment Failures were the 2nd leading cause of interruptions, accounting for 36% of total interruptions (5 of 14). Unknown were the 3rd leading cause of interruptions, accounting for 29% of total interruptions (4 of 14).
- Equipment Failures were the leading cause of customers interrupted (CI) on the Oathout Lane 40251 in 2023, accounting for 89% of total customers interrupted (2,101 of 2,355). Trees were the 2nd leading cause of customers interrupted, accounting for 10% of total customers interrupted (232 of 2,355). Unknown were the 3rd leading cause of customers interrupted, accounting for 1% of total customers interrupted (22 of 2,355).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the Oathout Lane 40251 in 2023, accounting for 70% of total customer-hours interrupted (3,498 of 5,017). Trees were the 2nd leading cause of customer-hours interrupted, accounting for 29% of total customer-hours interrupted (1,459 of 5,017). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 1% of total customer-hours interrupted (61 of 5,017).
- Of the 14 interruptions on this circuit, 7 affected 12 customers or less, with 4 being single customer outages.

Actions Taken:

- There is one (1) 3-phase recloser on the Oathout Lane 40251. This recloser has assisted with minimizing customers interrupted and customer-hours interrupted since it was installed.
- A maintenance foot patrol was completed on the Oathout Lane 40251 in 2021 and all identified level 1, 2, and 3 maintenance has been completed.
- Tree trimming and a hazard tree review was completed on the Oathout Lane 40251 in 2023.

Action Plan:

- Tree trimming and a hazard tree review are scheduled to be performed on the Oathout Lane 40251 in 2027.
- Engineering to review if additional 3-phase reclosers will assist in minimizing customers interrupted and customer-hours interrupted; to install if warranted.
- Engineering to review if the addition of cutout-mounted reclosers will assist in minimizing customers interrupted and customer-hours interrupted; to install if warranted.

15. LANSINGBURG 09313 – 13.2 kV

Profile: 519 Customers, 2.7 Circuit Miles

Indices: CAIDI = 6.07, SAIFI = 2.93

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	0	0.00%	0	0.00%	0	0.00%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	2	28.57%	31	2.04%	78	0.84%
6	ACCIDENTS	2	28.57%	1,227	80.78%	8,718	94.55%
7	PREARRANGED	2	28.57%	224	14.75%	353	3.83%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	1	14.29%	37	2.44%	72	0.78%
Totals		7	100.00%	1,519	100.00%	9,221	100.00%

Problem Analysis:

- There were 7 interruptions on the Lansingburg 09313 in 2023.
- There were no transmission interruptions.
- There were 2 substation interruptions.
 - The first Substation interruption occurred on May 19, 2023, when a squirrel (PSC cause code 06) came in contact with the bus, causing a fault. This lockout accounted for 40% of the total customers interrupted (615 of 1,519), and 14% of the total customer-hours interrupted (1,282 of 9,221).
 - The second Substation interruption occurred on July 29, 2023, when a squirrel (PSC cause code 06) damaged a switch within the substation. This lockout accounted for 40% of the total customers interrupted (612 of 1,519), and 81% of the total customer-hours interrupted (7,436 of 9,221).
- The remaining 5 events occurred at the distribution level.
- The distribution circuit breaker for the Lansingburg 09313 experienced 1 momentary operation in 2023.
- The distribution circuit breaker for the Lansingburg 09313 experienced 1 sustained operation (lockout) in 2023. This interruption accounted for 13% of the total amount of customers interrupted (196 out of 1,519) and 3% of the total amount of the customer-hours interrupted (322 out of 9,221).
 - This lockout occurred on April 18, 2023, due to a planned voltage conversion from 4.16 kV to 13.2 kV (PSC cause code 07). This lockout accounted for 13% of the total customers interrupted (196 of 1,519), and 3% of the total customer-hours interrupted (322 of 9,221).

- The two (2) substation interruptions, combined with the single circuit breaker lockout, accounted for 94% of the total customers interrupted (1,423 of 1,519) and 98% of the total customer-hours interrupted (9,040 of 9,221).
- Equipment Failures were the leading cause of interruptions on the Lansingburg 09313 in 2023, accounting for 29% of total interruptions (2 of 7). Accidents were the 2nd leading cause of interruptions, accounting for 29% of total interruptions (2 of 7). Prearranged were the 3rd leading cause of interruptions, accounting for 29% of total interruptions (2 of 7).
- Accidents were the leading cause of customers interrupted (CI) on the Lansingburg 09313 in 2023, accounting for 81% of total customers interrupted (1,227 of 1,519). Prearranged were the 2nd leading cause of customers interrupted, accounting for 15% of total customers interrupted (224 of 1,519). Unknown were the 3rd leading cause of customers interrupted, accounting for 2% of total customers interrupted (37 of 1,519).
- Accidents were the leading cause of customer-hours interrupted (CHI) on the Lansingburg 09313 in 2023, accounting for 95% of total customer-hours interrupted (8,718 of 9,221). Prearranged were the 2nd leading cause of customer-hours interrupted, accounting for 4% of total customer-hours interrupted (353 of 9,221). Equipment Failures were the 3rd leading cause of customer-hours interrupted, accounting for 1% of total customer-hours interrupted (78 of 9,221).
- Of the 7 interruptions on this circuit, 1 affected 10 customers or less, with 1 being single customer outages.

Actions Taken:

- A maintenance foot patrol was completed on the Lansingburgh 09313 in 2021 and all identified level 1 and 2 maintenance has been completed.
- Tree trimming and a hazard tree review was completed on the Lansingburgh 09313 in 2021.
- Capital improvement work has been completed to convert a majority of the Lansingburgh 09313 to 13.2 kV and transfer the load to neighboring feeders as part of a larger project to retire the Lansingburgh substation; the Lansingburgh 09313 is now 0.52 miles long, comprised of only 56 customers.

Action Plan:

- Complete all identified level 3 maintenance on the Lansingburgh 09313.
- Tree trimming and a hazard tree review are scheduled to be performed on the Lansingburgh 09313 in 2026.
- Capital improvement work is scheduled to split load on a service transformer that is currently serving more customers than typical, thereby minimizing customers interrupted and customer-hours interrupted in the event of a sustained outage.

16. WATT STREET 23052 – 13.2 kV

Profile: 2,450 Customers, 19.7 Circuit Miles

Indices: CAIDI = 1.28, SAIFI = 2.06

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	3	15.79%	16	0.32%	38	0.59%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	3	15.79%	2,467	48.86%	4,105	63.57%
6	ACCIDENTS	4	21.05%	47	0.93%	90	1.40%
7	PREARRANGED	2	10.53%	20	0.40%	25	0.39%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	7	36.84%	2,499	49.49%	2,199	34.06%
Totals		19	100.00%	5,049	100.00%	6,458	100.00%

Problem Analysis:

- There were 19 interruptions on the Watt Street 23052 in 2023.
- There were 2 transmission interruptions.
 - The first Transmission interruption occurred on June 04, 2023, coded as a cause of fire on company equipment (PSC cause code 05). This lockout accounted for 49% of the total customers interrupted (2,455 of 5,049), and 63% of the total customer-hours interrupted (4,092 of 6,458).
 - The second Transmission interruption occurred on October 09, 2023, coded as a cause of unknown (PSC cause code 10). This lockout accounted for 48% of the total customers interrupted (2,445 of 5,049), and 32% of the total customer-hours interrupted (2,061 of 6,458).
- There were no substation interruptions.
- The remaining 17 events occurred at the distribution level.
- The distribution circuit breaker for the Watt Street 23052 experienced 2 momentary operations in 2023.
- The distribution circuit breaker for the Watt Street 23052 experienced 0 sustained operations (lockouts) in 2023.
- Unknown were the leading cause of interruptions on the Watt Street 23052 in 2023, accounting for 37% of total interruptions (7 of 19). Accidents were the 2nd leading cause of interruptions, accounting for 21% of total interruptions (4 of 19). Trees were the 3rd leading cause of interruptions, accounting for 16% of total interruptions (3 of 19).

- Unknown were the leading cause of customers interrupted (CI) on the Watt Street 23052 in 2023, accounting for 49% of total customers interrupted (2,499 of 5,049). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 49% of total customers interrupted (2,467 of 5,049). Accidents were the 3rd leading cause of customers interrupted, accounting for 1% of total customers interrupted (47 of 5,049).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the Watt Street 23052 in 2023, accounting for 64% of total customer-hours interrupted (4,105 of 6,458). Unknown were the 2nd leading cause of customer-hours interrupted, accounting for 34% of total customer-hours interrupted (2,199 of 6,458). Accidents were the 3rd leading cause of customer-hours interrupted, accounting for 1% of total customer-hours interrupted (90 of 6,458).
- Of the 19 interruptions on this circuit, 15 affected 10 customers or less, with 5 being single customer outages.

Actions Taken:

- There are two (2) 3-phase reclosers on the Watt Street 23052. These reclosers have assisted with minimizing customers interrupted and customer hours interrupted since they were installed.
- A maintenance foot patrol was completed on the Watt Street 23052 in 2023 and all identified level 1 maintenance has been completed.
- Tree trimming and a hazard tree review was completed on the Watt Street 23052 in 2022.

Action Plan:

- Complete all identified level 2 and level 3 maintenance on the Watt Street 23052.
- Tree trimming and a hazard tree review are scheduled to be performed on the Watt Street 23052 in 2027.
- Engineering to review if additional 3-phase reclosers will assist in minimizing customers interrupted and customer-hours interrupted; to install if warranted.

3. ACTION PLAN SUMMARIES

a. SUMMARY OF ACTION ITEM PLANS FOR 2023 WORST PERFORMING
CIRCUITS

Station	Feeder	Report Year	Action Plan	Estimated Completion Date	Comments
Curry Road	36552	2023	Tree trimming and hazard tree review.	3/2026	
Curry Road	36552	2023	New 3-phase recloser installation review.	3/2025	
Curry Road	36552	2023	Existing 3-phase recloser settings review.	3/2025	
Curry Road	36552	2023	Fault indicator installation review.	3/2025	
Curry Road	36552	2023	Curry Road 36552 / Pinebush 37153 tie.	3/2029	
Brunswick	26453	2023	Complete level 3 maintenance.	3/2025	
Brunswick	26453	2023	Tree trimming and hazard tree review.	3/2025	
Brunswick	26453	2023	Protection coordination study.	3/2025	
Brunswick	26453	2023	NY-2 recloser installation.	3/2025	
Brunswick	26453	2023	Taconic Lake Road tie.	3/2025	
Brunswick	26453	2023	White Church Road conversion.	3/2026	
Brunswick	26453	2023	Moonlawn Road conversion.	3/2025	
Brunswick	26453	2023	Tamarac Road conversion.	3/2027	
Everett Road	42051	2023	3-phase recloser location review.	3/2025	
Everett Road	42051	2023	Cutout-mounted recloser location review.	3/2025	
Everett Road	42051	2023	Complete level 3 maintenance.	3/2025	
Everett Road	42051	2023	Tree trimming and hazard tree review.	3/2025	
Brunswick	26452	2023	Complete level 2 maintenance.	3/2025	
Brunswick	26452	2023	Complete level 3 maintenance.	3/2025	
Brunswick	26452	2023	Tree trimming and hazard tree review.	3/2025	
Brunswick	26452	2023	Protection coordination study.	3/2025	
Brunswick	26452	2023	Weatherwax Road recloser installation.	3/2025	
Brunswick	26452	2023	Blue Factory Road conversion.	3/2025	
Brunswick	26452	2023	Blue Factory Road tie.	3/2025	
Brunswick	26452	2023	Swankey Road rear lot removal.	3/2025	
Brunswick	26452	2023	Fifty Six Road rear lot removal.	3/2025	
Brunswick	26452	2023	Abbott Drive conversion.	3/2026	
Brunswick	26452	2023	Clement Drive conversion.	3/2026	
Brunswick	26452	2023	Averill Park Road conversion.	3/2027	
Brunswick	26452	2023	White Church Road conversion.	3/2027	
Blue Stores	30353	2023	Tree trimming and hazard tree review.	3/2025	
Blue Stores	30353	2023	Complete level 3 maintenance.	3/2025	
Blue Stores	30353	2023	Bells Pond Road conversion.	3/2025	
Blue Stores	30353	2023	County Route 27 3-phase extension.	3/2027	
Blue Stores	30353	2023	Albany Post Road rear lot relocation.	3/2027	
Blue Stores	30353	2023	Switch installation.	3/2025	
North Troy	12353	2023	Tree trimming and hazard tree review.	3/2028	
North Troy	12353	2023	Protective device settings review.	3/2025	
North Troy	12353	2023	North Troy to Sycaway switching.	3/2025	
North Troy	12353	2023	Protection coordination study.	3/2025	
North Troy	12353	2023	Frear Park View conversion.	3/2025	
North Troy	12353	2023	Gypsy Lane rear lot removal.	3/2026	
North Troy	12353	2023	Bellview Road conversion.	3/2025	
Curry Road	36557	2023	Tree trimming and hazard tree review.	3/2026	
Curry Road	36557	2023	Maintenance foot patrol.	3/2027	
Curry Road	36557	2023	Fusing coordination review.	3/2025	
Burdeck St	26553	2023	Tree trimming and hazard tree review.	3/2026	

Station	Feeder	Report Year	Action Plan	Estimated Completion Date	Comments
Burdeck St	26553	2023	Maintenance foot patrol.	3/2026	
Burdeck St	26553	2023	New 3-phase recloser installation review.	3/2025	
Burdeck St	26553	2023	Rear lot removal review.	3/2025	
Burdeck St	26553	2023	Complete level 3 maintenance.	3/2025	
Hemstreet	32851	2023	Tree trimming and hazard tree review.	3/2029	
Hemstreet	32851	2023	Protective device settings review.	3/2025	
Hemstreet	32851	2023	Protection coordination study.	3/2025	
Hemstreet	32851	2023	Johnsonville Road recloser installation.	3/2025	
Hemstreet	32851	2023	Hemstreet Road tie.	3/2025	
Hemstreet	32851	2023	Ridge Road rear lot removal.	3/2025	
Hemstreet	32851	2023	Farm to Market Road rear lot removal.	3/2026	
Front St	36051	2023	Tree trimming and hazard tree review.	3/2025	
Front St	36051	2023	Maintenance foot patrol.	3/2025	
Front St	36051	2023	New 3-phase recloser installation review.	3/2025	
Front St	36051	2023	Glen Avenue conversion.	3/2028	
Front St	36051	2023	Complete level 3 maintenance.	3/2025	
Boyntonville	33351	2023	Complete level 2 maintenance.	3/2025	
Boyntonville	33351	2023	Complete level 3 maintenance.	3/2025	
Boyntonville	33351	2023	Tree trimming and hazard tree review.	3/2026	
Boyntonville	33351	2023	NY-7 recloser relocation.	3/2024	
Boyntonville	33351	2023	NY-7 recloser installation (East).	3/2025	
Boyntonville	33351	2023	NY-7 recloser installation (West).	3/2024	
Boyntonville	33351	2023	Parker School Road recloser installation.	3/2025	
Boyntonville	33351	2023	Babcock Lake recloser installation.	3/2025	
Boyntonville	33351	2023	Kautz Hollow Road fault indicators.	3/2025	
Boyntonville	33351	2023	Babcock Lake load split.	3/2025	
Swaggertown	36451	2023	Tree trimming and hazard tree review.	3/2027	
Swaggertown	36451	2023	New 3-phase recloser installation review.	3/2025	
Swaggertown	36451	2023	Complete level 2 maintenance.	3/2025	
Swaggertown	36451	2023	Complete level 3 maintenance.	3/2026	
Oathout Lane	40251	2023	Cutout-mounted recloser location review	3/2025	
Oathout Lane	40251	2023	Fuse coordination review.	3/2025	
Oathout Lane	40251	2023	Tree trimming and hazard tree review	3/2025	
Hoags Corners	22151	2023	Complete level 3 maintenance.	3/2025	
Hoags Corners	22151	2023	Tree trimming and hazard tree review.	3/2025	
Hoags Corners	22151	2023	Protective device settings review.	3/2025	
Hoags Corners	22151	2023	Protection coordination study.	3/2025	
Hoags Corners	22151	2023	Gardner Hill Road rear lot removal.	3/2025	
Hoags Corners	22151	2023	Town Garage Road rear lot removal.	3/2025	
Watt St	23052	2023	New 3-phase recloser installation review.	3/2025	
Watt St	23052	2023	Complete level 2 maintenance.	3/2025	
Watt St	23052	2023	Complete level 3 maintenance.	3/2026	
Lansingburgh	09313	2023	Complete level 3 maintenance.	3/2025	
Lansingburgh	09313	2023	Tree trimming and hazard tree review.	3/2026	
Lansingburgh	09313	2023	Service transformer load split.	3/2025	

b. STATUS OF ACTION PLANS FOR 2022 WORST PERFORMING CIRCUITS

Station	Feeder	Year	Action Plan	Estimated Completion Date	Comments
Hudson	08753	2022	Complete level 1 maintenance.	3/2024	Complete.
Hudson	08753	2022	Complete level 2 maintenance.	3/2024	Complete.
Hudson	08753	2022	Complete level 3 maintenance.	3/2024	Complete.
Hudson	08753	2022	Loadbreak disconnect with shunt fuse.	3/2024	Complete.
Hudson	08753	2022	Mill Street 3-phase recloser.	3/2024	Complete.
Hudson	08753	2022	Howard Avenue cutout-mounted recloser.	3/2024	On Schedule.
Hudson	08753	2022	Michael Court conversion.	3/2025	On Schedule.
Hudson	08753	2022	Fusing coordination.	3/2024	On Schedule.
Hudson	08753	2022	Switch installation.	3/2024	On Schedule.
Altamont	28355	2022	3-phase recloser location review.	3/2024	Complete.
Altamont	28355	2022	3-phase recloser installation.	3/2024	On Schedule.
Altamont	28355	2022	Cutout-mounted recloser installation.	3/2024	Complete.
Greenbush	07856	2022	Complete level 3 maintenance.	3/2024	Complete.
Greenbush	07856	2022	Philips Road conversion.	3/2026	On Schedule.
Greenbush	07856	2022	3-phase recloser location review.	3/2024	Complete.
Greenbush	07856	2022	Cutout-mounted recloser location review.	3/2024	Complete.
Greenbush	07852	2022	Complete level 3 maintenance.	3/2024	Complete.
Greenbush	07852	2022	3-phase recloser location review.	3/2024	Complete.
Greenbush	07852	2022	Cutout-mounted recloser review.	3/2024	Complete.
Pinebush	37152	2022	Complete level 3 maintenance.	3/2024	On Schedule.
Pinebush	37152	2022	3-phase recloser location review.	3/2024	On Schedule.
Pinebush	37152	2022	Cutout-mounted recloser review.	3/2024	On Schedule.
Pinebush	37152	2022	Tree trimming.	3/2024	Complete.
Hoosick	31452	2022	Tree trimming.	3/2028	On Schedule.
Hoosick	31452	2022	High Street conversion.	3/2024	On Schedule.
Hoosick	31452	2022	County Highway 68 conversion.	3/2024	On Schedule.
Hoosick	31452	2022	Fusing coordination.	3/2024	On Schedule.
Hoosick	31452	2022	Cutout-mounted recloser installation.	3/2024	On Schedule.
Hoosick	31452	2022	Switch installation.	3/2024	On Schedule.
Blue Stores	30351	2022	Complete level 1 maintenance.	3/2024	Complete.
Blue Stores	30351	2022	Complete level 2 maintenance.	3/2024	Complete.
Blue Stores	30351	2022	Complete level 3 maintenance.	3/2024	On Schedule.
Blue Stores	30351	2022	3-phase recloser installation.	3/2024	On Schedule.
Blue Stores	30351	2022	Fusing coordination.	3/2024	On Schedule.
Blue Stores	30351	2022	Cutout-mounted recloser installation.	3/2024	Complete.
Blue Stores	30351	2022	Switch installation.	3/2024	On Schedule.
Hemstreet	32851	2022	Complete level 3 maintenance.	3/2024	Complete.
Hemstreet	32851	2022	Tree trimming.	3/2024	On Schedule.
Hemstreet	32851	2022	Hoosic River rear lot removal.	3/2025	On Schedule.
Hemstreet	32851	2022	3-phase recloser installation.	3/2024	Complete.
Hemstreet	32851	2022	Cutout-mounted recloser installation.	3/2024	On Schedule.
Hemstreet	32851	2022	Switch installation.	3/2024	On Schedule.

Station	Feeder	Year	Action Plan	Estimated Completion Date	Comments
Boyntonville	33351	2022	Complete level 3 maintenance.	3/2024	On Schedule.
Boyntonville	33351	2022	Tree trimming.	3/2027	On Schedule.
Boyntonville	33351	2022	3-phase recloser relocation.	3/2024	On Schedule.
Boyntonville	33351	2022	3-phase recloser installation.	3/2024	On Schedule.
Boyntonville	33351	2022	Cutout-mounted recloser installation.	3/2024	On Schedule.
Boyntonville	33351	2022	Switch installation.	3/2024	On Schedule.
Boyntonville	33351	2022	Fault indicators installation.	3/2024	On Schedule.
Menands	10153	2022	Complete level 3 maintenance.	3/2024	Complete.
Menands	10153	2022	3-phase recloser location review.	3/2024	Complete.
Menands	10153	2022	Cutout-mounted recloser review.	3/2024	On Schedule.
Schodack	45152	2022	Complete level 2 maintenance.	3/2024	Complete.
Schodack	45152	2022	3-phase recloser installation.	3/2024	Complete.
Schodack	45152	2022	Cutout-mounted recloser review.	3/2024	On Schedule.
Hudson	08751	2022	Complete level 1 maintenance.	3/2024	Complete.
Hudson	08751	2022	Complete level 2 maintenance.	3/2024	Complete.
Hudson	08751	2022	Complete level 3 maintenance.	3/2024	Complete.
Hudson	08751	2022	Fusing coordination.	3/2024	On Schedule.
Hudson	08751	2022	Cutout-mounted recloser installation.	3/2024	On Schedule.
Hudson	08751	2022	Switch installation.	3/2024	On Schedule.
Stuyvesant	03551	2022	Complete level 1 maintenance.	3/2024	Complete.
Stuyvesant	03551	2022	Complete level 2 maintenance.	3/2024	Complete.
Stuyvesant	03551	2022	Complete level 3 maintenance.	3/2024	Complete.
Stuyvesant	03551	2022	Day Road fusing coordination.	3/2024	Complete.
Stuyvesant	03551	2022	Rossman Road rear lot removal.	3/2025	On Schedule.
Stuyvesant	03551	2022	Stuyvesant 51 and Hudson 52 loop scheme.	3/2027	On Schedule.
Stuyvesant	03551	2022	Cutout-mounted recloser installation.	3/2024	On Schedule.
Stuyvesant	03551	2022	Switch installation.	3/2024	On Schedule.
Hoosick	31451	2022	Hoosick 31451 overloaded ratio.	3/2028	On Schedule.
Hoosick	31451	2022	Eddy Road overloaded ratio.	3/2025	On Schedule.
Hoosick	31451	2022	Fusing coordination.	3/2024	On Schedule.
Hoosick	31451	2022	Cutout-mounted recloser installation.	3/2024	On Schedule.
Hoosick	31451	2022	Switch installation.	3/2024	On Schedule.
Hoosick	31451	2022	Recloser installation.	3/2024	On Schedule.
Rensselaer	13256	2022	Complete level 3 maintenance.	3/2024	On Schedule.
Rensselaer	13256	2022	3-phase recloser installation.	3/2024	Complete.
Rensselaer	13256	2022	Cutout-mounted recloser review.	3/2024	Complete.
Rensselaer	13256	2022	Tree trimming and hazard tree review.	3/2024	Complete.
Rensselaer	13256	2022	Rensselaer to Reynolds Road load transfer.	3/2024	On Schedule.
Burdeck Street	26551	2022	Maintenance foot patrol.	3/2024	Complete.
Burdeck Street	26551	2022	Fault indicators installation.	3/2024	On Schedule.
Burdeck Street	26551	2022	Cutout-mounted recloser installation.	3/2024	On Schedule.
Burdeck Street	26551	2022	Fusing coordination.	3/2024	On Schedule.
Burdeck Street	26551	2022	Tree trimming.	3/2026	On Schedule.

Station	Feeder	Year	Action Plan	Estimated Completion Date	Comments
Elnora	44258	2022	Complete level 2 maintenance.	3/2024	On Schedule.
Elnora	44258	2022	Complete level 3 maintenance.	3/2024	On Schedule.
Elnora	44258	2022	Cutout-mounted recloser installation.	3/2024	On Schedule.
Elnora	44258	2022	Switchgear inspection.	3/2024	On Schedule.
Elnora	44258	2022	Switch installation.	3/2024	On Schedule.
Elnora	44258	2022	Fault indicators installation.	3/2024	On Schedule.
Elnora	44258	2022	Tree trimming.	3/2028	On Schedule.
Prospect Hill	41351	2022	Tree trimming.	3/2024	Complete.
Prospect Hill	41351	2022	Fusing coordination.	3/2024	On Schedule.
Prospect Hill	41351	2022	Switch installation.	3/2024	On Schedule.
Prospect Hill	41351	2022	3-phase recloser installation.	3/2024	On Schedule.
Greenbush	07854	2022	Complete level 3 maintenance.	3/2024	On Schedule.
Greenbush	07854	2022	3-phase recloser location review.	3/2024	Complete.
Greenbush	07854	2022	Cutout-mounted recloser location review.	3/2024	Complete.
Blue Stores	30353	2022	Complete level 1 maintenance.	3/2024	Complete.
Blue Stores	30353	2022	Complete level 2 maintenance.	3/2024	Complete.
Blue Stores	30353	2022	Complete level 3 maintenance.	3/2024	On Schedule.
Blue Stores	30353	2022	Fusing coordination.	3/2024	Complete.
Blue Stores	30353	2022	Bells Pond Road conversion and rear lot relocation.	3/2025	On Schedule.
Blue Stores	30353	2022	County Route 27 3-phase extension and rear lot relocation.	3/2027	On Schedule.
Blue Stores	30353	2022	3-phase recloser installation.	3/2024	Complete.
Blue Stores	30353	2022	Proper Road conversion.	3/2024	Complete.
Blue Stores	30353	2022	Albany Post Road rear lot relocation.	3/2027	On Schedule.
Blue Stores	30353	2022	Switch installation.	3/2024	On Schedule.

4. OPERATING REGION PERFORMANCE BELOW MINIMUM

a. MAINTENANCE HISTORY AND ANALYSIS OF FACTORS THAT CAUSED THE BELOW MINIMUM PERFORMANCE.

In 2023, the Capital Region failed to meet the PSC minimum CAIDI requirement of 2.025 having not failed to meet the requirement since 2019. The Capital Region failed to meet the target in 2023 with an annual CAIDI of 2.03, only 0.2% above the threshold. Nonetheless, the Capital Region continues to meet its annual SAIFI goal, having met it nine (9) times since 2013. The Capital Region met the SAIFI target of 1.024 in 2023 with an annual SAIFI of 0.91, the lowest since 2014.

In 2023, excluding major storms, the Capital Region experienced 2,747 interruptions. By nature of the system, most of these interruptions (99%) occurred at the distribution level, however, eleven (11) occurred at the transmission level and eight (8) occurred at the substation level.

The eleven (11) transmission interruptions accounted for 17% of the region's total customers interrupted (52,274 of 309,984) and 12% of the region's total customer-hours interrupted (75,126 of 630,735). Overall, transmission interruptions had a CAIDI of 1.44 hours, and a SAIFI of 0.15 interruptions.

The eight (8) substation interruptions accounted for 9% of the region's total customers interrupted (28,348 of 309,984) and 8% of the region's total customer-hours interrupted (50,881 of 630,735). Overall, substation interruptions had a CAIDI of 1.79 hours, and a SAIFI of 0.08 interruptions.

Combined, despite accounting for only 0.7% of the region's total interruptions (19 of 2,747), the transmission and substation interruptions accounted for 26% of the region's total customers interrupted (80,622 of 309,984) and 20% of the region's total customer-hours interrupted (126,007 of 630,735).

Comparing 2022 to 2023, despite the number of transmission interruptions remaining the same, the number of customers interrupted increased from 30,206 to 52,274 (an increase of 73%) and the customer-hours interrupted increased from 44,739 to 75,126 (an increase of 68%).

Comparatively, distribution interruptions decreased from 2,926 to 2,728 (a decrease of 7%), customers interrupted decreased from 283,718 to 229,362 (a decrease of 19%), and customer-hours interrupted decreased from 553,889 to 504,728 (a decrease of 9%).

b. **PLANNED PROGRAMS OR PLANNED CORRECTIVE ACTIONS AND PROPOSED IMPROVEMENTS TO THE PERFORMANCE INDICES.**

The contribution of transmission and substation interruptions played a significant factor to the Capital Region's performance indices, having contributed to 26% of the region's total customers interrupted and 20% of the region's total customer-hours interrupted, despite accounting for only 0.7% of the region's total interruptions.

In addition to the capital improvement work outlined in of each the Capital Region Worst Performing Feeder's Action Plan, below are additional efforts to improve reliability and performance indices in the Capital Region.

- On a monthly basis, the Eastern Division Reliability Team will continue to investigate and analyze outages impacting greater than 2,500 customers or more than 50,000 customer-minutes interrupted (CMI). This effort continues to bring light to interruptions with the greatest impact to CAIDI and SAIFI in an effort implement mitigation methods to reduce the length of the interruption or to have prevented it from occurring at all.
- Review of suitable locations for the installation of additional 3-phase reclosers. These continue to assist in minimizing customers interrupted and customer-hours interrupted in the event of a sustained outage as well as prevent sustained outages that, otherwise, would have been momentary in nature.
- Review of suitable locations for the installation of additional cutout-mounted reclosers. These continue to assist in minimizing customers interrupted and customer-hours interrupted in the event of a sustained outage as well as prevent sustained outages that, otherwise, would have been momentary in nature.
- Review of suitable locations for the installation of switches which will offer significant operational flexibility, allowing additional opportunity to isolate faults, thereby significantly decreasing customer-hours interrupted in the event of a sustained outage.
- Review of protective device coordination to assist in minimizing customers interrupted and customer-hours interrupted in the event of a sustained outage.

D. CENTRAL REGION

1. OPERATING REGIONAL PERFORMANCE

a. HISTORIC CAIDI AND SAIFI INDICES

IDS Info:

	2023	2022	2021	2020	2019	2018
CAIDI (Target 1.899)	1.67	1.84	1.70	1.65	1.65	1.80
SAIFI (Target 1.226)	1.00	1.15	1.40	1.04	1.06	1.17
SAIDI	1.68	2.11	2.37	1.72	1.75	2.11
Interruptions	2,251	2,414	2,479	2,103	2,003	2,313
Customers Interrupted	291,957	333,799	406,484	301,159	305,267	334,013
Customer-Hours Interrupted	488,254	613,424	690,331	495,444	503,716	601,662
Customers Served	290,947	291,189	290,852	288,777	287,348	285,558
Customers Per Interruption	129.70	138.28	163.97	143.20	152.40	144.41
Availability Index	99.9808	99.9760	99.9729	99.9805	99.9800	99.9759
Interruptions/1000 customers	7.74	8.29	8.52	7.28	6.97	8.10

b. DISCUSSION OF REGIONAL PERFORMANCE

In 2023, the Central Region met its CAIDI reliability target and met its SAIFI reliability target as set forth by the New York Public Service Commission (PSC). The final System Average Interruption Frequency Index (SAIFI) result was 1.00 interruption, 18% below the PSC goal of 1.226 interruptions. As shown in the table above, the Customer Average Interruption Duration index (CAIDI) was 1.67 in 2023, 12% below the PSC's regional target of 1.899 hours.

The 2023 CAIDI result was 9% below the 2022 result of 1.84 hours, and 3% below the previous 5-year average of 1.73 hours. The 2023 SAIFI was 13% below the 2022 result of 1.15 interruptions, and 14% below the previous 5-year average of 1.16 interruptions.

In 2023, excluding major storms, the Central Region experienced 15 transmission interruptions. These interruptions accounted for 1% of the region's total interruptions (15 of 2,251), 11% of the region's total customers interrupted (CI), (33,086 of 291,957), and 15% (71,818 of 488,254) of the region's total customer-hours interrupted (CHI). Overall, transmission interruptions had a CAIDI of 2.17 hours, and a SAIFI of 0.11 interruptions.

The number of transmission-related interruptions decreased from 20 in 2022 to 15 in 2023 (a decrease of 25%). The number of customers interrupted decreased from 69,925 in 2022, to 33,086 in 2023 (a decrease of 53%), while the customer-hours interrupted decreased from 126,003 in 2022, to 71,818 in 2023 (a decrease of 43%).

In 2023, excluding major storms, the Central Region experienced 8 substation interruptions. These interruptions accounted for 0.4% of the region's total interruptions (8 of 2,251), 5% of the region's total customers interrupted, (15,514 of 291,957), and 5% (22,691 of 488,254) of the region's total customer-hours interrupted. Overall, substation interruptions had a CAIDI of 1.46 hours, and a SAIFI of 0.05 interruptions.

The number of substation-related interruptions decreased from 13 to 8 from 2022 to 2023 (a decrease of 38%). The number of customers interrupted decreased from 24,456 in 2022, to 15,514 in 2023 (a decrease of 37%), while the customer-hours interrupted decreased from 31,055 in 2022, to 22,691 in 2023 (a decrease of 27%).

In 2023, excluding major storms, the Central Region experienced 2,228 distribution interruptions. These interruptions accounted for 99% of the region's total interruptions (2,228 of 2,251), 83% of the region's total customers interrupted, (243,357 of 291,957), and 81% (393,745 of 488,254) of the region's total customer-hours interrupted. Overall, distribution interruptions had a CAIDI of 1.62 hours, and a SAIFI of 0.84 interruptions.

The number of distribution-related interruptions decreased from 2,381 to 2,228 from 2022 to 2023 (a decrease of 6%). The number of customers interrupted increased from 239,418 in 2022, to 243,357 in 2023 (an increase of 2%), while the customer-hours interrupted decreased from 456,366 in 2022, to 393,745 in 2023 (a decrease of 14%).

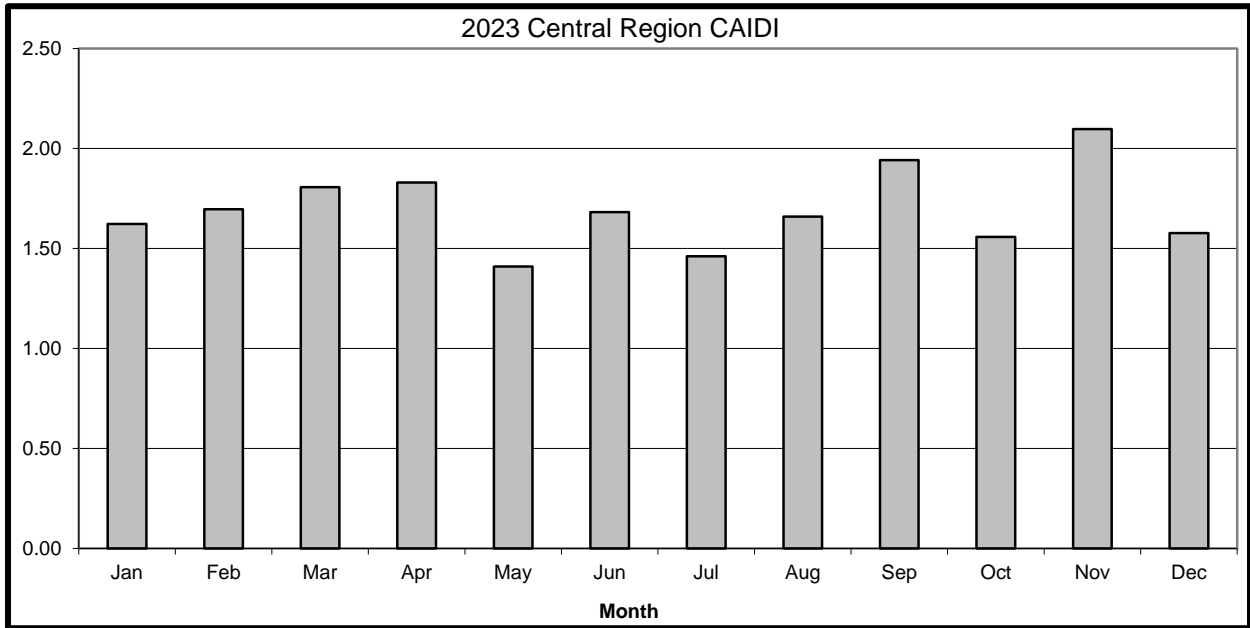
c. MONTHLY CAIDI AND SAIFI GRAPHS

The following graphs show the monthly CAIDI and SAIFI for the Central Region for 2023 (Excluding Major Storms).

Regional CAIDI exceeded the PSC threshold of 1.899 hours in September (1.94) and November (2.10). CAIDI in September was influenced by several long subtransmission interruptions. CAIDI in November was influenced by weather on the 21st.

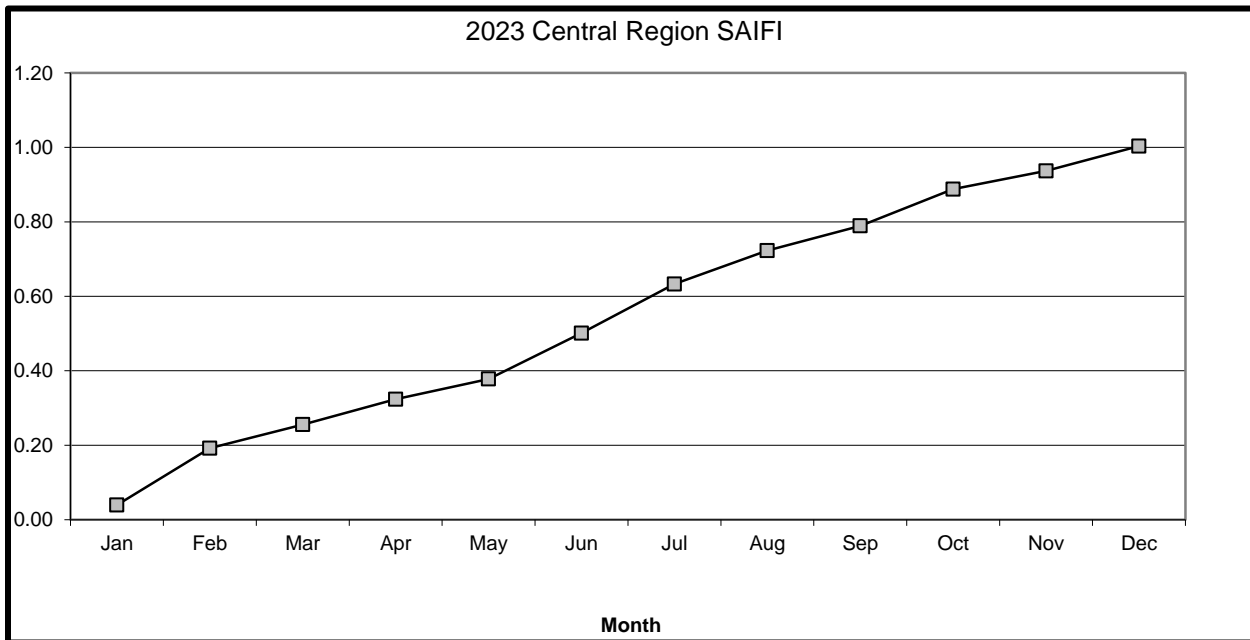
Regional SAIFI was above the monthly thresholds in February (0.15), June (0.12) and July (0.13). February's SAIFI was impacted by a two substation events and a planned interruption of the Mallory-Cleveland 31 Line to replace woodpecker damaged poles. The SAIFI was above the threshold in June due to the loss of the 34.5kV bus at Mallory due to an Osprey nest. July's SAIFI was impacted by a weather event on the 14th.

GRAPH OF MONTHLY CAIDI AND SAIFI FOR CENTRAL REGION



PSC CAIDI Goal:	
Threshold	1.899
2023 Actual	1.67

PSC SAIFI Goal:	
Threshold	1.226
2023 Actual	1.00



d. PSC CAUSE CODES

1) Number of Events by Cause – Historical

IDS Info:

Cause Code	2023	2022	2021	2020	2019	2018
01 Major Storms	-	235	157	143	698	635
02 Tree Contacts	661	682	781	528	500	693
03 Overloads	6	11	10	56	22	69
04 Operator Error	12	17	9	13	5	5
05 Equipment	695	776	774	667	732	688
06 Accidents	426	470	395	455	358	445
07 Prearranged	101	94	125	108	96	81
08 Customer Equip.	-	-	-	1	1	-
09 Lightning	58	97	129	24	36	66
10 Unknown	292	267	256	252	253	266
Total	2,251	2,649	2,636	2,246	2,246	2,948

2) Customers Interrupted by Cause – Historical

IDS Info:

Cause Code	2023	2022	2021	2020	2019	2018
01 Major Storms	-	29,242	21,494	30,121	87,616	96,440
02 Tree Contacts	100,441	113,048	171,635	92,186	78,098	108,612
03 Overloads	72	413	144	4,730	243	1,446
04 Operator Error	1,604	4,953	2,231	7,025	110	7,145
05 Equipment	88,161	133,946	110,069	98,212	108,707	104,157
06 Accidents	68,953	51,917	80,899	54,427	46,402	49,516
07 Prearranged	12,088	6,678	20,632	11,617	17,497	32,038
08 Customer Equip.	-	-	-	18	5	-
09 Lightning	3,462	4,841	5,963	2,691	6,171	4,531
10 Unknown	17,176	18,003	14,911	30,298	48,034	26,568
Total	291,957	363,041	427,978	331,280	392,883	430,453

3) Customer-Hours Interrupted by Cause – Historical

IDS Info:

Cause Code	2023	2022	2021	2020	2019	2018
01 Major Storms	-	119,036	77,026	92,052	370,365	508,277
02 Tree Contacts	169,047	230,936	325,960	150,754	166,050	225,964
03 Overloads	159	996	438	18,050	1,222	3,961
04 Operator Error	1,506	3,544	3,628	8,345	168	4,382
05 Equipment	158,809	242,778	171,910	186,351	173,269	181,626
06 Accidents	91,431	86,826	126,879	72,988	74,079	89,571
07 Prearranged	32,098	7,653	20,260	11,309	26,962	15,378
08 Customer Equip.	-	-	-	26	8	-
09 Lightning	4,058	10,669	15,302	3,628	15,700	15,939
10 Unknown	31,148	30,022	25,950	44,063	46,258	64,843
Total	488,254	732,460	767,354	587,495	874,081	1,109,938

4) Interruptions, Customers Interrupted and Customer-Hours Interrupted - 2023

Cause Code	Interruptions		Customers Interrupted		Customer-Hours Interrupted	
	Number	% Total	Number	% Total	Number	% Total
01 Major Storms	0	0.0%	0	0.0%	0	0.0%
02 Tree Contacts	661	29.4%	100,441	34.4%	169,047	34.6%
03 Overloads	6	0.3%	72	0.0%	159	0.0%
04 Operator Error	12	0.5%	1,604	0.5%	1,506	0.3%
05 Equipment	695	30.9%	88,161	30.2%	158,809	32.5%
06 Accidents	426	18.9%	68,953	23.6%	91,431	18.7%
07 Prearranged	101	4.5%	12,088	4.1%	32,098	6.6%
08 Customer Equip.	0	0.0%	0	0.0%	0	0.0%
09 Lightning	58	2.6%	3,462	1.2%	4,058	0.8%
10 Unknown	292	13.0%	17,176	5.9%	31,148	6.4%
Total	2,251	100.0%	291,957	100.0%	488,254	100.0%

e. **INTERRUPTION REVIEW BY PSC CAUSE CODES**

Cause Code 01 - Major Storms

In 2023, Major Storms accounted for 0% of interruptions, 0% of customers interrupted, and 0% of Customer-Hours Interrupted.

Interruptions due to Major Storm were down 100% from 2022, and down 100% over the 5-year average. Customers interrupted due to Major Storms were down 100% from 2022, and down 100% over the 5-year average. Customer-Hours interrupted were down 100% from 2022 and down 100% over the 5-year average.

The remaining PSC code descriptions do not include Major Storms in the percentages.

Cause Code 02 - Tree Contacts

In 2023, Tree Contacts accounted for 29% of interruptions, 34% of customers interrupted, and 35% of Customer-Hours Interrupted.

Interruptions due to Tree Contacts were down 3% from 2022, and up 4% over the 5-year average. Customers interrupted due to Tree Contacts were down 11% from 2022, and down 10% over the 5-year average. Customer-Hours interrupted were down 27% from 2022 and down 23% over the 5-year average.

Tree Contacts were the 2nd largest cause of interruptions in 2023.

Cause Code 03 - Overloads

In 2023, Overloads accounted for 0% of interruptions, 0% of customers interrupted, and 0% of Customer-Hours Interrupted.

Interruptions due to Overloads were down 45% from 2022, and down 82% over the 5-year average. Customers interrupted due to Overloads were down 83% from 2022, and down 95% over the 5-year average. Customer-Hours interrupted were down 84% from 2022 and down 97% over the 5-year average.

Overloads were the 8th largest cause of interruptions in 2023.

Cause Code 04 - Operator Error

In 2023, Operator Error accounted for 1% of interruptions, 1% of customers interrupted, and 0% of Customer-Hours Interrupted.

Interruptions due to Operator Error were down 29% from 2022, and up 20% over the 5-year average. Customers interrupted due to Operator Error were down 68% from 2022, and down 63% over the 5-year average. Customer-Hours interrupted were down 58% from 2022 and down 62% over the 5-year average.

Operator Error was the 7th largest cause of interruptions in 2023.

Cause Code 05 - Equipment Failure

In 2023, Equipment Failures accounted for 31% of interruptions, 30% of customers interrupted, and 33% of Customer-Hours Interrupted.

Interruptions due to Equipment Failure were down 10% from 2022, and down 4% over the 5-year average. Customers interrupted due to Equipment Failure were down 34% from 2022, and down 21% over the 5-year average. Customer-Hours interrupted were down 35% from 2022 and down 17% over the 5-year average.

Equipment Failures were the largest cause of interruptions in 2023.

Cause Code 06 - Accidents

In 2023, Accidents accounted for 19% of interruptions, 24% of customers interrupted, and 19% of Customer-Hours Interrupted.

Interruptions due to Accidents were down 9% from 2022, and up 0% over the 5-year average. Customers interrupted due to Accidents were up 33% from 2022, and up 22% over the 5-year average. Customer-Hours interrupted were up 5% from 2022 and up 2% over the 5-year average.

Accidents were the 3rd largest cause of interruptions in 2023.

Cause Code 07 - Prearranged

In 2023, Prearranged accounted for 4% of interruptions, 4% of customers interrupted, and 7% of Customer-Hours Interrupted.

Interruptions due to Prearranged were up 7% from 2022, and flat at 0% over the 5-year average. Customers interrupted due to Prearranged were up 81% from 2022, and down 32% over the 5-year average. Customer-Hours interrupted were up 319% from 2022 and up 97% over the 5-year average.

Prearranged was the 5th largest cause of interruptions in 2023.

Cause Code 08 - Customer Equipment

There were no Customer Equipment interruptions in 2023.

Cause Code 09 - Lightning

In 2023, Lightning accounted for 3% of interruptions, 1% of customers interrupted, and 1% of Customer-Hours Interrupted.

Interruptions due to Lightning were down 40% from 2022, and down 17% over the 5-year average. Customers interrupted due to Lightning were down 28% from 2022, and down 28% over the 5-year average. Customer-Hours interrupted were down 62% from 2022 and down 67% over the 5-year average.

Lightning was the 6th largest cause of interruptions in 2023.

Cause Code 10 - Unknown

In 2023, Unknown causes accounted for 13% of interruptions, 6% of customers interrupted, and 6% of Customer-Hours Interrupted.

Interruptions due to Unknown causes were up 9% from 2022, and up 11% over the 5-year average. Customers interrupted due to Unknown causes were down 5% from 2022, and down 39% over the 5-year average. Customer-Hours interrupted were up 4% from 2022 and down 29% over the 5-year average.

Unknown causes were the 4th largest cause of interruptions in 2023.

f. DISCUSSION OF REGIONAL CAPEX PROJECTS WITH 2021/22 SPENDS

The Company continues to work on capital projects in the Central Region in order to maintain customer satisfaction and future reliability. Some specific projects that were constructed in either CY23 or will be constructed in CY24 are listed below. Additional descriptions of other major infrastructure projects will follow.

There are several projects where lines are being rebuilt or reconductored. These projects are either the result of engineering reliability reviews (ERRs) conducted on the Worst Performing Circuits or are the responses to customer inquiries via the Quick Resolution System (QRS). There are several sub-transmission line rebuild projects and a number of distribution line rebuild projects in progress.

There are additional load relief projects scheduled to be completed throughout the region. Most of these load relief projects are ratio transformer replacements or voltage conversions. Line reconductoring is also included in the voltage conversions, where appropriate.

There are also a number of substation projects that were completed, are underway or slated to begin in 2024. All are load relief projects. These projects include constructing new feeders to retire old 5kV substations. These projects include the new Cicero Substation, Sorrell Hill expansion, Pine Grove Metalclad replacements and Milton Ave (to retire Hinsdale and Camillus).

Major Capital Projects for Central Region:

Region	Project Name	Project Type	Fin Sys Project No.	Finish	Total Spend
Central	Convert 29351 north of station	Dist Line	C049397	5/3/2023	\$2,561,000
Central	TreyJayLossoLLC_CiceroNY_URD	Dist Line	C090918	11/8/2023	\$1,284,000
Central	FLY ROAD STATION - DSCADA (DSCADA (FULL RTU UPGRADE)	Dist Sub	C077972	5/31/2023	\$2,344,000
Central	DSCADA - ASH STREET STATION (REPLACE) CPU & DUAL PORT 4 RTU's & DUAL PORT 5TH RTU) - C081809	Trans Sub	C081809	8/8/2023	\$2,190,000
Central	FLY VVO LTC & ORBIT RADIO - C076103	Dist Sub	C076103	5/31/2023	\$3,024,000
Central	NINE MILE MICROWAVE - C086778	Trans Sub	C086778	12/8/2023	\$1,830,000

g. DISCUSSION OF REGIONAL PERFORMANCE OF LVAC (LOW VOLTAGE AC) NETWORK DISTRIBUTION SYSTEM(S)

City of Syracuse - Ash Street LVAC Network

The Ash Street LVAC Network serves the northern downtown area and James Street of the City of Syracuse. This system is supplied by ten 11.5kV feeders that originate from the Ash Street substation. This system serves approximately 2,012 customer accounts and experienced a peak load of approximately 21,457 MVA in 2023.

The table below lists the breaker operations in 2023 that were a result of a fault and/or failure.

Substation	Feeder Number	Breaker Number	Breaker Number	# Breaker Operations from Failures
Ash Street	22340	R400	R4505	0
Ash Street	22341	R410	R4175	0
Ash Street	22342	R420	R4265	0
Ash Street	22343	R430	R4315	0
Ash Street	22344	R440	R4485	0
Ash Street	22345	R450	R4505	0
Ash Street	22346	R460	R4265	0
Ash Street	22347	R470	R4175	1 & 1
Ash Street	22348	R480	R4485	0
Ash Street	22349	R490	R4295	0

As shown above, the Ash Street LVAC Network experienced three feeder outages in 2023. All outages involved cable. The cable was repaired and placed back into service. At no time was this network operated beyond its double contingency (N-2) design criteria.

There was one major events at the Temple Street station:

- 1) An animal tripped the 13.2kV Bus at Feeder 47. Breakers R470 & R4175 were opened and no customers experienced a loss of power during this event.

Annual maintenance consisted of manhole and vault inspections, network protector and transformer inspections and network protector operation checks.

Equipment maintenance consisted of manhole and vault rebuilds, network protector and transformer replacements.

At this time, there are no major projects being designed and/or under construction.

City of Syracuse – Temple Street LVAC Network

The Temple Street LVAC Network serves the southern downtown area of the City of Syracuse with several spot network services in the northern area. This network is supplied by seven 13.2kV feeders that originate from the Temple Street substation. This system serves approximately 510 customer accounts and experienced a peak load of approximately 15.781 MVA in 2023.

The table below lists the breaker operations in 2023 that were a result of a fault and/or failure.

Substation	Feeder	Breaker	Breaker	# Breaker Operations from Failures
Temple Street	24349	R490	R4895	1 & 0
Temple Street	24350	R500	R5015	0
Temple Street	24353	R530	R5235	0
Temple Street	24354	R540	R5455	0
Temple Street	24356	R560	R5675	0
Temple Street	24357	R570	R5675	1 & 0
Temple Street	24358	R580	R5895	0

As shown above the Temple Street LVAC Network experienced two feeder outages in 2023. At no time was this network operated beyond its double contingency (N-2) design criteria.

There was one major event at the Temple Street station:

- 1) An animal tripped the 13.2kV East Bus. Breakers R490, R510, R453, R550, R570 & R590 were Opened. Breaker and a half worked no loss of customers. All feeders continued to be supplied via west bus.

Annual maintenance consisted of manhole and vault inspections, network protector and transformer inspections and network protector operation checks.

Equipment maintenance consisted of manhole and vault rebuilds, network protector and transformer replacements.

There is one major project being designed and/or under construction, to replace the two metalclad switchgear where one of the two metalclad switchgear supplies the seven feeders of the LVAC Network system.

The project started in FY2023

City of Cortland LVAC Network

The Cortland LVAC Network serves the downtown area of the City of Cortland along Main Street from Lincoln Avenue to Port Watson Street. This network is supplied by three 4.8kV feeders: two feeders from the Cortland Substation and one feeder from the Miller Street Substation. This system serves approximately 377 customer accounts and experienced a peak load of approximately 1.651 MVA in 2023.

The table below lists the breaker operations in 2023 that were a result of a fault and/or failure.

Substation	Feeder Number	Breaker Number	# Breaker Operations from Failures
Cortland	50201	R010	0
Cortland	50204	R040	0
Miller Street	11705	R050	0

As shown above the Cortland LVAC Network experienced zero feeder outages in 2023. There were no customer interruptions. At no time was this network operated beyond its single contingency (N-1) design criteria.

There were no major events associated with the network in 2023.

Annual maintenance consisted of manhole and vault inspections, network protector and transformer inspections and network protector operation checks.

Equipment maintenance consisted of manhole and vault rebuilds, network protector and transformer replacements.

At this time, there are no major projects being designed and/or under construction.

The Company has decided to transform this LVAC Network system into a LVAC Radial system. The project to disassemble the network is scheduled to begin in 2025.

2. OPERATING CIRCUIT LISTS

The next three (3) tables will provide the following information for the Central Region.

- a. Worst Performing Circuit List
- b. Worst Performing Circuits with 3 Year History for CAIDI and SAIFI Indices
- c. Worst Performing Circuits by # of Momentary Interruptions

a. NATIONAL GRID WORST PERFORMING CIRCUIT LIST

CENTRAL REGION

FEEDER #	A CUST. SERVED	B TOTAL INTER.	C # CUST. INTER.	D CUST. HRS. INTER.	C/A SAIFI	D/A SAIDI	D/C CAIDI	NUMBER OF MOMENTARIES
WEST MONROE 27451	2,043	25	9,136	20,840	4.47	10.20	2.28	2
WEST CLEVELAND 32651	1,018	27	4,023	12,145	3.95	11.93	3.02	0
WHITAKER 29652	2,143	33	9,638	9,758	4.50	4.55	1.01	1
PHOENIX 5165	986	17	4,525	13,731	4.59	13.93	3.03	1
NILES 29451	1,328	43	3,345	7,561	2.52	5.69	2.26	2
LIGHTHOUSE HILL 6144	2,346	65	4,935	12,231	2.10	5.21	2.48	0
COLOSSE 32151	2,449	36	4,533	13,009	1.85	5.31	2.87	3
CLEVELAND 1166	1,050	15	3,158	10,507	3.01	10.01	3.33	0
NEW HAVEN 25653	2,020	36	4,725	7,092	2.34	3.51	1.50	1
WINE CREEK 28354	2,399	19	7,140	9,251	2.98	3.86	1.30	0
GILBERT MILLS 24751	2,180	24	5,064	8,361	2.32	3.84	1.65	1
WETZEL RD SUBSTATION 690055	1,509	13	7,080	8,137	4.69	5.39	1.15	2
TULLY CENTER 27851	2,360	35	6,189	6,548	2.62	2.77	1.06	2
LORDS HILL 15067	797	18	2,262	4,556	2.84	5.72	2.01	1
BARTELL RD 32554	2,815	25	7,380	7,576	2.62	2.69	1.03	9
THIRD ST 21672	943	14	2,812	4,960	2.98	5.26	1.76	1
COLLAMER CROSSING 151156	1,132	16	2,899	4,988	2.56	4.41	1.72	1
SORRELL HILL 26954	3,275	16	6,235	13,045	1.90	3.98	2.09	2
LORDS HILL 15066	451	18	1,182	2,805	2.62	6.22	2.37	1
BELMONT 26052	1,736	11	5,611	7,925	3.23	4.57	1.41	2

Regional Goals:
CAIDI 1.899
SAIFI 1.226

b. NATIONAL GRID WORST PERFORMING CIRCUITS WITH 3 YEAR HISTORY FOR CAIDI AND SAIFI INDICES

CENTRAL REGION

FEEDER #	2023 CAIDI	2022 CAIDI	2021 CAIDI	2020 CAIDI	2023 SAIFI	2022 SAIFI	2021 SAIFI	2020 SAIFI
WEST MONROE 27451	2.28	0.97	1.97	0.81	4.47	6.87	8.74	2.43
WEST CLEVELAND 32651	3.02	1.71	2.70	1.36	3.95	6.84	11.52	3.89
WHITAKER 29652	1.01	1.69	1.65	0.85	4.50	1.81	3.05	0.88
PHOENIX 5165	3.03	0.84	2.03	1.19	4.59	2.36	1.37	2.24
NILES 29451	2.26	2.55	3.92	4.03	2.52	2.08	2.23	2.10
LIGHTHOUSE HILL 6144	2.48	4.38	1.33	1.41	2.10	1.80	3.77	4.46
COLOSSE 32151	2.87	1.35	1.12	0.63	1.85	4.76	5.60	1.44
CLEVELAND 1166	3.33	2.80	3.07	0.79	3.01	4.18	5.37	1.65
NEW HAVEN 25653	1.50	1.59	2.04	3.20	2.34	1.94	2.89	0.46
WINE CREEK 28354	1.30	1.37	1.64	2.57	2.98	1.31	0.34	1.22
GILBERT MILLS 24751	1.65	2.66	1.47	1.79	2.32	1.70	4.72	1.84
WETZEL RD SUBSTATION 690055	1.15	1.25	1.14	1.43	4.69	3.23	2.39	4.05
TULLY CENTER 27851	1.06	2.26	1.05	1.58	2.62	0.26	4.15	1.62
LORDS HILL 15067	2.01	1.90	2.88	4.00	2.84	3.87	0.72	0.36
BARTELL RD 32554	1.03	1.79	0.83	1.63	2.62	2.08	3.42	1.04
THIRD ST 21672	1.76	2.24	2.44	2.11	2.98	4.69	2.93	0.97
COLLAMER CROSSING 151156	1.72	0.96	2.00	1.59	2.56	1.09	1.30	0.29
SORRELL HILL 26954	2.09	1.18	1.50	1.65	1.90	2.75	1.26	1.06
LORDS HILL 15066	2.37	2.65	1.32	1.44	2.62	1.75	1.23	4.15
BELMONT 26052	1.41	1.84	1.65	1.19	3.23	2.33	1.74	0.39

Regional Goals:
CAIDI 1.899
SAIFI 1.226

c. NATIONAL GRID WORST PERFORMING CIRCUITS BY # OF MOMENTARY INTERRUPTIONS

CENTRAL REGION

Feeders			Customer Momentaries				Ranks		
Volts (kV)	Station Name	Ckt/F No.	Substation	Transmission	Distribution	Total	Within Region	Within System	Reliability Ranking
No circuits experienced 10 or more momentary interruptions in 2023.									

d. WORST PERFORMING CIRCUIT ANALYSIS

This year, the Central Region is required to analyze and report on twenty of the worst performing circuits. The list consists of Fourteen 13.2kV circuits, one 12kV and five 4.8kV circuits.

The reliability performance thresholds for the Central Region are 1.899 hours for CAIDI and 1.226 interruptions for SAIFI.

1. WEST MONROE 27451 - 13.2kV

Profile: 2,043 Customers, 88.23 Circuit Miles
Indices: CAIDI = 2.28, SAIFI = 4.47

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	7	28.00%	654	7.16%	1,459	7.00%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	6	24.00%	2,090	22.88%	1,844	8.85%
6	ACCIDENTS	6	24.00%	4,312	47.20%	8,659	41.55%
7	PREARRANGED	2	8.00%	2,047	22.41%	8,794	42.20%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	4	16.00%	33	0.36%	84	0.40%
Totals		25	100.00%	9,136	100.00%	20,840	100.00%

Problem Analysis:

- There were 25 interruptions on the West Monroe 27451 in 2023.
- There was 1 transmission interruption.
 - This Transmission interruption occurred on February 11, 2023, coded as a cause of no cause associated (PSC cause code 07). This lockout accounted for 22% of the total customers interrupted (2,036 of 9,136), and 42% of the total customer-hours interrupted (8,789 of 20,840). This interruption was for maintenance (to replace several rotted/woodpecker damaged poles)
- There was 1 substation interruption.
 - This Substation interruption occurred on June 12, 2023, coded as a cause of animal (PSC cause code 06). This lockout accounted for 22% of the total customers interrupted (2,036 of 9,136), and 20% of the total customer-hours interrupted (4,093 of 20,840). This interruption was due to an Osprey nest that cleared the 34.5kV bus at Mallory.
- The remaining 23 events occurred at the distribution level.
- The distribution circuit breaker for the West Monroe 27451 experienced 2 momentary operations in 2023.
- The distribution circuit breaker for the West Monroe 27451 experienced 2 sustained operations (lockouts) in 2023. These interruptions accounted for 45% of the total amount of customers interrupted (4,093 out of 9,136) and 26% of the total amount of the customer-hours interrupted (5,494 out of 20,840).
 - The first lockout occurred on December 13, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 22% of the total customers interrupted (2,054 of 9,136), and 8% of the total customer-hours interrupted (1,744

of 20,840). This interruption was due to a primary conductor that came off the insulator.

- The second lockout occurred on February 25, 2023, coded as a cause of vehicle (PSC cause code 06). This lockout accounted for 22% of the total customers interrupted (2,039 of 9,136), and 18% of the total customer-hours interrupted (3,750 of 20,840).
- Trees were the leading cause of interruptions on the West Monroe 27451 in 2023, accounting for 28% of total interruptions (7 of 25). Equipment Failures were the 2nd leading cause of interruptions, accounting for 24% of total interruptions (6 of 25). Accidents were the 3rd leading cause of interruptions, accounting for 24% of total interruptions (6 of 25).
- Accidents were the leading cause of customers interrupted (CI) on the West Monroe 27451 in 2023, accounting for 47% of total customers interrupted (4,312 of 9,136). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 23% of total customers interrupted (2,090 of 9,136). Prearranged were the 3rd leading cause of customers interrupted, accounting for 22% of total customers interrupted (2,047 of 9,136).
- Prearranged were the leading cause of customer-hours interrupted (CHI) on the West Monroe 27451 in 2023, accounting for 42% of total customer-hours interrupted (8,794 of 20,840). Accidents were the 2nd leading cause of customer-hours interrupted, accounting for 42% of total customer-hours interrupted (8,659 of 20,840). Equipment Failures were the 3rd leading cause of customer-hours interrupted, accounting for 9% of total customer-hours interrupted (1,844 of 20,840).
- Of the 25 interruptions on this circuit, 9 affected 10 customers or less, with 2 being single customer outages.

Action Taken:

- Distribution Forestry cycle pruned the feeder in FY2021.
- Distribution Forestry completed Ash tree removals on the feeder in FY2021.
- Replaced multiple rotted/woodpecker damaged poles in the Mallory-Cleveland 31 Line (34.5kV).
- The I&M inspection (foot patrol) of the feeder was completed in July 2023.

Action Plan:

- Install sectionalizing breakers on the transmission line side of Mallory Substation FY26.
- Complete all level 2 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder by July 2024.
- Complete all level 3 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder by July 2026.
- Hazard tree review to be completed in 2024.

2. WEST CLEVELAND 32651 - 13.2kV

Profile: 1,018 Customers, 52.8 Circuit Miles
Indices: CAIDI = 3.02, SAIFI = 3.95

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	19	70.37%	1,558	38.73%	5,152	42.42%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	4	14.81%	124	3.08%	107	0.88%
6	ACCIDENTS	2	7.41%	1,087	27.02%	2,190	18.03%
7	PREARRANGED	1	3.70%	907	22.55%	4,172	34.35%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	1	3.70%	347	8.63%	524	4.31%
Totals		27	100.00%	4,023	100.00%	12,145	100.00%

Problem Analysis:

- There were 27 interruptions on the West Cleveland 32651 in 2023.
- There was 1 transmission interruption.
 - This Transmission interruption occurred on February 11, 2023, coded as a cause of no cause associated (PSC cause code 07). This lockout accounted for 23% of the total customers interrupted (907 of 4,023), and 34% of the total customer-hours interrupted (4,172 of 12,145). This interruption was for maintenance (to replace several rotted/woodpecker damaged poles)
- There was 1 substation interruption.
 - This Substation interruption occurred on June 12, 2023, coded as a cause of animal (PSC cause code 06). This lockout accounted for 27% of the total customers interrupted (1,084 of 4,023), and 18% of the total customer-hours interrupted (2,179 of 12,145). This interruption was due to an Osprey nest that cleared the 34.5kV bus at Mallory.
- The remaining 23 events occurred at the distribution level.
- The distribution circuit breaker for the West Cleveland 32651 experienced 0 momentary operations in 2023.
- There were no distribution circuit breaker interruptions.
- Trees were the leading cause of interruptions on the West Cleveland 32651 in 2023, accounting for 70% of total interruptions (19 of 27). Equipment Failures were the 2nd leading cause of interruptions, accounting for 15% of total interruptions (4 of 27). Accidents were the 3rd leading cause of interruptions, accounting for 7% of total interruptions (2 of 27).

- Trees were the leading cause of customers interrupted (CI) on the West Cleveland 32651 in 2023, accounting for 39% of total customers interrupted (1,558 of 4,023). Accidents were the 2nd leading cause of customers interrupted, accounting for 27% of total customers interrupted (1,087 of 4,023). Prearranged were the 3rd leading cause of customers interrupted, accounting for 23% of total customers interrupted (907 of 4,023).
- Trees were the leading cause of customer-hours interrupted (CHI) on the West Cleveland 32651 in 2023, accounting for 42% of total customer-hours interrupted (5,152 of 12,145). Prearranged were the 2nd leading cause of customer-hours interrupted, accounting for 34% of total customer-hours interrupted (4,172 of 12,145). Accidents were the 3rd leading cause of customer-hours interrupted, accounting for 18% of total customer-hours interrupted (2,190 of 12,145).
- Of the 27 interruptions on this circuit, 7 affected 10 customers or less, with 2 being single customer outages.

Action Taken:

- Completed all level 2 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder in June 2021.
- Completed all level 3 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder in June 2023.
- Replaced multiple rotted/woodpecker damaged poles in the Mallory-Cleveland 31 Line (34.5kV)
- Distribution Forestry cycle pruned the feeder in FY2022.

Action Plan:

- Install sectionalizing breakers on the transmission line side of Mallory Substation FY26.
- The I&M inspection (foot patrol) of the feeder to be completed in 2025.
- Routine tree trimming/pruning to be completed in FY2028.

3. WHITAKER 29652 - 13.2kV

Profile: 2,143 Customers, 104.3 Circuit Miles
 Indices: CAIDI = 1.01, SAIFI = 4.50

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	11	33.33%	4,415	45.81%	4,527	46.39%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	6	18.18%	290	3.01%	615	6.30%
6	ACCIDENTS	7	21.21%	3,862	40.07%	2,852	29.22%
7	PREARRANGED	2	6.06%	57	0.59%	20	0.20%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	2	6.06%	2	0.02%	5	0.05%
10	UNKNOWN	5	15.15%	1,012	10.50%	1,740	17.83%
Totals		33	100.00%	9,638	100.00%	9,759	100.00%

Problem Analysis:

- There were 33 interruptions on the Whitaker 29652 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 33 events occurred at the distribution level.
- The distribution circuit breaker for the Whitaker 29652 experienced 1 momentary operation in 2023.
- The distribution circuit breaker for the Whitaker 29652 experienced 1 sustained operation (lockout) in 2023. This interruption accounted for 22% of the total amount of customers interrupted (2,146 out of 9,638) and 5% of the total amount of the customer-hours interrupted (494 out of 9,759).
- This lockout occurred on June 14, 2023, coded as a cause of vehicle (PSC cause code 06). This lockout accounted for 22% of the total customers interrupted (2,146 of 9,638), and 5% of the total customer-hours interrupted (494 of 9,758).
- There were 8 recloser lockouts in 2023. These interruptions accounted for 70% of the total amount of customers interrupted (6,779 out of 9,638) and 79% of the total amount of the customer-hours interrupted (7,743 out of 9,759).
 - R41193 first interruption occurred on February 2, 2023, coded as a cause of vehicle (PSC cause code 06). This lockout accounted for 10% of the total customers interrupted (924 of 9,638), and 12% of the total customer-hours interrupted (1,177 of 9,759).
 - R41193 second interruption occurred on March 26, 2023, coded as a cause of tree-broken limb (PSC cause code 02). This lockout accounted for 10% of the total customers interrupted (924 of 9,638), and 8% of the total customer-hours

- interrupted (758 of 9,759). The tree branch was on Great Bear Rd (which is beyond R41199).
- R41193 third interruption occurred on August 11, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 10% of the total customers interrupted (925 of 9,638), and 7% of the total customer-hours interrupted (722 of 9,759). The tree was on Great Bear Rd (which is beyond R41199).
 - R41193 fourth interruption occurred on September 9, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 10% of the total customers interrupted (925 of 9,638), and 9% of the total customer-hours interrupted (878 of 9,759). The tree was on CR-57 (which is beyond R41199).
 - R41193 fifth interruption occurred on October 26, 2023, coded as a cause of tree-broken limb (PSC cause code 02). This lockout accounted for 10% of the total customers interrupted (926 of 9,638), and 7% of the total customer-hours interrupted (674 of 9,759). This tree branch was on NYS 264.
 - R41193 sixth interruption occurred on November 3, 2023, coded as a cause of unknown (PSC cause code 10). This lockout accounted for 10% of the total customers interrupted (926 of 9,638), and 17% of the total customer-hours interrupted (1,617 of 9,759).
 - R40700 first interruption occurred on April 14, 2023, coded as a cause of vehicle (PSC cause code 06). This lockout accounted for 6% of the total customers interrupted (616 of 9,638), and 11% of the total customer-hours interrupted (844 of 9,759).
 - R40700 second interruption occurred on August 25, 2023, coded as a cause of tree-broken limb (PSC cause code 02). This lockout accounted for 6% of the total customers interrupted (613 of 9,638), and 9% of the total customer-hours interrupted (1,073 of 9,759).
- Trees were the leading cause of interruptions on the Whitaker 29652 in 2023, accounting for 33% of total interruptions (11 of 33). Accidents were the 2nd leading cause of interruptions, accounting for 21% of total interruptions (7 of 33). Equipment Failures were the 3rd leading cause of interruptions, accounting for 18% of total interruptions (6 of 33).
 - Trees were the leading cause of customers interrupted (CI) on the Whitaker 29652 in 2023, accounting for 46% of total customers interrupted (4,415 of 9,638). Accidents were the 2nd leading cause of customers interrupted, accounting for 40% of total customers interrupted (3,862 of 9,638). Unknown were the 3rd leading cause of customers interrupted, accounting for 11% of total customers interrupted (1,012 of 9,638).
 - Trees were the leading cause of customer-hours interrupted (CHI) on the Whitaker 29652 in 2023, accounting for 46% of total customer-hours interrupted (4,527 of 9,759). Accidents were the 2nd leading cause of customer-hours interrupted, accounting for 29% of total customer-hours interrupted (2,852 of 9,759). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 18% of total customer-hours interrupted (1,740 of 9,759).
 - Of the 33 interruptions on this circuit, 12 affected 10 customers or less, with 5 being single customer outages.

Action Taken:

- Completed all level 3 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder by August 2022.
- Distribution Forestry cycle pruned the feeder in FY2019.
- Issued revised settings for reclosers R41193 and R41199 for better coordination.

Action Plan:

- The I&M inspection (foot patrol) of the feeder to be completed in 2024.
- Routine tree trimming/pruning to be completed in FY2024.

4. PHOENIX 5165 – 4.8kV

Profile: 986 Customers, 46.6 Circuit Miles
 Indices: CAIDI = 3.03, SAIFI = 4.59

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	7	41.18%	1,039	22.96%	2,915	21.23%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	2	11.76%	1,022	22.59%	137	1.00%
5	EQUIPMENT	4	23.53%	2,404	53.13%	10,284	74.89%
6	ACCIDENTS	1	5.88%	1	0.02%	7	0.05%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	3	17.65%	59	1.30%	387	2.82%
Totals		17	100.00%	4,525	100.00%	13,731	100.00%

Problem Analysis:

- There were 17 interruptions on the Phoenix 5165 in 2023.
- There were 2 transmission interruptions.
 - The first Transmission interruption occurred on April 13, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 22% of the total customers interrupted (987 of 4,525), and 30% of the total customer-hours interrupted (4,103 of 13,731). This interruption was due to an insulator failure.
 - The second Transmission interruption occurred on September 18, 2023, coded as a cause of insulation failure - cable (PSC cause code 05). This lockout accounted for 22% of the total customers interrupted (986 of 4,525), and 44% of the total customer-hours interrupted (5,976 of 13,731). This interruption was due to a cable failure at Phoenix Hydro.
- There were no substation interruptions.
- The remaining 15 events occurred at the distribution level.
- The distribution circuit breaker for the Phoenix 5165 experienced 1 momentary operation in 2023.
- The distribution circuit breaker for the Phoenix 5165 experienced 1 sustained operation (lockout) in 2023. This interruption accounted for 22% of the total amount of customers interrupted (987 out of 4,525) and 1% of the total amount of the customer-hours interrupted (117 out of 13,731).
 - This lockout occurred on April 14, 2023, coded as a cause of construction by company (PSC cause code 04). This lockout accounted for 22% of the total customers interrupted (987 of 4,525), and 1% of the total customer-hours interrupted (117 of 13,731). This interruption was due to a drop and pick to return the feeder to normal after the previous days subtransmission interruption.

- Recloser R41380 locked out on February 23, 2023, coded as tree fell (PSC cause code 02). This lockout accounted for 10% of the total customers interrupted (443 of 4,525) and 13% of the total customer-hours interrupted (1,754 of 13,371).
- The switches on P109 Lamson Rd experienced 2 sustained operations (they were opened twice) in 2023. These interruptions accounted for 18% of the total amount of customers interrupted (821 out of 4,525) and 1% of the total amount of the customer-hours interrupted (108 out of 13,731).
 - The first interruption occurred on October 12, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 9% of the total customers interrupted (410 of 4,525), and 1% of the total customer-hours interrupted (55 of 13,731). The switches were opened to de-energize a failed voltage regulator.
 - The second interruption occurred on December 12, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 9% of the total customers interrupted (411 of 4,525), and 1% of the total customer-hours interrupted (53 of 13,731). The switches were opened to remove a tree off of the primary.
- Trees were the leading cause of interruptions on the Phoenix 5165 in 2023, accounting for 41% of total interruptions (7 of 17). Equipment Failures were the 2nd leading cause of interruptions, accounting for 24% of total interruptions (4 of 17). Unknown were the 3rd leading cause of interruptions, accounting for 18% of total interruptions (3 of 17).
- Equipment Failures were the leading cause of customers interrupted (CI) on the Phoenix 5165 in 2023, accounting for 53% of total customers interrupted (2,404 of 4,525). Trees were the 2nd leading cause of customers interrupted, accounting for 23% of total customers interrupted (1,039 of 4,525). Operators Errors were the 3rd leading cause of customers interrupted, accounting for 23% of total customers interrupted (1,022 of 4,525).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the Phoenix 5165 in 2023, accounting for 75% of total customer-hours interrupted (10,284 of 13,731). Trees were the 2nd leading cause of customer-hours interrupted, accounting for 21% of total customer-hours interrupted (2,915 of 13,731). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 3% of total customer-hours interrupted (387 of 13,731).
- Of the 17 interruptions on this circuit, 4 affected 10 customers or less, with 1 being single customer outages.

Action Taken:

- Distribution Forestry cycle pruned the feeder in FY2023.
- The I&M inspection (foot patrol) of the feeder was in November 2023.

Action Plan:

- Complete all level 2 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder by November 2024.
- Complete all level 3 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder by November 2026.

5. NILES 29451 - 13.2kV

Profile: 1,328 Customers, 105.8 Circuit Miles
Indices: CAIDI = 2.26, SAIFI = 2.52

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	30	69.77%	3,248	97.10%	7,109	94.01%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	2	4.65%	19	0.57%	123	1.62%
6	ACCIDENTS	2	4.65%	2	0.06%	11	0.15%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	4	9.30%	10	0.30%	94	1.24%
10	UNKNOWN	5	11.63%	66	1.97%	225	2.97%
Totals		43	100.00%	3,345	100.00%	7,561	100.00%

Problem Analysis:

- There were 43 interruptions on the Niles 29451 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 43 events occurred at the distribution level.
- The distribution circuit breaker for the Niles 29451 experienced 2 momentary operations in 2023.
- The distribution circuit breaker for the Niles 29451 experienced 1 sustained operation (lockout) in 2023. This interruption accounted for 40% of the total amount of customers interrupted (1,334 out of 3,345) and 29% of the total amount of the customer-hours interrupted (2,186 out of 7,561).
 - This lockout occurred on November 21, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 40% of the total customers interrupted (1,334 of 3,345), and 29% of the total customer-hours interrupted (2,186 of 7,561).
- Trees were the leading cause of interruptions on the Niles 29451 in 2023, accounting for 70% of total interruptions (30 of 43). Unknown were the 2nd leading cause of interruptions, accounting for 12% of total interruptions (5 of 43). Lightning were the 3rd leading cause of interruptions, accounting for 9% of total interruptions (4 of 43).
- Trees were the leading cause of customers interrupted (CI) on the Niles 29451 in 2023, accounting for 97% of total customers interrupted (3,248 of 3,345). Unknown were the 2nd leading cause of customers interrupted, accounting for 2% of total customers interrupted (66 of 3,345). Equipment Failures were the 3rd leading cause of customers interrupted, accounting for 1% of total customers interrupted (19 of 3,345).

- Trees were the leading cause of customer-hours interrupted (CHI) on the Niles 29451 in 2023, accounting for 94% of total customer-hours interrupted (7,109 of 7,561). Unknown were the 2nd leading cause of customer-hours interrupted, accounting for 3% of total customer-hours interrupted (225 of 7,561). Equipment Failures were the 3rd leading cause of customer-hours interrupted, accounting for 2% of total customer-hours interrupted (123 of 7,561).
- Of the 43 interruptions on this circuit, 20 affected 10 customers or less, with 9 being single customer outages.

Action Taken:

- Complete all level 3 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder by May 2022.
- Distribution Forestry cycle pruned the feeder in FY2022.

Action Plan:

- Hazard tree review currently in progress.
- Routine tree trimming/pruning is planned to be completed in FY2028.
- The I&M inspection (foot patrol) of the feeder to completed in 2024.

6. LIGHTHOUSE HILL 6144 – 12.0kV

Profile: 2,346 Customers, 159.5 Circuit Miles
Indices: CAIDI = 2.48, SAIFI = 2.10

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	35	53.85%	4,632	93.86%	10,875	88.92%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	1	1.54%	1	0.02%	10	0.09%
5	EQUIPMENT	14	21.54%	147	2.98%	753	6.16%
6	ACCIDENTS	3	4.62%	35	0.71%	85	0.70%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	2	3.08%	19	0.39%	81	0.66%
10	UNKNOWN	10	15.38%	101	2.05%	426	3.48%
Totals		65	100.00%	4,935	100.00%	12,231	100.00%

Problem Analysis:

- There were 65 interruptions on the Lighthouse Hill 6144 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 65 events occurred at the distribution level.
- The distribution circuit breaker for the Lighthouse Hill 6144 experienced 0 momentary operations in 2023.
- The distribution circuit breaker for the Lighthouse Hill 6144 experienced 1 sustained operation (lockout) in 2023. This interruption accounted for 48% of the total amount of customers interrupted (2,363 out of 4,935) and 21% of the total amount of the customer-hours interrupted (2,556 out of 12,231).
 - This lockout occurred on August 12, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 48% of the total customers interrupted (2,363 of 4,935), and 21% of the total customer-hours interrupted (2,556 of 12,231).
- One of the reclosers (R40084) experienced an interruption on April 1, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 10% of the total amount of customers interrupted (473 of 4,935) and 17% of the total amount of the customer-hours interrupted (2,121 of 12,231).
- Trees were the leading cause of interruptions on the Lighthouse Hill 6144 in 2023, accounting for 54% of total interruptions (35 of 65). Equipment Failures were the 2nd leading cause of interruptions, accounting for 22% of total interruptions (14 of 65). Unknown were the 3rd leading cause of interruptions, accounting for 15% of total interruptions (10 of 65).

- Trees were the leading cause of customers interrupted (CI) on the Lighthouse Hill 6144 in 2023, accounting for 94% of total customers interrupted (4,632 of 4,935). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 3% of total customers interrupted (147 of 4,935). Unknown were the 3rd leading cause of customers interrupted, accounting for 2% of total customers interrupted (101 of 4,935).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Lighthouse Hill 6144 in 2023, accounting for 89% of total customer-hours interrupted (10,875 of 12,231). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 6% of total customer-hours interrupted (753 of 12,231). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 3% of total customer-hours interrupted (426 of 12,231).
- Of the 65 interruptions on this circuit, 29 affected 10 customers or less, with 11 being single customer outages.

Action Taken:

- Completed all level 3 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder in November 2023.
- 1,362 Hazard trees have been removed in the last 2 years.

Action Plan:

- Routine tree trimming/pruning is planned to be completed in FY2025.
- The I&M inspection (foot patrol) of the feeder to completed in 2025.

7. COLOSSE 32151 – 13.2kV

Profile: 2,449 Customers, 126.8 Circuit Miles
 Indices: CAIDI = 2.87, SAIFI = 1.85

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	13	36.11%	2,401	52.97%	8,038	61.79%
3	OVERLOADS	1	2.78%	6	0.13%	16	0.12%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	10	27.78%	1,785	39.38%	3,158	24.27%
6	ACCIDENTS	2	5.56%	58	1.28%	65	0.50%
7	PREARRANGED	1	2.78%	12	0.26%	21	0.16%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	1	2.78%	1	0.02%	3	0.02%
10	UNKNOWN	8	22.22%	270	5.96%	1,709	13.13%
Totals		36	100.00%	4,533	100.00%	13,009	100.00%

Problem Analysis:

- There were 36 interruptions on the Colosse 32151 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 36 events occurred at the distribution level.
- The distribution circuit breaker for the Colosse 32151 experienced 3 momentary operations in 2023.
- The distribution circuit breaker for the Colosse 32151 experienced 0 sustained operations (lockouts) in 2023.
- There were 2 recloser lockouts in 2023. These interruptions accounted for 52% of the total amount of customers interrupted (2,369 out of 4,553) and 41% of the total amount of the customer-hours interrupted (5,324 out of 13,009).
 - R40411 interruption occurred on March 4, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 24% of the total customers interrupted (1,075 of 4,533), and 13% of the total customer-hours interrupted (1,670 of 13,009). The cause of this interruption was 4 broken poles along US 11.
 - R40677 interruption occurred on August 12, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 29% of the total customers interrupted (1,294 of 4,533), and 28% of the total customer-hours interrupted (3,654 of 13,009).
- The fuses on P111 CR-22 experienced 4 interruptions in 2023. These interruptions accounted for 25% of the total amount of customers interrupted (1,136 out of 4,553) and 30% of the total amount of the customer-hours interrupted (3,923 out of 13,009).
 - The first interruption occurred on January 15, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 7% of the total customers

- interrupted (309 of 4,533), and 8% of the total customer-hours interrupted (988 of 13,009). The cause of this interruption was down conductors on CR-22.
- The second interruption occurred on March 29, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 7% of the total customers interrupted (309 of 4,533), and 6% of the total customer-hours interrupted (804 of 13,009).
 - The third interruption occurred on November 21, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 6% of the total customers interrupted (292 of 4,533), and 6% of the total customer-hours interrupted (830 of 13,009).
 - The fourth interruption occurred on November 23, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 5% of the total customers interrupted (226 of 4,533), and 10% of the total customer-hours interrupted (1,301 of 13,009).
- Trees were the leading cause of interruptions on the Colosse 32151 in 2023, accounting for 36% of total interruptions (13 of 36). Equipment Failures were the 2nd leading cause of interruptions, accounting for 28% of total interruptions (10 of 36). Unknown were the 3rd leading cause of interruptions, accounting for 22% of total interruptions (8 of 36).
 - Trees were the leading cause of customers interrupted (CI) on the Colosse 32151 in 2023, accounting for 53% of total customers interrupted (2,401 of 4,533). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 39% of total customers interrupted (1,785 of 4,533). Unknown were the 3rd leading cause of customers interrupted, accounting for 6% of total customers interrupted (270 of 4,533).
 - Trees were the leading cause of customer-hours interrupted (CHI) on the Colosse 32151 in 2023, accounting for 62% of total customer-hours interrupted (8,038 of 13,009). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 24% of total customer-hours interrupted (3,158 of 13,009). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 13% of total customer-hours interrupted (1,709 of 13,009).
 - Of the 36 interruptions on this circuit, 14 affected 10 customers or less, with 5 being single customer outages.

Action Taken:

- Distribution Forestry cycle pruned the feeder in FY2023.
- The I&M inspection (foot patrol) of the feeder was completed in August 2021.
- Completed all level 2 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder in August 2022.
- 301 Hazard trees have been removed since 2019.
- Distribution Forestry completed Ash tree removals on the feeder in FY2021.

Action Plan:

- Install sectionalizing breakers on the transmission line side of Mallory Substation FY26
- Complete all level 3 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder in August 2024.
- Routine tree trimming/pruning to be completed in FY2028.
- Hazard tree removals in progress.

8. CLEVELAND 1166 – 4.8kV

Profile: 1,050 Customers, 36.9 Circuit Miles
 Indices: CAIDI = 3.33, SAIFI = 3.01

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	9	60.00%	485	15.36%	1,828	17.40%
3	OVERLOADS	1	6.67%	391	12.38%	208	1.98%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	2	13.33%	146	4.62%	787	7.49%
6	ACCIDENTS	1	6.67%	978	30.97%	1,966	18.71%
7	PREARRANGED	1	6.67%	1,155	36.57%	5,698	54.23%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	1	6.67%	3	0.10%	20	0.19%
10	UNKNOWN	0	0.00%	0	0.00%	0	0.00%
Totals		15	100.00%	3,158	100.00%	10,507	100.00%

Problem Analysis:

- There were 15 interruptions on the Cleveland 1166 in 2023.
- There was 1 transmission interruption.
 - This Transmission interruption occurred on February 11, 2023, coded as a cause of no cause associated (PSC cause code 07). This lockout accounted for 37% of the total customers interrupted (1,155 of 3,158), and 54% of the total customer-hours interrupted (5,698 of 10,597). This interruption was for maintenance (to replace several rotted/woodpecker damaged poles)
- There was 1 substation interruption.
 - This Substation interruption occurred on June 12, 2023, coded as a cause of animal (PSC cause code 06). This lockout accounted for 31% of the total customers interrupted (978 of 3,158), and 19% of the total customer-hours interrupted (1,966 of 10,507). This interruption was due to an Osprey nest that cleared the 34.5kV bus at Mallory.
- The remaining 13 events occurred at the distribution level.
- The distribution circuit breaker for the Cleveland 1166 experienced 0 momentary operations in 2023.
- There were no distribution circuit breaker interruptions.
- Trees were the leading cause of interruptions on the Cleveland 1166 in 2023, accounting for 60% of total interruptions (9 of 15). Equipment Failures were the 2nd leading cause of interruptions, accounting for 13% of total interruptions (2 of 15).

- Prearranged were the leading cause of customers interrupted (CI) on the Cleveland 1166 in 2023, accounting for 37% of total customers interrupted (1,155 of 3,158). Accidents were the 2nd leading cause of customers interrupted, accounting for 31% of total customers interrupted (978 of 3,158). Trees were the 3rd leading cause of customers interrupted, accounting for 15% of total customers interrupted (485 of 3,158).
- Prearranged were the leading cause of customer-hours interrupted (CHI) on the Cleveland 1166 in 2023, accounting for 54% of total customer-hours interrupted (5,698 of 10,507). Accidents were the 2nd leading cause of customer-hours interrupted, accounting for 19% of total customer-hours interrupted (1,966 of 10,507). Trees were the 3rd leading cause of customer-hours interrupted, accounting for 17% of total customer-hours interrupted (1,828 of 10,507).
- Of the 15 interruptions on this circuit, 5 affected 10 customers or less, with 2 being single customer outages.

Action Taken:

- Distribution Forestry cycle pruned the feeder in FY2022.
- Replaced multiple rotted/woodpecker damaged poles in the Mallory-Cleveland 31 Line (34.5kV)
- Completed all level 2 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder 2022.

Action Plan:

- Routine tree trimming/pruning to be completed in FY2028.
- Complete all level 3 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder by 2024.
- Install sectionalizing breakers on the transmission line side of Mallory Substation FY26

9. NEW HAVEN 25653 – 13.2kV

Profile: 2,020 Customers, 77.3 Circuit Miles
Indices: CAIDI = 1.50, SAIFI = 2.34

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	11	30.56%	606	12.83%	1,696	23.92%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	11	30.56%	342	7.24%	770	10.86%
6	ACCIDENTS	5	13.89%	1,605	33.97%	2,293	32.33%
7	PREARRANGED	1	2.78%	102	2.16%	33	0.47%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	2	5.56%	2	0.04%	5	0.06%
10	UNKNOWN	6	16.67%	2,068	43.77%	2,295	32.36%
Totals		36	100.00%	4,725	100.00%	7,092	100.00%

Problem Analysis:

- There were 36 interruptions on the New Haven 25653 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 36 events occurred at the distribution level.
- The distribution circuit breaker for the New Haven 25653 experienced 1 momentary operation in 2023.
- The distribution circuit breaker for the New Haven 25653 experienced 0 sustained operations (lockouts) in 2023.
- There were 3 recloser lockouts in 2023. These interruptions accounted for 64% of the total amount of customers interrupted (3,022 out of 4,725) and 47% of the total amount of the customer-hours interrupted (3,301 out of 7,092).
 - R40408 first interruption occurred on May 1, 2023, coded as a cause of accident (PSC cause code 06). This lockout accounted for 27% of the total customers interrupted (1,297 of 4,725), and 27% of the total customer-hours interrupted (1,885 of 7,092). The cause of this interruption was an Osprey nest on NYS 3.
 - R40408 second interruption occurred on May 4, 2023, coded as a cause of unknown (PSC cause code 10). This lockout accounted for 26% of the total customers interrupted (1,231 of 4,725), and 2% of the total customer-hours interrupted (116 of 7,092).
 - R41192 interruption occurred on August 7, 2023, coded as a cause of unknown (PSC cause code 10). This lockout accounted for 10% of the total customers interrupted (494 of 4,725), and 18% of the total customer-hours interrupted (1,300 of 7,092).

- Trees were the leading cause of interruptions on the New Haven 25653 in 2023, accounting for 31% of total interruptions (11 of 36). Equipment Failures were the 2nd leading cause of interruptions, accounting for 31% of total interruptions (11 of 36). Unknown were the 3rd leading cause of interruptions, accounting for 17% of total interruptions (6 of 36).
- Unknown were the leading cause of customers interrupted (CI) on the New Haven 25653 in 2023, accounting for 44% of total customers interrupted (2,068 of 4,725). Accidents were the 2nd leading cause of customers interrupted, accounting for 34% of total customers interrupted (1,605 of 4,725). Trees were the 3rd leading cause of customers interrupted, accounting for 13% of total customers interrupted (606 of 4,725).
- Unknown were the leading cause of customer-hours interrupted (CHI) on the New Haven 25653 in 2023, accounting for 32% of total customer-hours interrupted (2,295 of 7,092). Accidents were the 2nd leading cause of customer-hours interrupted, accounting for 32% of total customer-hours interrupted (2,293 of 7,092). Trees were the 3rd leading cause of customer-hours interrupted, accounting for 24% of total customer-hours interrupted (1,696 of 7,092).
- Of the 36 interruptions on this circuit, 15 affected 10 customers or less, with 9 being single customer outages.

Action Taken:

- Distribution Forestry cycle pruned the feeder in FY2023.
- Distribution Forestry completed Ash Tree removals in FY2021.
- The I&M inspection (foot patrol) of the feeder was completed in May 2023.

Action Plan:

- Complete all level 2 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder by May 2024.
- Complete all level 3 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder by May 2026.
- Routine tree trimming/pruning to be completed in FY2028.
- Forestry to review for hazard tree removals.

10. WINE CREEK 28354 - 13.2kV

Profile: 2,399 Customers, 71.1 Circuit Miles
Indices: CAIDI = 1.30, SAIFI = 2.98

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	5	26.32%	4,180	58.54%	5,766	62.33%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	9	47.37%	2,740	38.38%	3,136	33.90%
6	ACCIDENTS	3	15.79%	29	0.41%	48	0.52%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	2	10.53%	191	2.68%	300	3.25%
Totals		19	100.00%	7,140	100.00%	9,251	100.00%

Problem Analysis:

- There were 19 interruptions on the Wine Creek 28354 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 19 events occurred at the distribution level.
- The distribution circuit breaker for the Wine Creek 28354 experienced 0 momentary operations in 2023.
- The distribution circuit breaker for the Wine Creek 28354 experienced 0 sustained operations (lockouts) in 2023.
- There were 3 recloser (R5721) lockouts in 2023. These interruptions accounted for 89% of the total amount of customers interrupted (6,332 out of 7,140) and 73% of the total amount of the customer-hours interrupted (6,776 out of 9,251).
 - The first interruption occurred on January 27, 2023, coded as a cause of tree-broken limb (PSC cause code 02). This lockout accounted for 28% of the total customers interrupted (1,986 of 9,251), and 16% of the total customer-hours interrupted (1,516 of 9,251).
 - The second interruption occurred on June 3, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 28% of the total customers interrupted (1,986 of 9,251), and 35% of the total customer-hours interrupted (3,202 of 9,251).
 - The third interruption occurred on December 13, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 33% of the total customers interrupted (2,360 of 9,251), and 22% of the total customer-hours interrupted (2,058 of 9,251). This was due to burnt conductor.

- Equipment Failures were the leading cause of interruptions on the Wine Creek 28354 in 2023, accounting for 47% of total interruptions (9 of 19). Trees were the 2nd leading cause of interruptions, accounting for 26% of total interruptions (5 of 19). Accidents were the 3rd leading cause of interruptions, accounting for 16% of total interruptions (3 of 19).
- Trees were the leading cause of customers interrupted (CI) on the Wine Creek 28354 in 2023, accounting for 59% of total customers interrupted (4,180 of 7,140). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 38% of total customers interrupted (2,740 of 7,140). Unknown were the 3rd leading cause of customers interrupted, accounting for 3% of total customers interrupted (191 of 7,140).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Wine Creek 28354 in 2023, accounting for 62% of total customer-hours interrupted (5,766 of 9,251). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 34% of total customer-hours interrupted (3,136 of 9,251). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 3% of total customer-hours interrupted (300 of 9,251).
- Of the 19 interruptions on this circuit, 9 affected 10 customers or less, with 5 being single customer outages.

Action Taken:

- The I&M inspection (foot patrol) of the feeder was completed in May 2020.
- Completed all level 2 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder by May 2021.
- Completed all level 3 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder by May 2023.
- Distribution Forestry cycle pruned the feeder in FY2021.

Action Plan:

- Routine tree trimming/pruning to be completed in FY2027.
- Distribution Forestry to monitor the feeder.
- The I&M inspection (foot patrol) of the feeder to completed in 2025.

11. GILBERT MILLS 24751 – 13.2kV

Profile: 2,180 Customers, 78.2 Circuit Miles
 Indices: CAIDI = 1.65, SAIFI = 2.32

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	9	37.50%	1,008	19.91%	1,299	15.54%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	8	33.33%	3,102	61.26%	6,046	72.31%
6	ACCIDENTS	3	12.50%	824	16.27%	842	10.07%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	4	16.67%	130	2.57%	174	2.08%
Totals		24	100.00%	5,064	100.00%	8,361	100.00%

Problem Analysis:

- There were 24 interruptions on the Gilbert Mills 24751 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 24 events occurred at the distribution level.
- The distribution circuit breaker for the Gilbert Mills 24751 experienced 1 momentary operation in 2023.
- The distribution circuit breaker for the Gilbert Mills 24751 experienced 1 sustained operation (lockout) in 2023. This interruption accounted for 43% of the total amount of customers interrupted (2,186 out of 5,064) and 47% of the total amount of the customer-hours interrupted (3,969 out of 8,361).
 - This lockout occurred on March 29, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 43% of the total customers interrupted (2,186 of 5,064), and 47% of the total customer-hours interrupted (3,969 of 8,360). This interruption was due to a failed relay at the substation.
- Trees were the leading cause of interruptions on the Gilbert Mills 24751 in 2023, accounting for 38% of total interruptions (9 of 24). Equipment Failures were the 2nd leading cause of interruptions, accounting for 33% of total interruptions (8 of 24). Unknown were the 3rd leading cause of interruptions, accounting for 17% of total interruptions (4 of 24).
- Equipment Failures were the leading cause of customers interrupted (CI) on the Gilbert Mills 24751 in 2023, accounting for 61% of total customers interrupted (3,102 of 5,064). Trees were the 2nd leading cause of customers interrupted, accounting for 20% of total customers interrupted (1,008 of 5,064). Accidents were the 3rd leading cause of customers interrupted, accounting for 16% of total customers interrupted (824 of 5,064).

- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the Gilbert Mills 24751 in 2023, accounting for 72% of total customer-hours interrupted (6,046 of 8,361). Trees were the 2nd leading cause of customer-hours interrupted, accounting for 16% of total customer-hours interrupted (1,299 of 8,361). Accidents were the 3rd leading cause of customer-hours interrupted, accounting for 10% of total customer-hours interrupted (842 of 8,361).
- Of the 24 interruptions on this circuit, 8 affected 10 customers or less, with 4 being single customer outages.

Action Taken:

- Distribution Forestry cycle pruned the feeder in FY2022.
- Distribution Forestry completed Ash Tree removals in FY2021.
- The I&M inspection (foot patrol) of the feeder was completed in May 2022.
- Completed all level 2 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder by May 2023.

Action Plan:

- Complete all level 3 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder by May 2025.
- Distribution Forestry to perform a hazard tree review on the main line of the feeder.
- Routine tree trimming/pruning to be completed in FY2027.
- FLISR to be active on the feeder in 2024.

12. WETZEL RD SUBSTATION 690055 - 13.2kV

Profile: 1,509 Customers, 49.6 Circuit Miles
Indices: CAIDI = 1.15, SAIFI = 4.69

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	4	30.77%	2,833	40.01%	3,200	39.33%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	6	46.15%	2,623	37.05%	4,231	51.99%
6	ACCIDENTS	1	7.69%	1,510	21.33%	518	6.37%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	2	15.38%	114	1.61%	188	2.31%
Totals		13	100.00%	7,080	100.00%	8,137	100.00%

Problem Analysis:

- There were 13 interruptions on the Wetzel Rd Substation 690055 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 13 events occurred at the distribution level.
- The distribution circuit breaker for the Wetzel Rd Substation 690055 experienced 2 momentary operations in 2023.
- The distribution circuit breaker for the Wetzel Rd Substation 690055 experienced 3 sustained operations (lockouts) in 2023. These interruptions accounted for 65% of the total amount of customers interrupted (4,622 out of 7,080) and 49% of the total amount of the customer-hours interrupted (4,010 out of 8,137).
 - The first lockout occurred on February 23, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 23% of the total customers interrupted (1,600 of 7,080), and 20% of the total customer-hours interrupted (1,645 of 8,137). This interruption was due to a conductor that came off an insulator.
 - The second lockout occurred on July 06, 2023, coded as a cause of vehicle (PSC cause code 06). This lockout accounted for 21% of the total customers interrupted (1,510 of 7,080), and 6% of the total customer-hours interrupted (518 of 8,137). This interruption was due to a car that broke a guy wire.
 - The third lockout occurred on August 07, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 21% of the total customers interrupted (1,512 of 7,080), and 23% of the total customer-hours interrupted (1,847 of 8,137).

- Equipment Failures were the leading cause of interruptions on the Wetzel Rd Substation 690055 in 2023, accounting for 46% of total interruptions (6 of 13). Trees were the 2nd leading cause of interruptions, accounting for 31% of total interruptions (4 of 13). Unknown were the 3rd leading cause of interruptions, accounting for 15% of total interruptions (2 of 13).
- Trees were the leading cause of customers interrupted (CI) on the Wetzel Rd Substation 690055 in 2023, accounting for 40% of total customers interrupted (2,833 of 7,080). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 37% of total customers interrupted (2,623 of 7,080). Accidents were the 3rd leading cause of customers interrupted, accounting for 21% of total customers interrupted (1,510 of 7,080).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the Wetzel Rd Substation 690055 in 2023, accounting for 52% of total customer-hours interrupted (4,231 of 8,137). Trees were the 2nd leading cause of customer-hours interrupted, accounting for 39% of total customer-hours interrupted (3,200 of 8,137). Accidents were the 3rd leading cause of customer-hours interrupted, accounting for 6% of total customer-hours interrupted (518 of 8,137).
- Of the 13 interruptions on this circuit, 1 affected 10 customers or less, with 1 being single customer outages.

Action Taken:

- Distribution Forestry cycle pruned completed November, 2023.
- Hazard Tree removals completed in 2023.
- The I&M inspection (foot patrol) of the feeder was completed in August 2021.
- Completed all level 2 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder by August 2022.

Action Plan:

- Complete all level 3 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder by August 2024.

13. TULLY CENTER 27851 - 13.2kV

Profile: 2,360 Customers, 124.6 Circuit Miles
 Indices: CAIDI = 1.06, SAIFI = 2.62

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	21	60.00%	2,425	39.18%	3,048	46.55%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	3	8.57%	559	9.03%	611	9.33%
6	ACCIDENTS	6	17.14%	2,954	47.73%	2,330	35.58%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	5	14.29%	251	4.06%	560	8.55%
Totals		35	100.00%	6,189	100.00%	6,548	100.00%

Problem Analysis:

- There were 35 interruptions on the Tully Center 27851 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 35 events occurred at the distribution level.
- The distribution circuit breaker for the Tully Center 27851 experienced 2 momentary operations in 2023.
- The distribution circuit breaker for the Tully Center 27851 experienced 1 sustained operation (lockout) in 2023. This interruption accounted for 38% of the total amount of customers interrupted (2,355 out of 6,189) and 34% of the total amount of the customer-hours interrupted (2,206 out of 6,548).
 - This lockout occurred on May 23, 2023, coded as a cause of vehicle (PSC cause code 06). This lockout accounted for 38% of the total customers interrupted (2,355 of 6,189), and 34% of the total customer-hours interrupted (2,206 of 6,548). This was caused due to a tractor running into P49 on State Hwy 80. The vehicle took down primary and broke the pole.
- Trees were the leading cause of interruptions on the Tully Center 27851 in 2023, accounting for 60% of total interruptions (21 of 35). Accidents were the 2nd leading cause of interruptions, accounting for 17% of total interruptions (6 of 35). Unknown were the 3rd leading cause of interruptions, accounting for 14% of total interruptions (5 of 35).

- Accidents were the leading cause of customers interrupted (CI) on the Tully Center 27851 in 2023, accounting for 48% of total customers interrupted (2,954 of 6,189). Trees were the 2nd leading cause of customers interrupted, accounting for 39% of total customers interrupted (2,425 of 6,189). Equipment Failures were the 3rd leading cause of customers interrupted, accounting for 9% of total customers interrupted (559 of 6,189).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Tully Center 27851 in 2023, accounting for 47% of total customer-hours interrupted (3,048 of 6,548). Accidents were the 2nd leading cause of customer-hours interrupted, accounting for 36% of total customer-hours interrupted (2,330 of 6,548). Equipment Failures were the 3rd leading cause of customer-hours interrupted, accounting for 9% of total customer-hours interrupted (611 of 6,548).
- Of the 35 interruptions on this circuit, 19 affected 10 customers or less, with 9 being single customer outages.

Action Taken:

- Distribution Forestry cycle pruned the feeder in FY2020.
- The I&M inspection (foot patrol) of the feeder was completed in Aug 2023.

Action Plan:

- Routine tree trimming/pruning to be completed in FY2026.
- Complete all level 2 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder by Sept 2024.

14. LORDS HILL 15067 –4.8kV

Profile: 797 Customers, 54.6 Circuit Miles
Indices: CAIDI = 2.01, SAIFI = 2.84

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	7	38.89%	1,724	76.22%	4,177	91.68%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	0	0.00%	0	0.00%	0	0.00%
6	ACCIDENTS	4	22.22%	501	22.15%	267	5.87%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	2	11.11%	24	1.06%	62	1.37%
10	UNKNOWN	5	27.78%	13	0.57%	49	1.08%
Totals		18	100.00%	2,262	100.00%	4,556	100.00%

Problem Analysis:

- There were 18 interruptions on the Lords Hill 15067 in 2023.
- There were 2 transmission interruptions.
 - The first Transmission interruption occurred on May 24, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 35% of the total customers interrupted (793 of 2,262), and 19% of the total customer-hours interrupted (872 of 4,556). This was caused by a tree, which downed wire near structure 237
 - The second Transmission interruption occurred on October 20, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 35% of the total customers interrupted (802 of 2,262), and 62% of the total customer-hours interrupted (2,816 of 4,556). This was caused by a tree, leading to a wire down on the Lords Hill Tap
- There were no substation interruptions.
- The remaining 16 events occurred at the distribution level.
- The distribution circuit breaker for the Lords Hill 15067 experienced 1 momentary operation in 2023.
- The distribution circuit breaker for the Lords Hill 15067 experienced 0 sustained operations (lockouts) in 2023.
- Trees were the leading cause of interruptions on the Lords Hill 15067 in 2023, accounting for 39% of total interruptions (7 of 18). Unknown were the 2nd leading cause of interruptions, accounting for 28% of total interruptions (5 of 18). Accidents were the 3rd leading cause of interruptions, accounting for 22% of total interruptions (4 of 18).

- Trees were the leading cause of customers interrupted (CI) on the Lords Hill 15067 in 2023, accounting for 76% of total customers interrupted (1,724 of 2,262). Accidents were the 2nd leading cause of customers interrupted, accounting for 22% of total customers interrupted (501 of 2,262). Lightning were the 3rd leading cause of customers interrupted, accounting for 1% of total customers interrupted (24 of 2,262).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Lords Hill 15067 in 2023, accounting for 92% of total customer-hours interrupted (4,177 of 4,556). Accidents were the 2nd leading cause of customer-hours interrupted, accounting for 6% of total customer-hours interrupted (267 of 4,556). Lightning were the 3rd leading cause of customer-hours interrupted, accounting for 1% of total customer-hours interrupted (62 of 4,556).
- Of the 18 interruptions on this circuit, 10 affected 10 customers or less, with 4 being single customer outages.

Action Taken:

- The I&M inspection (foot patrol) of the feeder was completed in April 2021.
- Distribution Forestry cycle pruned the feeder in FY2021.
- Completed all level 2 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder by May 2021.
- Distribution Forestry completed Ash tree removals on the feeder in FY2021.

Action Plan:

- Completed all level 3 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder by May 2024.
- Routine tree trimming/pruning to be completed in FY2028.

15. BARTELL RD 32554 - 13.2kV

Profile: 2,815 Customers, 47.5 Circuit Miles
Indices: CAIDI = 1.03, SAIFI = 2.62

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	3	12.00%	3,437	46.57%	2,629	34.70%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	8	32.00%	3,820	51.76%	4,706	62.12%
6	ACCIDENTS	4	16.00%	18	0.24%	37	0.48%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	2	8.00%	60	0.81%	117	1.55%
10	UNKNOWN	8	32.00%	45	0.61%	86	1.14%
Totals		25	100.00%	7,380	100.00%	7,576	100.00%

Problem Analysis:

- There were 25 interruptions on the Bartell Rd 32554 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 25 events occurred at the distribution level.
- The distribution circuit breaker for the Bartell Rd 32554 experienced 9 momentary operations in 2023.
- The distribution circuit breaker for the Bartell Rd 32554 experienced 2 sustained operations (lockouts) in 2023. These interruptions accounted for 76% of the total amount of customers interrupted (5,632 out of 7,380) and 69% of the total amount of the customer-hours interrupted (5,257 out of 7,576).
 - The first lockout occurred on February 03, 2023, coded as a cause of deterioration (PSC cause code 05). This lockout accounted for 38% of the total customers interrupted (2,806 of 7,380), and 38% of the total customer-hours interrupted (2,908 of 7,576). This interruption was due to multiple rotten pole that had failed.
 - The second lockout occurred on August 07, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 38% of the total customers interrupted (2,826 of 7,380), and 31% of the total customer-hours interrupted (2,350 of 7,576).
- Equipment Failures were the leading cause of interruptions on the Bartell Rd 32554 in 2023, accounting for 32% of total interruptions (8 of 25). Unknown were the 2nd leading cause of interruptions, accounting for 32% of total interruptions (8 of 25). Accidents were the 3rd leading cause of interruptions, accounting for 16% of total interruptions (4 of 25).

- Equipment Failures were the leading cause of customers interrupted (CI) on the Bartell Rd 32554 in 2023, accounting for 52% of total customers interrupted (3,820 of 7,380). Trees were the 2nd leading cause of customers interrupted, accounting for 47% of total customers interrupted (3,437 of 7,380). Lightning were the 3rd leading cause of customers interrupted, accounting for 1% of total customers interrupted (60 of 7,380).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the Bartell Rd 32554 in 2023, accounting for 62% of total customer-hours interrupted (4,706 of 7,576). Trees were the 2nd leading cause of customer-hours interrupted, accounting for 35% of total customer-hours interrupted (2,629 of 7,576). Lightning were the 3rd leading cause of customer-hours interrupted, accounting for 2% of total customer-hours interrupted (117 of 7,576).
- Of the 25 interruptions on this circuit, 17 affected 10 customers or less, with 7 being single customer outages.

Action Taken:

- The I&M inspection (foot patrol) of the feeder was completed in January 2019.
- Completed all level 2 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder by January 2020.
- Completed all level 2 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder by January 2022.

Action Plan:

- Routine tree trimming/pruning to be completed in FY2025.
- The I&M inspection (foot patrol) of the feeder to completed in 2025.

16. THIRD ST 21672 – 4.8kV

Profile: 943 Customers, 27.6 Circuit Miles
 Indices: CAIDI = 1.76, SAIFI = 2.98

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	8	57.14%	1,928	68.56%	3,466	69.88%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	2	14.29%	858	30.51%	1,379	27.81%
6	ACCIDENTS	1	7.14%	15	0.53%	59	1.20%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	1	7.14%	3	0.11%	29	0.57%
10	UNKNOWN	2	14.29%	8	0.28%	27	0.54%
Totals		14	100.00%	2,812	100.00%	4,960	100.00%

Problem Analysis:

- There were 14 interruptions on the Third St 21672 in 2023.
- There was 1 transmission interruption.
 - This Transmission interruption occurred on April 07, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 30% of the total customers interrupted (846 of 2,812), and 27% of the total customer-hours interrupted (1,325 of 4,960). This interruption was due to a failed insulator.
- There were no substation interruptions.
- The remaining 13 events occurred at the distribution level.
- The distribution circuit breaker for the Third St 21672 experienced 1 momentary operation in 2023.
- The distribution circuit breaker for the Third St 21672 experienced 1 sustained operation (lockout) in 2023. This interruption accounted for 33% of the total amount of customers interrupted (941 out of 2,812) and 23% of the total amount of the customer-hours interrupted (1,156 out of 4,960).
- This lockout occurred on April 01, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 33% of the total customers interrupted (941 of 2,812), and 23% of the total customer-hours interrupted (1,156 of 4,960).
- Trees were the leading cause of interruptions on the Third St 21672 in 2023, accounting for 57% of total interruptions (8 of 14). Equipment Failures were the 2nd leading cause of interruptions, accounting for 14% of total interruptions (2 of 14). Unknown were the 3rd leading cause of interruptions, accounting for 14% of total interruptions (2 of 14).

- Trees were the leading cause of customers interrupted (CI) on the Third St 21672 in 2023, accounting for 69% of total customers interrupted (1,928 of 2,812). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 31% of total customers interrupted (858 of 2,812). Accidents were the 3rd leading cause of customers interrupted, accounting for 1% of total customers interrupted (15 of 2,812).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Third St 21672 in 2023, accounting for 70% of total customer-hours interrupted (3,466 of 4,960). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 28% of total customer-hours interrupted (1,379 of 4,960). Accidents were the 3rd leading cause of customer-hours interrupted, accounting for 1% of total customer-hours interrupted (59 of 4,960).
- Of the 14 interruptions on this circuit, 4 affected 10 customers or less, with 1 being single customer outages.

Action Taken:

- The I&M inspection (foot patrol) of the feeder was completed in March 2020.
- Completed all level 2 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder by March 2021.
- Completed all level 2 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder by March 2021.

Action Plan:

- Routine tree trimming/pruning to be completed in FY2026.
- The I&M inspection (foot patrol) of the feeder to completed in 2025.

17. COLLAMER CROSSING 151156 - 13.2kV

Profile: 1,132 Customers, 29.3 Circuit Miles
Indices: CAIDI = 1.72, SAIFI = 2.56

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	4	25.00%	424	14.63%	1,615	32.38%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	5	31.25%	1,212	41.81%	1,221	24.47%
6	ACCIDENTS	5	31.25%	867	29.91%	1,160	23.26%
7	PREARRANGED	1	6.25%	393	13.56%	984	19.73%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	1	6.25%	3	0.10%	8	0.16%
Totals		16	100.00%	2,899	100.00%	4,988	100.00%

Problem Analysis:

- There were 16 interruptions on the Collamer Crossing 151156 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 16 events occurred at the distribution level.
- The distribution circuit breaker for the Collamer Crossing 151156 experienced 1 momentary operation in 2023.
- The distribution circuit breaker for the Collamer Crossing 151156 experienced 1 sustained operation (lockout) in 2023. This interruption accounted for 39% of the total amount of customers interrupted (1,136 out of 2,899) and 23% of the total amount of the customer-hours interrupted (1,153 out of 4,988).
 - This lockout occurred on December 11, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 39% of the total customers interrupted (1,136 of 2,899), and 23% of the total customer-hours interrupted (1,153 of 4,988). This interruption was due to a 3-phase transformer bank that failed just beyond the riser pole.
- Equipment Failures were the leading cause of interruptions on the Collamer Crossing 151156 in 2023, accounting for 31% of total interruptions (5 of 16). Accidents were the 2nd leading cause of interruptions, accounting for 31% of total interruptions (5 of 16). Trees were the 3rd leading cause of interruptions, accounting for 25% of total interruptions (4 of 16).

- Equipment Failures were the leading cause of customers interrupted (CI) on the Collamer Crossing 151156 in 2023, accounting for 42% of total customers interrupted (1,212 of 2,899). Accidents were the 2nd leading cause of customers interrupted, accounting for 30% of total customers interrupted (867 of 2,899). Trees were the 3rd leading cause of customers interrupted, accounting for 15% of total customers interrupted (424 of 2,899).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Collamer Crossing 151156 in 2023, accounting for 32% of total customer-hours interrupted (1,615 of 4,988). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 24% of total customer-hours interrupted (1,221 of 4,988). Accidents were the 3rd leading cause of customer-hours interrupted, accounting for 23% of total customer-hours interrupted (1,160 of 4,988).
- Of the 16 interruptions on this circuit, 6 affected 10 customers or less, with 4 being single customer outages.

Action Taken:

- N/A

Action Plan:

- Distribution Forestry to cycle prune the feeder in FY2026.

18. SORRELL HILL 26954 – 13.2kV

Profile: 3,275 Customers, 35.6 Circuit Miles
Indices: CAIDI = 2.09, SAIFI = 1.90

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	6	37.50%	5,448	87.38%	11,417	87.52%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	5	31.25%	660	10.59%	1,374	10.53%
6	ACCIDENTS	3	18.75%	54	0.87%	91	0.70%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	1	6.25%	72	1.15%	161	1.23%
10	UNKNOWN	1	6.25%	1	0.02%	3	0.03%
Totals		16	100.00%	6,235	100.00%	13,045	100.00%

Problem Analysis:

- There were 16 interruptions on the Sorrell Hill 26954 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 16 events occurred at the distribution level.
- The distribution circuit breaker for the Sorrell Hill 26954 experienced 2 momentary operations in 2023.
- The distribution circuit breaker for the Sorrell Hill 26954 experienced 1 sustained operation (lockout) in 2023. This interruption accounted for 52% of the total amount of customers interrupted (3,271 out of 6,235) and 52% of the total amount of the customer-hours interrupted (6,737 out of 13,045).
 - This lockout occurred on February 23, 2023, coded as a cause of tree - broken limb (PSC cause code 02). This lockout accounted for 52% of the total customers interrupted (3,271 of 6,235), and 52% of the total customer-hours interrupted (6,737 of 13,045).
- Recloser R2961 experienced 1 sustained interruption (lockout) in 2023, coded as a cause of tree - broken limb (PSC cause code 02).. This interruption accounted for 32% of the total amount of customers interrupted (2,008 out of 6,235) and 35% of the total amount of the customer-hours interrupted (4,523 out of 13,045).
- Trees were the leading cause of interruptions on the Sorrell Hill 26954 in 2023, accounting for 38% of total interruptions (6 of 16). Equipment Failures were the 2nd leading cause of interruptions, accounting for 31% of total interruptions (5 of 16). Accidents were the 3rd leading cause of interruptions, accounting for 19% of total interruptions (3 of 16).

- Trees were the leading cause of customers interrupted (CI) on the Sorrell Hill 26954 in 2023, accounting for 87% of total customers interrupted (5,448 of 6,235). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 11% of total customers interrupted (660 of 6,235). Lightning were the 3rd leading cause of customers interrupted, accounting for 1% of total customers interrupted (72 of 6,235).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Sorrell Hill 26954 in 2023, accounting for 88% of total customer-hours interrupted (11,417 of 13,045). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 11% of total customer-hours interrupted (1,374 of 13,045). Lightning were the 3rd leading cause of customer-hours interrupted, accounting for 1% of total customer-hours interrupted (161 of 13,045).
- Of the 16 interruptions on this circuit, 7 affected 10 customers or less, with 6 being single customer outages.

Action Taken:

- The I&M inspection (foot patrol) of the feeder was completed in September 2021.
- Completed all level 2 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder by September 2022.
- 1,502 Ash trees have been removed since 2019.

Action Plan:

- Distribution Forestry to cycle prune the feeder in FY2024.
- Complete all level 3 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder by September 2024.

19. LORDS HILL 15066 – 4.8kV

Profile: 451 Customers, 24.8 Circuit Miles
Indices: CAIDI = 2.37, SAIFI = 2.62

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	8	44.44%	1,160	98.14%	2,707	96.52%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	3	16.67%	10	0.85%	40	1.44%
6	ACCIDENTS	1	5.56%	2	0.17%	8	0.28%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	1	5.56%	1	0.08%	15	0.54%
10	UNKNOWN	5	27.78%	9	0.76%	34	1.22%
Totals		18	100.00%	1,182	100.00%	2,805	100.00%

Problem Analysis:

- There were 18 interruptions on the Lords Hill 15066 in 2023.
- There were 2 transmission interruptions.
 - The first Transmission interruption occurred on May 24, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 38% of the total customers interrupted (451 of 1,182), and 18% of the total customer-hours interrupted (496 of 2,805). This was caused by a tree, which downed wire near structure 237
 - The second Transmission interruption occurred on October 20, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 38% of the total customers interrupted (451 of 1,182), and 53% of the total customer-hours interrupted (1,494 of 2,805). This was caused by a tree, leading to a wire down on the Lords Hill Tap
- There were no substation interruptions.
- The remaining 16 events occurred at the distribution level.
- The distribution circuit breaker for the Lords Hill 15066 experienced 1 momentary operation in 2023.
- The distribution circuit breaker for the Lords Hill 15066 experienced 0 sustained operations (lockouts) in 2023.
- Trees were the leading cause of interruptions on the Lords Hill 15066 in 2023, accounting for 44% of total interruptions (8 of 18). Unknown were the 2nd leading cause of interruptions, accounting for 28% of total interruptions (5 of 18). Equipment Failures were the 3rd leading cause of interruptions, accounting for 17% of total interruptions (3 of 18).

- Trees were the leading cause of customers interrupted (CI) on the Lords Hill 15066 in 2023, accounting for 98% of total customers interrupted (1,160 of 1,182). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 1% of total customers interrupted (10 of 1,182). Unknown were the 3rd leading cause of customers interrupted, accounting for 1% of total customers interrupted (9 of 1,182).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Lords Hill 15066 in 2023, accounting for 97% of total customer-hours interrupted (2,707 of 2,805). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 1% of total customer-hours interrupted (40 of 2,805). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 1% of total customer-hours interrupted (34 of 2,805).
- Of the 18 interruptions on this circuit, 11 affected 10 customers or less, with 6 being single customer outages.

Action Taken:

- The I&M inspection (foot patrol) of the feeder was completed in April 2021.
- Distribution Forestry cycle pruned the feeder in FY2021.
- Completed all level 2 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder by May 2021.

Action Plan:

- Completed all level 3 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder by May 2024.
- Routine tree trimming/pruning to be completed in FY2028.

20. BELMONT 26052 – 13.2kV

Profile: 1,736 Customers, 16.3 Circuit Miles
Indices: CAIDI = 1.41, SAIFI = 3.23

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	3	27.27%	11	0.20%	58	0.73%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	4	36.36%	3,726	66.41%	4,453	56.18%
6	ACCIDENTS	2	18.18%	1,861	33.17%	3,395	42.84%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	1	9.09%	1	0.02%	4	0.05%
10	UNKNOWN	1	9.09%	12	0.21%	16	0.20%
Totals		11	100.00%	5,611	100.00%	7,925	100.00%

Problem Analysis:

- There were 11 interruptions on the Belmont 26052 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 11 events occurred at the distribution level.
- The distribution circuit breaker for the Belmont 26052 experienced 2 momentary operations in 2023.
- The distribution circuit breaker for the Belmont 26052 experienced 2 sustained operations (lockouts) in 2023. These interruptions accounted for 62% of the total amount of customers interrupted (3,471 out of 5,611) and 68% of the total amount of the customer-hours interrupted (5,373 out of 7,925).
 - The first lockout occurred on June 04, 2023, coded as a cause of insulation failure - cable (PSC cause code 05). This lockout accounted for 31% of the total customers interrupted (1,734 of 5,611), and 31% of the total customer-hours interrupted (2,453 of 7,925). This interruption was due to a cable fault under I-90 (NYS Thruway).
 - The second lockout occurred on October 21, 2023, coded as a cause of animal (PSC cause code 06). This lockout accounted for 31% of the total customers interrupted (1,737 of 5,611), and 37% of the total customer-hours interrupted (2,920 of 7,925). This interruption was due to wildlife contact on recloser R41002.
- Equipment Failures were the leading cause of interruptions on the Belmont 26052 in 2023, accounting for 36% of total interruptions (4 of 11). Trees were the 2nd leading cause of interruptions, accounting for 27% of total interruptions (3 of 11). Accidents were the 3rd leading cause of interruptions, accounting for 18% of total interruptions (2 of 11).

- Equipment Failures were the leading cause of customers interrupted (CI) on the Belmont 26052 in 2023, accounting for 66% of total customers interrupted (3,726 of 5,611). Accidents were the 2nd leading cause of customers interrupted, accounting for 33% of total customers interrupted (1,861 of 5,611). Unknown were the 3rd leading cause of customers interrupted, accounting for 0% of total customers interrupted (12 of 5,611).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the Belmont 26052 in 2023, accounting for 56% of total customer-hours interrupted (4,453 of 7,925). Accidents were the 2nd leading cause of customer-hours interrupted, accounting for 43% of total customer-hours interrupted (3,395 of 7,925). Trees were the 3rd leading cause of customer-hours interrupted, accounting for 1% of total customer-hours interrupted (58 of 7,925).
- Of the 11 interruptions on this circuit, 5 affected 10 customers or less, with 4 being single customer outages.

Action Taken:

- The I&M inspection (foot patrol) of the feeder was completed in May 2021.
- Completed all level 2 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder by May 2022.

Action Plan:

- Distribution Forestry to cycle prune the feeder in FY2024.
- Complete all level 3 maintenance work that was identified by the I&M inspection (foot patrol) on the feeder by May 2024.

3. ACTION PLAN SUMMARIES

a. SUMMARY OF ACTION PLANS FOR 2023 WORST PERFORMING CIRCUITS

Station	Feeder	Report Year	Action Plan	Estimated Completion Date	Comments
West Monroe	27451	2023	Install sectionalizing breakers on the transmission line side of Mallory Substation	03/2026	
West Monroe	27451	2023	Hazard tree removal	12/2024	
West Monroe	27451	2023	Level 2 maintenance	07/2024	
West Monroe	27451	2023	Level 3 maintenance	07/2026	
West Cleveland	32651	2023	Install sectionalizing breakers on the transmission line side of Mallory Substation	03/2026	
West Cleveland	32651	2023	The I&M inspection (foot patrol)	12/2025	
West Cleveland	32651	2023	Routine tree trimming/pruning to be completed in FY2028.	03/2028	
Whitaker	29652	2023	The I&M inspection (foot patrol)	12/2024	
Whitaker	29652	2023	Routine tree trimming/pruning to be completed in FY2024.	03/2024	
Phoenix	5165	2023	Level 2 maintenance	11/2024	
Phoenix	5165	2023	Level 3 maintenance	11/2026	
Niles	29451	2023	Hazard tree removal	12/2024	
Niles	29451	2023	The I&M inspection (foot patrol)	12/2024	
Niles	29451	2023	Routine tree trimming/pruning to be completed in FY2028.	03/2028	
Lighthouse Hill	6144	2023	Routine trimming	03/2025	
Lighthouse Hill	6144	2023	The I&M inspection (foot patrol)	12/2025	
Colosse	32151	2023	Hazard tree removal	12/2024	
Colosse	32151	2023	Routine trimming	03/2028	
Colosse	32151	2023	Level 3 maintenance	08/2024	
Colosse	32151	2023	Install sectionalizing breakers on the transmission line side of Mallory Substation	03/2026	
Cleveland	1166	2023	Routine trimming	12/2028	
Cleveland	1166	2023	Level 3 maintenance	12/2024	
Cleveland	1166	2023	Install sectionalizing breakers on the transmission line side of Mallory Substation	03/2026	
New Haven	25653	2023	Level 2 maintenance	05/2024	
New Haven	25653	2023	Level 3 maintenance	05/2026	
New Haven	25653	2023	Routine trimming	03/2028	
New Haven	25653	2023	Review for hazard tree removal	12/2024	
Wine Creek	28354	2023	Routine trimming	03/2027	
Wine Creek	28354	2023	Forestry to monitor feeder	12/2024	
Wine Creek	28354	2023	The I&M inspection (foot patrol)	12/2025	
Gilbert Mills	24751	2023	Hazard tree review	12/2024	
Gilbert Mills	24751	2023	Level 3 maintenance	05/2025	
Gilbert Mills	24751	2023	Routine trimming	03/2027	
Gilbert Mills	24751	2023	Active FLISR	12/2024	
Wetzel Road	690055	2023	Level 3 maintenance	11/2024	
Tully Center	27851	2023	Routine trimming	03/2026	
Tully Center	27851	2023	Level 2 maintenance	09/2024	
Lords Hill	15067	2023	Routine trimming	03/2028	
Lords Hill	15067	2023	Level 3 maintenance	05/2024	
Bartell Road	32554	2023	Routine trimming	03/2025	
Bartell Road	32554	2023	The I&M inspection (foot patrol)	12/2025	
Third Street	21672	2023	Routine trimming	03/2026	
Third Street	21672	2023	The I&M inspection (foot patrol)	12/2025	
Collamer Crossing	151156	2023	Routine trimming	03/2026	
Sorrell Hill	26954	2023	Routine tree trimming/pruning to be completed in FY2024.	03/2024	
Sorrell Hill	26954	2023	Level 3 maintenance	09/2024	
Lords Hill	15066	2023	Routine trimming	03/2028	

Station	Feeder	Report Year	Action Plan	Estimated Completion Date	Comments
Lords Hill	15066	2023	Level 3 maintenance	05/2024	
Belmont	26052	2023	Routine tree trimming/pruning to be completed in FY2024.	03/2024	
Belmont	26052	2023	Level 3 maintenance	05/2024	

b. STATUS OF ACTION PLANS FOR 2022 WORST PERFORMING CIRCUITS

Station	Feeder	Report Year	Action Plan	Actual Completion Date	Comments
West Monroe	27451	2022	Install sectionalizing breakers on the transmission line side of Mallory Substation	03/2026	
West Monroe	27451	2022	The I&M inspection (foot patrol)	12/2023	
West Monroe	27451	2022	Hazard tree removal	12/2023	
West Monroe	27451	2022	Replace Sub-T poles	12/2023	
Colosse	32151	2022	Install sectionalizing breakers on the transmission line side of Mallory Substation	03/2026	
Colosse	32151	2022	Level 3 maintenance	08/2024	
Colosse	32151	2022	Routine tree trimming/pruning to be completed in FY2023.	03/2023	
West Cleveland	32651	2022	Install sectionalizing breakers on the transmission line side of Mallory Substation	03/2026	
West Cleveland	32651	2022	Distribution Forestry to review the circuit for hazard trees.	12/2023	
West Cleveland	32651	2022	Level 3 maintenance	06/2023	
West Cleveland	32651	2022	Replace SubT poles	12/2023	
Third Street	21672	2022	Routine trimming	03/2025	
Third Street	21672	2022	Hazard tree removal	12/2023	
Third Street	21672	2022	Level 3 maintenance	03/2023	
East Pulaski	32451	2022	Routine trimming	03/2023	
East Pulaski	32451	2022	Hazard tree removal	12/2023	
Southwood	24452	2022	Level 3 maintenance	05/2024	
Southwood	24452	2022	Routine trimming	03/2023	
Cleveland	1166	2022	Level 3 maintenance	12/2024	
Cleveland	1166	2022	Install sectionalizing breakers on the transmission line side of Mallory Substation	03/2026	
Cleveland	1166	2022	Replace Sub-T poles	12/2023	
Lighthouse Hill	6144	2022	Routine trimming	33/2025	
Lighthouse Hill	6144	2022	Forestry to review for hazard tree removals	12/2022	
Lighthouse Hill	6144	2022	Level 3 maintenance	11/2023	
Lords Hill	15067	2022	Level 3 maintenance	4/2024	
Lords Hill	15067	2022	Routine trimming	12/2026	
Lords Hill	15067	2022	Hazard tree removal	09/2023	
Sandy Creek	6652	2022	Routine trimming	03/2023	
Sandy Creek	6652	2022	Hazard tree removal	12/2023	
Truxton	7473	2022	Level 3 maintenance	06/2023	
Truxton	7473	2022	Routine trimming	06/2025	
Truxton	7473	2022	hazard tree review	09/2023	
Truxton	7473	2022	Feeder Tie	04/2026	
New Haven	25652	2022	Hazard tree removal	12/2023	
Niles	29451	2022	Hazard tree removal	12/2023	
Belmont	26054	2022	Level 3 maintenance	05/2024	
Belmont	26054	2022	Routine trimming	03/2024	
Milton	26656	2022	Hazard tree removal	12/2023	
Milton	26656	2022	Level 3 maintenance	12/2023	

Station	Feeder	Report Year	Action Plan	Actual Completion Date	Comments
Sorrell Hill	26954	2022	Routine trimming	03/2024	
Gilbert Mills	24751	2022	Level 2 maintenance	05/2023	
Gilbert Mills	24751	2022	Level 3 maintenance	05/2025	
Gilbert Mills	24751	2022	Forestry to review for hazard tree removals	12/2023	
Constantia	1923	2022	Install sectionalizing breakers on the transmission line side of Mallory Substation	03/2026	
Constantia	1923	2022	Routine tree trimming/pruning to be completed in FY2024.	03/2024	
Constantia	1923	2022	Level 2 maintenance	05/2023	
Constantia	1923	2022	Level 3 maintenance	05/2025	
Constantia	1923	2022	Replace Sub-T poles	12/2023	
Central Square	1562	2022	Install sectionalizing breakers on the transmission line side of Mallory Substation	03/2026	
Central Square	1562	2022	Level 2 maintenance	03/2023	
Central Square	1562	2022	Level 3 maintenance	03/2025	
Central Square	1562	2022	Routine trimming	03/2024	
Central Square	1562	2022	Replace Sub-T poles	12/2023	

E. FRONTIER REGION

1. OPERATING REGIONAL PERFORMANCE

a. HISTORIC CAIDI AND SAIFI INDICES

IDS Info:

	2023	2022	2021	2020	2019	2018
CAIDI (Threshold 1.869)	2.14	1.97	1.63	2.58	1.63	1.61
SAIFI (Threshold 0.480)	0.40	0.33	0.43	0.52	0.46	0.48
SAIDI	0.86	0.66	0.70	1.34	0.76	0.77
Interruptions	1,333	1,355	1,325	1,650	1,468	1,480
Customers Interrupted	133,872	111,047	144,137	171,231	151,806	156,487
Customer-Hours Interrupted	286,529	218,658	234,433	441,958	248,160	252,020
Customers Served	331,867	332,562	332,602	330,590	328,331	326,422
Customers Per Interruption	100.43	81.95	108.78	103.78	103.41	105.73
Availability Index	99.9901	99.9925	99.9920	99.9848	99.9914	99.9912
Interruptions/1000 customers	4.02	4.07	3.98	4.99	4.47	4.53

b. DISCUSSION OF REGIONAL PERFORMANCE

In 2023, the Frontier Region did not meet its CAIDI reliability target and met its SAIFI reliability target as set forth by the New York Public Service Commission (PSC). The final System Average Interruption Frequency Index (SAIFI) result was 0.4 interruptions, 17% below the PSC goal of 0.480 interruptions. As shown in the table above, the Customer Average Interruption Duration index (CAIDI) was 2.14 in 2023, 14% above the PSC's regional target of 1.869 hours.

The 2023 CAIDI result was 9% above the 2022 result of 1.97 hours, and 13% above the previous 5-year average of 1.90 hours. The 2023 SAIFI was 21% above the 2022 result of 0.33 interruptions, and 11% below the previous 5-year average of 0.45 interruptions.

In 2023, excluding major storms, the Frontier Region experienced 12 transmission interruptions. These interruptions accounted for 1% of the region's total interruptions (12 of 1,333), 25% of the region's total customers interrupted (CI), (33,677 of 133,872), and 40% (115,284 of 286,528) of the region's total customer-hours interrupted (CHI). Overall, transmission interruptions had a CAIDI of 3.42 hours, and a SAIFI of 0.1 interruptions.

The number of transmission-related interruptions increased from 6 in 2022 to 12 in 2023 (an increase of 100%). The number of customers interrupted increased from 11,631 in 2022, to 33,677 in 2023 (an increase of 190%), while the customer-hours interrupted increased from 27,965 in 2022, to 115,284 in 2023 (an increase of 312%).

In 2023, excluding major storms, the Frontier Region experienced 7 substation interruptions. These interruptions accounted for 1% of the region's total interruptions (7 of 1,333), 11% of the region's total customers interrupted, (14,334 of 133,872), and 5% (14,519 of 286,528) of the region's total customer-hours interrupted. Overall, substation interruptions had a CAIDI of 1.01 hours, and a SAIFI of 0.04 interruptions.

The number of substation-related interruptions decreased from 8 to 7 from 2022 to 2023 (a decrease of 13%). The number of customers interrupted increased from 8,159 in 2022, to 14,334 in 2023 (an increase of 76%), while the customer-hours interrupted increased from 14,449 in 2022, to 14,519 in 2023 (an increase of 0.5%).

In 2023, excluding major storms, the Frontier Region experienced 1,314 distribution interruptions. These interruptions accounted for 99% of the region's total interruptions (1,314 of 1,333), 64% of the region's total customers interrupted, (85,861 of 133,872), and 55% (156,725 of 286,528) of the region's total customer-hours interrupted. Overall, distribution interruptions had a CAIDI of 1.83 hours, and a SAIFI of 0.26 interruptions.

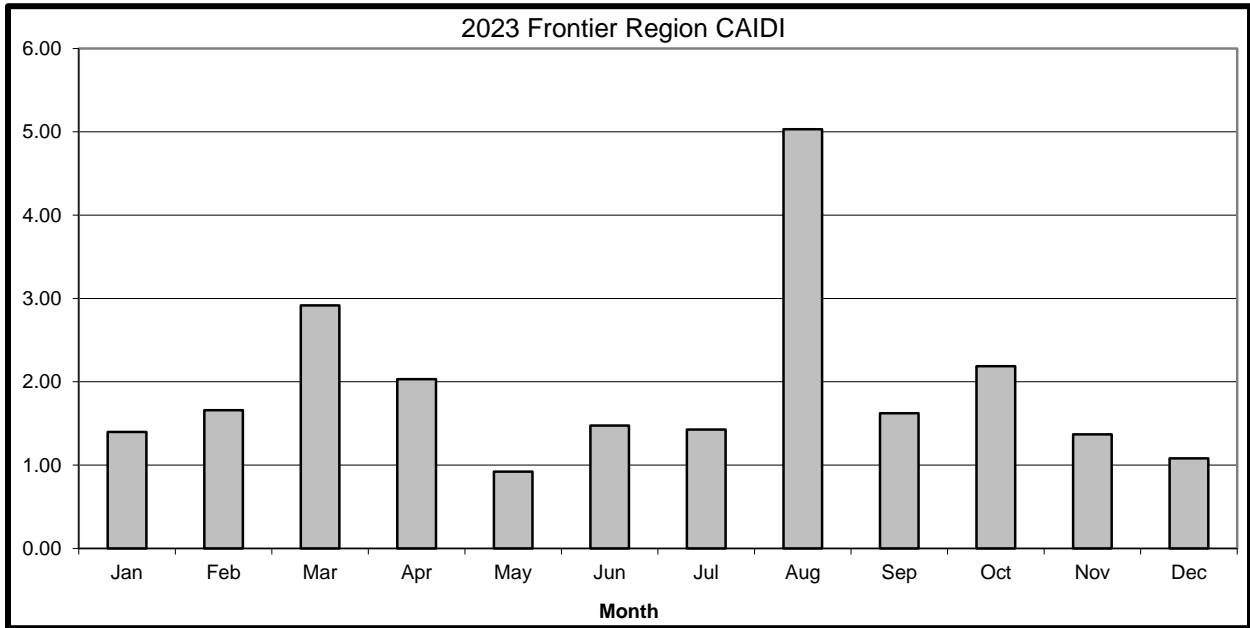
The number of distribution-related interruptions decreased from 1,341 to 1,314 from 2022 to 2023 (a decrease of 2%). The number of customers interrupted decreased from 91,257 in 2022, to 85,861 in 2023 (a decrease of 6%), while the customer-hours interrupted decreased from 176,244 in 2022, to 156,725 in 2023 (a decrease of 11%).

c. MONTHLY CAIDI AND SAIFI GRAPHS

The graphs on the following page show the monthly CAIDI and SAIFI for the Frontier Region for 2023. The months of January (0.05), February (0.04), April (0.04), May (0.04) and July (0.06) and were the highest contributors to SAIFI for 2023, with 50% of the Frontier Region's SAIFI occurring during these five months. The best six months for SAIFI were March (0.01), August (0.02), September (0.02), October (0.03), November (0.03) and December (0.03). The interruptions that occurred during these six months contributed to 35% of the Frontier Region's SAIFI.

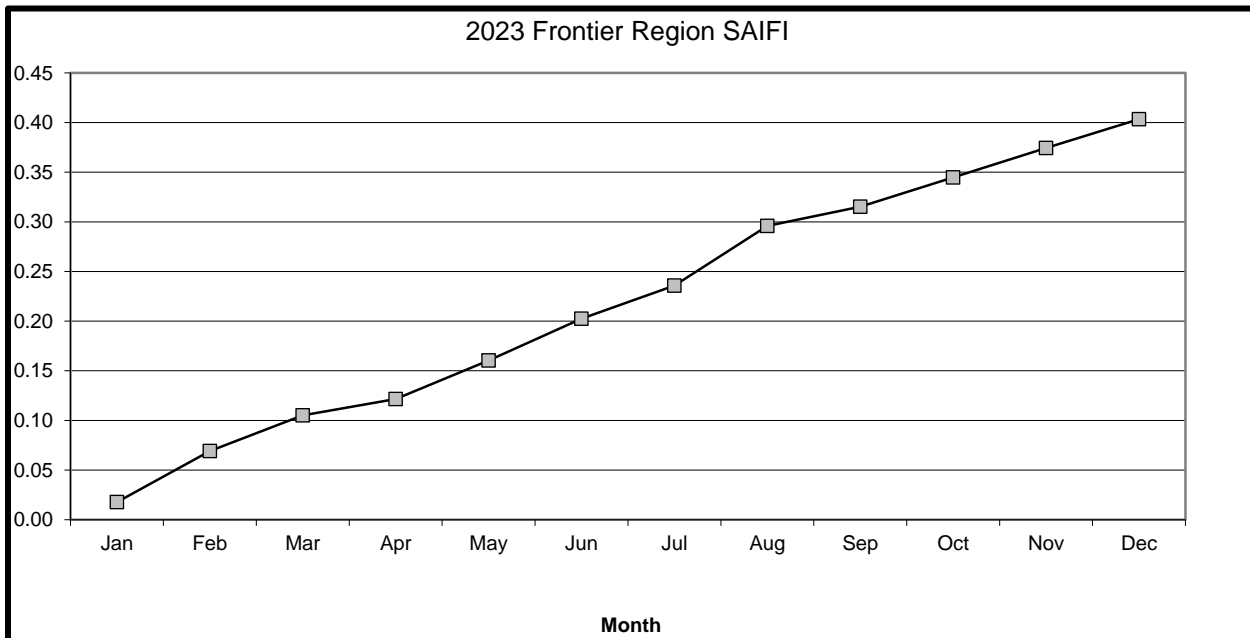
Monthly CAIDI was at or below the 2023 PSC threshold of 1.869, a total of eight months, with the best four months being January (1.40), May (0.92), November (1.37) and December (1.08). The four months that exceeded the threshold were March (2.92), April (2.03), August (5.03) and October (2.19).

GRAPH OF MONTHLY CAIDI AND SAIFI FOR FRONTIER REGION



PSC CAIDI Goal:	
Threshold	1.869
2023 Actual	2.14

PSC SAIFI Goal:	
Threshold	0.48
2023 Actual	0.40



d. PSC CAUSE CODES

1) Number of Events by Cause – Historical

Cause Code	2023	2022	2021	2020	2019	2018
01 Major Storms	-	1,004	546	413	1,352	413
02 Tree Contacts	340	323	321	369	392	366
03 Overloads	20	23	33	117	10	65
04 Operator Error	23	8	19	9	8	10
05 Equipment	560	558	502	650	647	628
06 Accidents	186	239	208	222	182	206
07 Prearranged	76	80	123	88	83	67
08 Customer Equip.	-	-	-	-	-	-
09 Lightning	18	33	29	35	21	20
10 Unknown	110	91	90	160	125	118
Total	1,333	2,359	1,871	2,063	2,820	1,893

2) Customers Interrupted by Cause – Historical

Cause Code	2023	2022	2021	2020	2019	2018
01 Major Storms	-	66,967	52,775	25,654	92,360	60,452
02 Tree Contacts	26,284	32,577	37,791	32,063	37,954	32,818
03 Overloads	3,234	857	1,824	3,934	1,757	1,848
04 Operator Error	1,858	1,292	3,231	3,033	8,464	3,485
05 Equipment	60,776	47,510	60,217	58,370	53,766	75,854
06 Accidents	22,437	16,599	19,799	18,857	22,445	16,446
07 Prearranged	6,417	5,865	8,850	6,181	3,489	8,870
08 Customer Equip.	-	-	-	-	-	-
09 Lightning	4,125	1,456	5,602	7,685	1,448	2,416
10 Unknown	8,741	4,891	6,823	41,108	22,483	14,750
Total	133,872	178,014	196,912	196,885	244,166	216,939

3) Customer-Hours Interrupted by Cause – Historical

Cause Code	2023	2022	2021	2020	2019	2018
01 Major Storms	-	1,731,846	426,393	146,111	941,315	305,750
02 Tree Contacts	47,078	51,618	62,174	90,952	70,766	64,681
03 Overloads	4,687	1,260	3,235	27,504	2,703	3,978
04 Operator Error	3,270	366	3,424	941	9,300	2,075
05 Equipment	99,683	116,205	104,948	197,045	85,445	127,747
06 Accidents	104,309	32,090	30,826	27,380	40,505	25,821
07 Prearranged	8,552	9,484	13,614	9,613	4,418	4,602
08 Customer Equip.	-	-	-	-	-	-
09 Lightning	3,509	2,118	8,201	10,414	3,850	6,384
10 Unknown	15,441	5,517	8,010	78,110	31,173	16,730
Total	286,528	1,950,504	660,825	588,069	1,189,476	557,769

4) Interruptions, Customers Interrupted, and Customer-Hours Interrupted – 2023

Cause Code	Interruptions		Customers Interrupted		Customer-Hours Interrupted	
	Number	% Total	Number	% Total	Number	% Total
01 Major Storms	0	0.0%	0	0.0%	0	0.0%
02 Tree Contacts	340	25.5%	26,284	19.6%	47,078	16.4%
03 Overloads	20	1.5%	3,234	2.4%	4,687	1.6%
04 Operator Error	23	1.7%	1,858	1.4%	3,270	1.1%
05 Equipment	560	42.0%	60,776	45.4%	99,683	34.8%
06 Accidents	186	14.0%	22,437	16.8%	104,309	36.4%
07 Prearranged	76	5.7%	6,417	4.8%	8,552	3.0%
08 Customer Equip.	0	0.0%	0	0.0%	0	0.0%
09 Lightning	18	1.4%	4,125	3.1%	3,509	1.2%
10 Unknown	110	8.3%	8,741	6.5%	15,441	5.4%
Total	1,333	100.0%	133,872	100.0%	286,528	100.0%

e. INTERRUPTION REVIEW BY PSC CAUSE CODES

Cause Code 01 - Major Storms

In 2023, Major Storms accounted for 0% of interruptions, 0% of customers interrupted, and 0% of Customer-Hours Interrupted.

Interruptions due to Major Storm were down 100% from 2022, and down 100% over the 5-year average. Customers interrupted due to Major Storms were down 100% from 2022, and down 100% over the 5-year average. Customer-Hours interrupted were down 100% from 2022 and down 100% over the 5-year average.

The remaining PSC code descriptions do not include Major Storms in the percentages.

Cause Code 02 - Tree Contacts

In 2023, Tree Contacts accounted for 26% of interruptions, 20% of customers interrupted, and 16% of Customer-Hours Interrupted.

Interruptions due to Tree Contacts were up 5% from 2022, and down 2% over the 5-year average. Customers interrupted due to Tree Contacts were down 19% from 2022, and down 22% over the 5-year average. Customer-Hours interrupted were down 9% from 2022 and down 28% over the 5-year average.

Tree Contacts were the 2nd largest cause of interruptions in 2023.

Cause Code 03 - Overloads

In 2023, Overloads accounted for 2% of interruptions, 2% of customers interrupted, and 2% of Customer-Hours Interrupted.

Interruptions due to Overloads were down 13% from 2022, and down 60% over the 5-year average. Customers interrupted due to Overloads were up 277% from 2022, and up 58% over the 5-year average. Customer-Hours interrupted were up 272% from 2022 and down 39% over the 5-year average.

Overloads were the 7th largest cause of interruptions in 2023.

Cause Code 04 - Operator Error

In 2023, Operator Error accounted for 2% of interruptions, 1% of customers interrupted, and 1% of Customer-Hours Interrupted.

Interruptions due to Operator Error were up 188% from 2022, and up 109% over the 5-year average. Customers interrupted due to Operator Error were up 44% from 2022, and down 52% over the 5-year average. Customer-Hours interrupted were up 794% from 2022 and up 2% over the 5-year average.

Operator Error was the 6th largest cause of interruptions in 2023.

Cause Code 05 - Equipment Failure

In 2023, Equipment Failures accounted for 42% of interruptions, 45% of customers interrupted, and 35% of Customer-Hours Interrupted.

Interruptions due to Equipment Failure were up 0% from 2022, and down 6% over the 5-year average. Customers interrupted due to Equipment Failure were up 28% from 2022, and up 3% over the 5-year average. Customer-Hours interrupted were down 14% from 2022 and down 21% over the 5-year average.

Equipment Failures were the largest cause of interruptions in 2023.

Cause Code 06 - Accidents

In 2023, Accidents accounted for 14% of interruptions, 17% of customers interrupted, and 36% of Customer-Hours Interrupted.

Interruptions due to Accidents were down 22% from 2022, and down 12% over the 5-year average. Customers interrupted due to Accidents were up 35% from 2022, and up 19% over the 5-year average. Customer-Hours interrupted were up 225% from 2022 and up 233% over the 5-year average.

Accidents were the 3rd largest cause of interruptions in 2023.

Cause Code 07 - Prearranged

In 2023, Prearranged accounted for 6% of interruptions, 5% of customers interrupted, and 3% of Customer-Hours Interrupted.

Interruptions due to Prearranged were down 5% from 2022, and down 14% over the 5-year average. Customers interrupted due to Prearranged were up 9% from 2022, and down 4% over the 5-year average. Customer-Hours interrupted were down 10% from 2022 and up 2% over the 5-year average.

Prearranged was the 5th largest cause of interruptions in 2023.

Cause Code 08 - Customer Equipment

There were no Customer Equipment interruptions in 2023.

Cause Code 09 - Lightning

In 2023, Lightning accounted for 1% of interruptions, 3% of customers interrupted, and 1% of Customer-Hours Interrupted.

Interruptions due to Lightning were down 45% from 2022, and down 36% over the 5-year average. Customers interrupted due to Lightning were up 183% from 2022, and up 11% over the 5-year average. Customer-Hours interrupted were up 66% from 2022 and down 43% over the 5-year average.

Lightning was the 8th largest cause of interruptions in 2023.

Cause Code 10 - Unknown

In 2023, Unknown causes accounted for 8% of interruptions, 7% of customers interrupted, and 5% of Customer-Hours Interrupted.

Interruptions due to Unknown causes were up 21% from 2022, and down 10% over the 5-year average. Customers interrupted due to Unknown causes were up 79% from 2022, and down 54% over the 5-year average. Customer-Hours interrupted were up 180% from 2022 and down 49% over the 5-year average.

Unknown causes were the 4th largest cause of interruptions in 2023.

f. DISCUSSION OF REGIONAL CAPEX PROJECTS WITH 2023/24 SPENDS :

The Company continues to work on capital-related projects in the Frontier Region to maintain customer satisfaction and future reliability. Some specific projects that were constructed in 2023 or will be constructed in 2024 are discussed below. An additional table of major infrastructure projects completed in 2023 follows. This includes distribution, sub-transmission, and transmission-related projects.

A number of ongoing projects are related to the program for reconstructing indoor Buffalo substations. This work is being done to upgrade the aging infrastructure within the Buffalo system, much of which is made up of 1920-30's vintage equipment that is at or beyond the end of its expected lifecycle. This effort is in place to maintain reliability and maintain the ability to serve our customers in the City of Buffalo. Reconstruction of Substation 53 is in progress, while design efforts continue for rebuild of substations 32 and 38. These efforts represent projects completed in recent years, those now in progress, and those planned to start in the upcoming year or are in design phase.

There are also numerous distribution projects to rebuild or reconductor lines. These projects are the result of reliability reviews, responses to QRS inquiries, the result of implementing an asset strategy, or load-related issues.

Some specific reliability-related projects in the Frontier Region follow below:

Welch Substation

The installation of a new 13.2kV/4.16kV substation with 8 feeders located in Niagara Falls, New York is currently in progress. This substation will replace the current 5kV station 83. The Welch Ave. Station Project is expected to be completed in the 4th quarter of FY25.

Station 122 Substation

The installation of a new 23kV/4.16kV substation with 8 feeders located in North Tonawanda, New York is currently in progress. This substation will replace the current 5kV station 122. This Station Project is expected to be completed in the 3rd quarter of FY25.

Major Capital Projects for Frontier Region:

Region	Project Name	Project Type	Fin Sys Proj. No.	Finish	Total Spend
Frontier	115KV TAP TO NEW CALSPAN / CUBRC CUSTOMER STATION	Trans	C086966	02/06/23	\$2,159,000
Frontier	701 LINE - KENSINGTON EXPWY UG	Sub Trans	C053243	04/07/23	\$4,611,000
Frontier	STEPHENSON 85 OUTDOOR SUBSTATION REFURBISHMENT - DSub	Dist Sub	C046581	04/05/23	\$10,100,000
Frontier	RENAISSANCE DRIVE STATION 229 - DSCADA (REPLACE CPU & DUAL PORT RTU)	Dist Sub	C077972	12/11/23	\$2,344,000
Frontier	STATION 097 - SUMMIT PARK - DSCADA (REPLACE CPU & DUAL PORT RTU)	Dist Sub	C077972	12/18/23	\$2,344,000
Frontier	STATION 105 - SWANN ROAD - DSCADA (REPLACE CPU & DUAL PORT RTU)	Dist Sub	C077972	12/08/23	\$2,344,000
Frontier	STATION 211 - AYER RD - DSCADA (FULL RTU UPGRADE) (ENG FY22, CONST FY23)	Dist Sub	C077972	12/01/23	\$2,344,000
Frontier	STATION 076 - SHAWNEE ROAD - DSCADA (FULL UPGRADE - WEST	Dist Sub	C077972	07/28/23	\$2,344,000
Frontier	STATION 076 - SHAWNEE ROAD (REPLACE CPU & DUAL PORT RTU)	Dist Sub	C077972	07/28/23	\$2,344,000
Frontier	LOCKPORT 108 ALT BKR (SUB)	Tran Sub	C090038	09/07/23	\$2,000,000
Frontier	KENSINGTON #4 & #5 TRF ASSET REPLACEMENT BUFFALO	Tran Sub	C069429	06/02/23	\$9,655,000
Frontier	M9000 - AMERICAN REF-FUEL (COVANTA) M9000 RTU	Tran Sub	C069437	01/24/23	\$1,870,000
Frontier	DSCADA - ELM STREET STATION - DSCADA (REPLACE CPU & DUAL PORT RTU)	Tran Sub	C081809	04/11/23	\$2,190,000
Frontier	DSCADA - KENSINGTON TERMINAL STATION DSCADA (REPLACE CPU & DUAL PORT)	Tran Sub	C081809	05/19/23	\$2,190,000
Frontier	DSCADA - RIDGE STATION 142 DSCADA (REPLACE CPU & DUAL PORT)	Tran Sub	C081809	05/17/23	\$2,190,000
Frontier	STEPHENSON 85 SUB REFURB D-LINE	Dist	C046580	05/16/23	\$16,996,000

g. DISCUSSION OF REGIONAL PERFORMANCE OF LVAC NETWORK DISTRIBUTION SYSTEM(S)

Buffalo LVAC Network

Background

The Elm Street 230/23 kV Station that serves Buffalo’s network area has twenty 23kV cables, which supply 146 general network vaults, 141 spot network vaults, nine primary commercial customers, three National Grid distribution stations and can serve five additional distribution stations via normally open tie switches. General network vaults supply the low voltage network which serves approximately 1,170 National Grid customers. Spot network vaults serve 375 commercial customers. Elm Street station peaked at 105 MVA during Summer 2023.

Performance

The table below lists the breaker operations at Elm Street in 2023 that were a result of a fault or a failure on either the primary cable or a piece of network equipment (reactor, transformer, high voltage switch or protector):

2023 ELM ST 23KV NETWORK PERFORMANCE					
STATION	CABLE	BKR	BKR	# OF OPERATIONS DUE TO FAILURES	CUSTOMERS AFFECTED
ELM	1E	R122	R125	1	0
ELM	2E	R222	R225	2	0
ELM	3E	R335	R338	1	0
ELM	4E	R435	R438	1	0
ELM	5E	R145	R148	0	0
ELM	6E	R332	R335	1	0
ELM	7E	R125	R128	1	0
ELM	8E	R225	R228	0	0
ELM	9E	R325	R238	1	0
ELM	10E	R432	R435	1	0
ELM	11E	R322	R325	1	0
ELM	12E	R325	R328	0	0
ELM	14E	R422	R425	0	0
ELM	15E	R425	R428	0	0
ELM	16E	R142	R145	0	0
ELM	17E	R242	R245	0	0
ELM	18E	R232	R235	0	0
ELM	23E	R248	R245	0	0
ELM	27E	R132	R135	0	0
ELM	35E	R138	R135	1	0

Improvements

In 2023 New York West replaced the high voltage switches, network transformers and network protectors in the following vaults:

- V7-135
- V35-158
- V9-158 equipment changeout due to fault.
- V2-100
- V2-179
- V2-24 (Just bushing swap equipment same).
- V7-110
- V10-124
- V9-93 equipment changeout due to cracked bushing.
- V9-108 equipment changeout due to cracked bushing.
- V1-124
- V4-162 equipment swap due to customer loading.
- V6-162 equipment swap due to customer loading.
- V1-71 equipment changeout (2/2024).
- V17-121 equipment changeout (3/2024).
- V1-147 equipment changeout due to cracked bushing (1/2024).

This equipment was identified as in need of replacement via the I&M process, or it failed in service. Currently the I&M process has identified 8 additional vaults requiring equipment change-outs that are planned for future years. Approximately 8,000 feet of LVAC cable was replaced in 2023. A project to replace approximately 10,000 feet of LVAC secondary cable per year is expected to be continued in 2024.

2. OPERATING CIRCUIT LISTS

The next three tables will provide the following information for the Frontier Region.

- a. Worst Performing Circuit List
- b. Worst Performing Circuits with 3 Year History for CAIDI and SAIFI Indices
- c. Worst Performing Circuits by # of Momentary Interruptions

b. NATIONAL GRID WORST PERFORMING CIRCUIT LIST

FRONTIER REGION

	A	B	C	D				
FEEDER #	CUST. SERVED	TOTAL INTER.	# CUST. INTER.	CUST. HRS. INTER.	C/A SAIFI	D/A SAIDI	D/C CAIDI	NUMBER OF MOMENTARIES
BUFFALO STA 40 4075	1,158	11	2,730	15,996	2.36	13.81	5.86	0

Regional Goals:
 CAIDI 1.869
 SAIFI 0.48

c. NATIONAL GRID WORST PERFORMING CIRCUITS WITH 3 YEAR HISTORY FOR CAIDI AND SAIFI INDICES

FRONTIER REGION

FEEDER #	2023 CAIDI	2022 CAIDI	2021 CAIDI	2020 CAIDI	2023 SAIFI	2022 SAIFI	2021 SAIFI	2020 SAIFI
BUFFALO STA 40 4075	5.86	1.36	0.83	2.36	13.81	0.54	0.02	0.02

Regional Goals:
 CAIDI 1.869
 SAIFI 0.48

d. NATIONAL GRID WORST PERFORMING CIRCUITS BY # OF MOMENTARY INTERRUPTIONS

FRONTIER REGION

Feeders			Customer Momentaries				Ranks		
Volts (kV)	Station Name	Ckt/F No.	Substation	Transmission	Distribution	Total	Within Region	Within System	Reliability Ranking
No circuits experienced 10 or more momentary interruptions in 2023.									

e. WORST PERFORMING CIRCUIT ANALYSIS

This year, the Frontier Region's list of Worst Feeders consists of one 4.16 kV feeder.

For the Frontier Region, the CAIDI performance threshold is 1.869 and SAIFI performance threshold is 0.48.

1. BUFFALO STA 40 4075 – 4.16 kV

Profile: 1,158 Customers, 5.03 Circuit Miles
Indices: CAIDI = 5.86, SAIFI = 2.36

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	1	9.09%	868	31.79%	203	1.27%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	3	27.27%	339	12.42%	271	1.70%
6	ACCIDENTS	1	9.09%	1,145	41.94%	14,809	92.57%
7	PREARRANGED	6	54.55%	378	13.85%	714	4.46%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	0	0.00%	0	0.00%	0	0.00%
Totals		11	100.00%	2,730	100.00%	15,996	100.00%

Problem Analysis:

- There were 11 interruptions on the Buffalo Sta 40 4075 in 2023.
- There was 1 transmission interruption.
 - This Transmission interruption occurred on August 24, 2023, coded as a cause of non-company activities (PSC cause code 06). This lockout accounted for 42% of the total customers interrupted (1,145 of 2,730), and 93% of the total customer-hours interrupted (14,809 of 15,996). This event resulted from non-company construction digging which caused the Seneca – Kensington tie cables to trip resulting in an outage of 12.9 hours.
- There were no substation interruptions.
- The remaining 10 events occurred at the distribution level.
- The distribution circuit breaker for the Buffalo Sta 40 4075 experienced 0 momentary operations in 2023.
- The distribution circuit breaker for the Buffalo Sta 40 4075 experienced 0 sustained operations (lockouts) in 2023.
- Prearranged were the leading cause of interruptions on the Buffalo Sta 40 4075 in 2023, accounting for 55% of total interruptions (6 of 11). Equipment Failures were the 2nd leading cause of interruptions, accounting for 27% of total interruptions (3 of 11). Trees were the 3rd leading cause of interruptions, accounting for 9% of total interruptions (1 of 11).
- Accidents were the leading cause of customers interrupted (CI) on the Buffalo Sta 40 4075 in 2023, accounting for 42% of total customers interrupted (1,145 of 2,730). Trees were the 2nd leading cause of customers interrupted, accounting for 32% of total customers

interrupted (868 of 2,730). Prearranged were the 3rd leading cause of customers interrupted, accounting for 14% of total customers interrupted (378 of 2,730).

- Accidents were the leading cause of customer-hours interrupted (CHI) on the Buffalo Sta 40 4075 in 2023, accounting for 93% of total customer-hours interrupted (14,809 of 15,996). Prearranged were the 2nd leading cause of customer-hours interrupted, accounting for 4% of total customer-hours interrupted (714 of 15,996). Equipment Failures were the 3rd leading cause of customer-hours interrupted, accounting for 2% of total customer-hours interrupted (271 of 15,996).
- Of the 11 interruptions on this circuit, 1 affected 10 customers or less, with 1 being single customer outages.

Actions Taken:

- Cycle Tree trimming was last completed on Buffalo Station 40 4075 in 2022.
- Distribution line inspection was last completed in May 2021. All Level 1, 2 and 3 work has been completed.

Action Plan:

- Next Cycle Tree trimming scheduled for 2027.

3. ACTION PLAN SUMMARIES

a. SUMMARY OF ACTION ITEM PLANS FOR 2023 WORST PERFORMING CIRCUITS

Station	Feeder	Report Year	Action Plan	Estimated Completion Date	Comments
Buffalo Station 40	4075	2023	Cycle Tree Trimming	12/2027	

b. STATUS OF ACTION PLANS FOR 2022 WORST PERFORMING CIRCUITS

Station	Feeder	Report Year	Action Plan	Estimated Completion Date	Comments
Wilson	9363	2022	Complete level 2 maintenance	06/2022	
Wilson	9363	2022	Complete level 3 maintenance	06/2022	
Wilson	9363	2022	Complete level 3 Sub-T maintenance	1/2024	
Wilson	9363	2022	Cycle Tree Trimming	12/2024	
Wilson	9363	2022	Hazard Tree Review	3/2024	Hazard tree trimming 61% complete
Wilson	9363	2022	Engineering Review of Fusing Coordination	12/2023	Complete fusing review was done. All side tap fusing was adequate.

4. OPERATING REGION PERFORMANCE BELOW MINIMUM

a. MAINTENANCE HISTORY AND ANALYSIS OF FACTORS THAT CAUSED THE BELOW MINIMUM PERFORMANCE.

In 2023 the Frontier Region failed to meet the PSC minimum CAIDI requirement. The Frontier Region has been below the target of 1.869 three of the previous five years. However, the Frontier Region failed to meet the target in 2023 with an annual CAIDI of 2.14. Meanwhile, the Frontier Region met the annual SAIFI goal of 0.48 in 2023 with a SAIFI of 0.40.

In 2023, the Frontier Region experienced 1,333 interruptions. Most of these interruptions (99%) occurred on the distribution system. However, 12 of these interruptions (1.0%) occurred on the transmission or sub-transmission systems, interrupting 33,677 customers (25%) and accounting for 115,284 customer-hours interrupted (40%). The SAIFI and CAIDI of the transmission and sub-transmission systems in 2023 were 0.1 interruptions and 3.42 hours respectively. The impact of these 12 interruptions was significant on CAIDI being that they were almost 93 minutes over target involving 25% of total customers making the annual CAIDI in the Frontier worse. Transmission CAIDI was 142.5% greater in 2023 as compared to 2022 when it was 2.4 hours vs. 3.42 hours. This was the major factor in the Frontier Region not meeting its target this year.

There were also 7 substation-related interruptions in the Frontier Region in 2023, interrupting 14,334 customers (11%) and accounting for 14,519 customer-hours interrupted (5%). The SAIFI and CAIDI of substation-related interruptions in 2023 was 0.04 interruptions per year and 1.01 hours.

The distribution system accounted for 99% of the interruptions in the Frontier Region in 2023, interrupting 85,861 customers (64%) and accounting for 156,725 customer-hours interrupted (55%). The SAIFI of the distribution system in 2023 met the SAIFI goal for the Frontier Region, with a distribution SAIFI of 0.26 interruptions per year. The CAIDI of the distribution system in 2023 was 1.83 hours and 0.10 less than 2022.

b. **PLANNED PROGRAMS OR PLANNED CORRECTIVE ACTIONS AND PROPOSED IMPROVEMENTS TO THE PERFORMANCE INDICES.**

The Company is continuing its efforts in the Frontier Region to maintain reliability. These efforts include distribution patrols, maintenance programs, single phase and three phase line recloser installations, protection coordination studies, lightning protection installations, and tree trimming programs. All these programs and corrective actions not only will reduce the number of interruptions and/or customers interrupted but also the restoration times. The Company will continue to stay on schedule for tree trimming and believes that this maintained schedule for tree trimming and miles trimmed will reduce both the incidence and duration of tree-related interruptions.

The contribution of transmission outages is significant to the regional performance indices, as can be seen in the data provided in the previous section. It is very difficult to predict transmission equipment failures in advance, and in a continued attempt to minimize these interruptions, Transmission Planning and Asset Management (TPAM) has several projects in the works to improve the performance of some of the worst performing transmission lines.

Tree trimming around the distribution system will remain a priority in 2024, to address what is typically the single largest contributor to customer interruptions within the Frontier Region. In addition, there is a list of distribution improvement capital projects to be designed and/or constructed in FY2025, which can be viewed in the 1.f section of this report.

Substation Improvements

- 1) When substation equipment is being installed or repaired, animal guards are being installed.
- 2) When opportunities arise, feeder-ties will be constructed to temporarily transfer load onto adjacent substations. This will improve reliability for the affected station.
- 3) The Company's ongoing maintenance program for substations should help reduce the potential for substation problems in 2024. This program includes:
 - Circuit breaker diagnostic tests
 - Circuit breaker mechanism checks
 - Load tap changer internal inspections
 - Dissolved gas analysis on load tap changers and transformers.
 - Calibration/inspections on relay positions and communication packages
 - Functional testing of relays
 - Battery maintenance
- 4) Network – The annual practice for Buffalo area networks is to review and change out transformers and protectors due to deterioration as needed. The

Buffalo area has approximately 285 vaults containing network transformers and protectors. The goal of this effort is to replace the equipment before failure occurs.

Additional efforts to improve restoration times are listed below:

- The Divisional Reliability Team will continue to investigate and analyze outages impacting greater than 2,500 customers or more than 50,000 customer-minutes-interrupted (CMI). This effort will look at the interruptions impacting the greatest number of customers to see what could have been done better to reduce the length of the interruption or to have eliminated it altogether.
- The review of suitable locations for the installation of new cutout mounted reclosers (CMRs) will continue to reduce the number of temporary faults that result in permanent outages on smaller side taps.

F. GENESEE REGION

1. OPERATING REGIONAL PERFORMANCE

a. HISTORIC CAIDI AND SAIFI INDICES

IDS Info:

	2023	2022	2021	2020	2019	2018
CAIDI (Threshold 2.049)	1.77	1.53	1.75	1.53	1.75	2.06
SAIFI (Threshold 1.037)	0.99	1.00	0.98	1.20	1.41	1.23
SAIDI	1.76	1.52	1.72	1.84	2.45	2.53
Interruptions	1,066	1,019	933	928	980	886
Customers Interrupted	100,427	100,413	98,675	120,597	140,279	122,045
Customer-Hours Interrupted	177,910	153,606	172,991	184,711	244,951	251,608
Customers Served	101,030	100,877	100,536	100,210	99,786	99,272
Customers Per Interruption	94.21	98.54	105.76	129.95	143.14	137.75
Availability Index	99.9799	99.9826	99.9804	99.9790	99.9720	99.9711
Interruptions/1000Customers	10.55	10.10	9.28	9.26	9.82	8.93

b. DISCUSSION OF REGIONAL PERFORMANCE

In 2023, the Genesee Region met its CAIDI reliability target and met its SAIFI reliability target as set forth by the New York Public Service Commission (PSC). The final System Average Interruption Frequency Index (SAIFI) result was 0.99 interruptions, 5% below the PSC goal of 1.037 interruptions. As shown in the table above, the Customer Average Interruption Duration index (CAIDI) was 1.77 in 2023, 14% below the PSC's regional target of 2.049 hours.

The 2023 CAIDI result was 16% above the 2022 result of 1.53 hours, and 2% above the previous 5-year average of 1.73 hours. The 2023 SAIFI was 1% below the 2022 result of 1 interruptions, and 15% below the previous 5-year average of 1.16 interruptions.

In 2023, excluding major storms, the Genesee Region experienced 4 transmission interruptions. These interruptions accounted for 0.4% of the region's total interruptions (4 of 1,066), 5% of the region's total customers interrupted (CI), (4,798 of 100,427), and 8% (13,488 of 177,910) of the region's total customer-hours interrupted (CHI). Overall, transmission interruptions had a CAIDI of 2.81 hours, and a SAIFI of 0.05 interruptions.

The number of transmission-related interruptions decreased from 13 in 2022 to 4 in 2023 (a decrease of 69%). The number of customers interrupted decreased from 26,745 in 2022, to 4,798 in 2023 (a decrease of 82%), while the customer-hours interrupted decreased from 45,932 in 2022, to 13,488 in 2023 (a decrease of 71%).

In 2023, excluding major storms, the Genesee Region experienced 3 substation interruptions. These interruptions accounted for 0.3% of the region's total interruptions (3 of 1,066), 3% of the region's total customers interrupted, (3,370 of 100,427), and 2% (2,730 of 177,910) of the region's total customer-hours interrupted. Overall, substation interruptions had a CAIDI of .81 hours, and a SAIFI of 0.03 interruptions.

The number of substation-related interruptions remained the same from 3 to 3 from 2022 to 2023 (no change). The number of customers interrupted decreased from 6,231 in 2022, to 3,370 in 2023 (a decrease of 46%), while the customer-hours interrupted increased from 2,614 in 2022, to 2,730 in 2023 (an increase of 4%).

In 2023, excluding major storms, the Genesee Region experienced 1,059 distribution interruptions. These interruptions accounted for 99% of the region's total interruptions (1,059 of 1,066), 92% of the region's total customers interrupted, (92,259 of 100,427), and 91% (161,692 of 177,910) of the region's total customer-hours interrupted. Overall, distribution interruptions had a CAIDI of 1.75 hours, and a SAIFI of 0.91 interruptions.

The number of distribution-related interruptions increased from 1,003 to 1,059 from 2022 to 2023 (an increase of 6%). The number of customers interrupted increased from 67,437 in 2022, to 92,259 in 2023 (an increase of 37%), while the customer-hours interrupted increased from 105,061 in 2022, to 161,692 in 2023 (an increase of 54%).

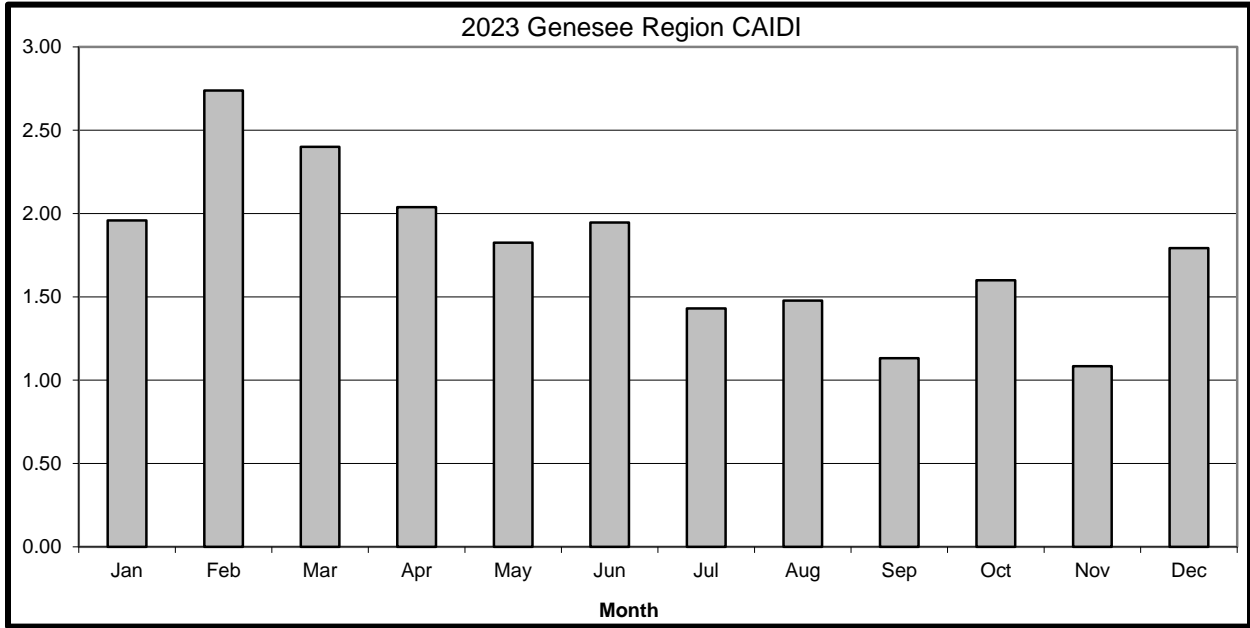
c. MONTHLY CAIDI AND SAIFI GRAPHS

The graphs on the following page show the monthly CAIDI and SAIFI for the Genesee Region for 2023.

CAIDI was below the PSC threshold of 2.049, a total of ten months in 2023, with best three months being July (1.43), September (1.13) and November (1.08). The two months that exceeded the threshold were in February (2.74) and March (2.40).

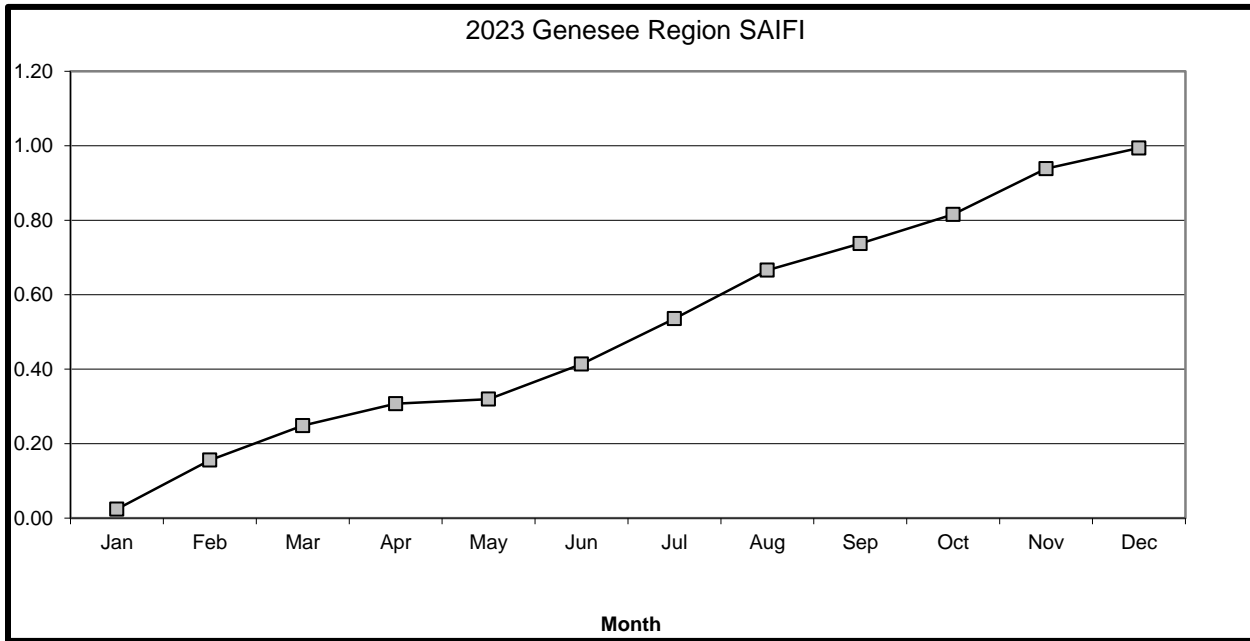
SAIFI was below the PSC threshold of 1.037 in 2023 and showed the greatest increase during the months of February (0.13), July (0.12), August (0.13) and November (0.12). These four months accounted for 51% of Genesee Region's annual SAIFI metric. In contrast, the months of January (0.02), April (0.06) and May (0.01) were the best three months and contributed only 9% to the Region's SAIFI.

GRAPH OF MONTHLY CAIDI AND SAIFI FOR THE GENESSEE REGION



PSC CAIDI Goal:	
Threshold	2.049
2023 Actual	1.77

PSC SAIFI Goal:	
Threshold	1.037
2023 Actual	0.99



d. PSC CAUSE CODES

1) Number of Events by Cause – Historical

Cause Code	2023	2022	2021	2020	2019	2018
01 Major Storms	99	550	523	206	532	503
02 Tree Contacts	348	272	242	220	258	184
03 Overloads	2	7	7	12	3	9
04 Operator Error	5	3	5	4	4	6
05 Equipment	282	262	258	288	326	275
06 Accidents	211	275	216	212	178	226
07 Prearranged	17	15	33	30	21	28
08 Customer Equip.	-	-	-	-	-	-
09 Lightning	41	40	35	30	30	29
10 Unknown	160	145	137	132	160	129
Total	1,165	1,569	1,456	1,134	1,512	1,389

2) Customers Interrupted by Cause – Historical

Cause Code	2023	2022	2021	2020	2019	2018
01 Major Storms	8,580	45,384	43,905	18,068	38,360	47,213
02 Tree Contacts	35,942	28,848	18,768	26,188	34,115	20,717
03 Overloads	7	62	1,794	7,751	68	164
04 Operator Error	87	3,195	95	184	6,092	1,826
05 Equipment	32,935	29,675	33,304	48,964	54,305	40,661
06 Accidents	18,727	20,400	20,143	14,946	26,593	34,508
07 Prearranged	1,645	2,211	6,378	7,373	2,973	4,058
08 Customer Equip.	-	-	-	-	-	-
09 Lightning	3,974	5,740	5,931	2,085	1,385	4,333
10 Unknown	7,110	10,282	12,262	13,106	14,748	15,778
Total	109,007	145,797	142,580	138,665	178,639	169,258

3) Customer-Hours Interrupted by Cause – Historical

Cause Code	2023	2022	2021	2020	2019	2018
01 Major Storms	64,313	436,544	727,571	76,176	247,052	363,920
02 Tree Contacts	72,644	43,395	42,526	40,476	74,452	32,897
03 Overloads	18	109	1,821	2,790	74	567
04 Operator Error	68	435	127	77	1,443	1,630
05 Equipment	61,845	47,442	46,209	85,436	84,094	141,295
06 Accidents	22,999	31,586	38,028	28,769	46,360	39,642
07 Prearranged	890	1,878	11,271	4,654	1,961	5,580
08 Customer Equip.	-	-	-	-	-	-
09 Lightning	3,925	15,120	15,004	2,394	3,174	9,473
10 Unknown	15,522	13,643	18,004	20,115	33,392	20,525
Total	242,223	590,151	900,562	260,886	492,002	615,528

4) Interruptions, Customers Interrupted and Customer-Hours Interrupted – 2023

Cause Code	Interruptions		Customers Interrupted		Customer Hours Interrupted	
	Number	% Total	Number	% Total	Number	% Total
01 Major Storms	99	8.5%	8,580	7.9%	64,313	26.6%
02 Tree Contacts	348	29.9%	35,942	33.0%	72,644	30.0%
03 Overloads	2	0.2%	7	0.0%	18	0.0%
04 Operator Error	5	0.4%	87	0.1%	68	0.0%
05 Equipment	282	24.2%	32,935	30.2%	61,845	25.5%
06 Accidents	211	18.1%	18,727	17.2%	22,999	9.5%
07 Prearranged	17	1.5%	1,645	1.5%	890	0.4%
08 Customer Equip.	0	0.0%	0	0.0%	0	0.0%
09 Lightning	41	3.5%	3,974	3.6%	3,925	1.6%
10 Unknown	160	13.7%	7,110	6.5%	15,522	6.4%
Total	1,165	100.0%	109,007	100.0%	242,223	100.0%

e. **INTERRUPTION REVIEW BY PSC CAUSE CODES**

Cause Code 01 - Major Storms

In 2023, Major Storms accounted for 8% of interruptions, 8% of customers interrupted, and 27% of Customer-Hours Interrupted.

Interruptions due to Major Storm were down 82% from 2022, and down 79% over the 5-year average. Customers interrupted due to Major Storms were down 81% from 2022, and down 78% over the 5-year average. Customer-Hours interrupted were down 85% from 2022 and down 83% over the 5-year average.

The remaining PSC code descriptions do not include Major Storms in the percentages.

Cause Code 02 - Tree Contacts

In 2023, Tree Contacts accounted for 33% of interruptions, 36% of customers interrupted, and 41% of Customer-Hours Interrupted.

Interruptions due to Tree Contacts were up 28% from 2022, and up 50% over the 5-year average. Customers interrupted due to Tree Contacts were up 25% from 2022, and up 40% over the 5-year average. Customer-Hours interrupted were up 67% from 2022 and up 57% over the 5-year average.

Tree Contacts were the largest cause of interruptions in 2023.

Cause Code 03 - Overloads

In 2023, Overloads accounted for 0% of interruptions, 0% of customers interrupted, and 0% of Customer-Hours Interrupted.

Interruptions due to Overloads were down 71% from 2022, and down 75% over the 5-year average. Customers interrupted due to Overloads were down 89% from 2022, and down 100% over the 5-year average. Customer-Hours interrupted were down 83% from 2022 and down 98% over the 5-year average.

Overloads were the 8th largest cause of interruptions in 2023.

Cause Code 04 - Operator Error

In 2023, Operator Error accounted for 0% of interruptions, 0% of customers interrupted, and 0% of Customer-Hours Interrupted.

Interruptions due to Operator Error were up 67% from 2022, and up 25% over the 5-year average. Customers interrupted due to Operator Error were down 97% from 2022, and down 96% over the 5-year average. Customer-Hours interrupted were down 84% from 2022 and down 91% over the 5-year average.

Operator Error was the 7th largest cause of interruptions in 2023.

Cause Code 05 - Equipment Failure

In 2023, Equipment Failures accounted for 26% of interruptions, 33% of customers interrupted, and 35% of Customer-Hours Interrupted.

Interruptions due to Equipment Failure were up 8% from 2022, and flat at 0% over the 5-year average. Customers interrupted due to Equipment Failure were up 11% from 2022, and down 20% over the 5-year average. Customer-Hours interrupted were up 30% from 2022 and down 24% over the 5-year average.

Equipment Failures were the 2nd largest cause of interruptions in 2023.

Cause Code 06 - Accidents

In 2023, Accidents accounted for 20% of interruptions, 19% of customers interrupted, and 13% of Customer-Hours Interrupted.

Interruptions due to Accidents were down 23% from 2022, and down 5% over the 5-year average. Customers interrupted due to Accidents were down 8% from 2022, and down 20% over the 5-year average. Customer-Hours interrupted were down 27% from 2022 and down 38% over the 5-year average.

Accidents were the 3rd largest cause of interruptions in 2023.

Cause Code 07 - Prearranged

In 2023, Prearranged accounted for 2% of interruptions, 2% of customers interrupted, and 1% of Customer-Hours Interrupted.

Interruptions due to Prearranged were up 13% from 2022, and down 32% over the 5-year average. Customers interrupted due to Prearranged were down 26% from 2022, and down 64% over the 5-year average. Customer-Hours interrupted were down 53% from 2022 and down 82% over the 5-year average.

Prearranged was the 6th largest cause of interruptions in 2023.

Cause Code 08 - Customer Equipment

There were no Customer Equipment interruptions in 2023.

Cause Code 09 - Lightning

In 2023, Lightning accounted for 4% of interruptions, 4% of customers interrupted, and 2% of Customer-Hours Interrupted.

Interruptions due to Lightning were up 3% from 2022, and up 24% over the 5-year average. Customers interrupted due to Lightning were down 31% from 2022, and up 2% over the 5-year average. Customer-Hours interrupted were down 74% from 2022 and down 57% over the 5-year average.

Lightning was the 5th largest cause of interruptions in 2023.

Cause Code 10 - Unknown

In 2023, Unknown causes accounted for 15% of interruptions, 7% of customers interrupted, and 9% of Customer-Hours Interrupted.

Interruptions due to Unknown causes were up 10% from 2022, and up 11% over the 5-year average. Customers interrupted due to Unknown causes were down 31% from 2022, and down 47% over the 5-year average. Customer-Hours interrupted were up 14% from 2022 and down 28% over the 5-year average.

Unknown causes were the 4th largest cause of interruptions in 2023.

f. DISCUSSION OF REGIONAL CAPEX PROJECTS WITH 2023/24 SPENDS :

The Company continues to work on capital projects in the Genesee Region to maintain customer satisfaction and maintain future reliability. Some specific projects that were either constructed in 2023 or planned for construction in 2024 are discussed below. An additional table of major infrastructure projects completed in 2023 follows. This includes distribution, transmission, and substation-related projects.

Some projects on the list or discussed below are substation-related projects located throughout the Region to address loading concerns or equipment condition issues, including Sonora Way 4381.

There are numerous distribution projects to rebuild or re-conductor lines. These projects are the result of reliability reviews, response to a QRS inquiry, the result of implementing an asset strategy, or load-related issues.

Some specific reliability-related projects in the Genesee Region follow below:

Sonora Way Substation 4381

Sonora Way Substation is a 115kV/13.2kV substation installed in 2015 with two new feeders to allow for the removal of Mobile 7W and to provide load relief for Lakeville Substation 40 and Geneseo Substation 55. Overall, the plan is to install new switchgear and three new feeders from Sonora Way substation to retire Lakeville Substation 40 and provide relief for Livonia Substation 37. The new feeders will also improve reliability and service by providing load relief, future feeder ties, operational flexibility and allow for additional hosting capacity. The three new feeders are expected to be completed by May 2025.

Sub-Transmission Infrastructure Projects

The 34.5kV system in the Genesee Region consists of several very long loops which traverse rural territory in the Western Division. There were several projects completed in 2023 or are planned for 2024/2025, that will maintain and upgrade the system, including projects to install Reclosers on sub-transmission lines 201, 226, 301, 304, 308 and 312 in the Genesee Region in FY2024/2025. The Reclosers will improve reliability by sectionalizing portions of the lines during interruptions.

Major Capital Projects for Genesee Region:

Region	Project Name	Project Type	Fin Sys Proj No.	Finish	Total Spend
Genesee	STAMP - Plug Power TX Service Lateral	Trans	C087953	7/31/23	\$2,500,000
Genesee	LOCKPORT 108 ALT BKR (SUB)	Trans Sub	C090038	9/7/23	\$2,000,000
Genesee	STAMP (Science & Technology Advanced Manufacturing Park) Line L-B 112 Reroute	Trans	C080692	5/11/23	\$10,677,000
Genesee	Rochester Airport Cable Refurb	Trans	C080543	2/6/23	\$10,522,000
Genesee	BATAVIA - REPLACE FIVE OCBs	Trans Sub	C075904	8/18/23	\$3,893,000
Genesee	SE BATAVIA #117 LINE RELAY	Trans Sub	C073588	7/26/23	\$1,618,000
Genesee	KNAPP RD STATION - DSCADA (REPLACE CPU & DUAL PORT) -	Dist Sub	C077972	11/17/23	\$2,344,000
Genesee	SHELBY STATION 76 - DSCADA (FULL RTU UPGRADE) (ENG FY20, CONST FY21)	Dist Sub	C077972	12/8/23	\$2,344,000
Genesee	DSCADA - NORTH LAKEVILLE STATION DSCADA (REPLACE CPU & DUAL PORT)	Trans Sub	C081809	2/17/23	\$2,190,000
Genesee	M9000 - WATERPORT STATION M9000 RTU	Trans Sub	C069437	6/15/23	\$1,870,000
Genesee	MUMFORD STATION 50 - DSCADA (FULL RTU UPGRADE) (ENG FY22, CONST FY23) -	Dist Sub	C077972	10/6/23	\$2,344,000
Genesee	MORTIMER - STATION UPGRADES - (RG&E)	Trans Sub	C064567	11/17/23	\$1,449,000

2. OPERATING CIRCUIT LISTS

The next three tables will provide the following information for the Genesee Region.

- a. Worst Performing Circuit List
- b. Worst Performing Circuits with 3 Year History for CAIDI and SAIFI Indices
- c. Worst Performing Circuits by # of Momentary Interruptions

a. NATIONAL GRID WORST PERFORMING CIRCUIT LIST

GENESEE REGION

FEEDER #	A CUST. SERVED	B TOTAL INTER.	C # CUST. INTER.	D CUST. HRS. INTER.	C/A SAIFI	D/A SAIDI	D/C CAIDI	NUMBER OF MOMENTARIES
W HAMLIN 8254	2,131	35	10,155	15,677	4.77	7.36	1.54	2
W HAMLIN 8255	1,658	15	6,311	12,194	3.81	7.35	1.93	1
WETHERSFIELD STA 23 2361	426	13	2,087	7,315	4.90	17.17	3.51	0
BYRON STA 18 1863	699	18	1,859	6,156	2.66	8.81	3.31	0
LINDEN STA 21 2161	384	18	914	3,441	2.38	8.96	3.76	1
WETHERSFIELD STA 23 2362	190	12	1,060	3,000	5.58	15.79	2.83	0
E GOLAH 5155	1,707	22	6,025	4,556	3.53	2.67	0.76	0
YORK CTR 5352	939	23	1,450	4,566	1.54	4.86	3.15	2
E GOLAH 5156	1,993	18	4,828	5,438	2.42	2.73	1.13	0

Regional Goals:
CAIDI 2.049
SAIFI 1.037

b. NATIONAL GRID WORST PERFORMING CIRCUITS WITH A 3 YEAR HISTORY FOR CAIDI AND SAIFI INDICES

GENESEE REGION

FEEDER #	2023 CAIDI	2022 CAIDI	2021 CAIDI	2020 CAIDI	2023 SAIFI	2022 SAIFI	2021 SAIFI	2020 SAIFI
W HAMLIN 8254	1.54	2.07	2.05	3.13	4.77	1.41	1.77	3.00
W HAMLIN 8255	1.93	1.48	1.65	1.44	3.81	0.15	0.60	2.10
WETHERSFIELD STA 23 2361	3.51	3.13	3.79	2.24	4.90	3.69	7.71	0.68
BYRON STA 18 1863	3.31	1.74	1.81	2.77	2.66	0.38	1.01	0.58
LINDEN STA 21 2161	3.76	3.14	0.86	3.60	2.38	0.04	0.09	0.43
WETHERSFIELD STA 23 2362	2.83	3.15	4.44	3.84	5.58	3.46	6.13	1.33
E GOLAH 5155	0.76	0.94	2.18	1.07	3.53	2.26	2.64	2.10
YORK CTR 5352	3.15	0.93	0.87	2.79	1.54	1.10	2.48	0.12
E GOLAH 5156	1.13	0.77	1.21	1.46	2.42	1.73	3.50	0.34

Regional Goals:
 CAIDI 2.049
 SAIFI 1.037

c. NATIONAL GRID WORST PERFORMING CIRCUITS BY # OF MOMENTARY INTERRUPTIONS

GENESEE REGION

Feeders			Customer Momentaries				Ranks		
Volts (kV)	Station Name	Ckt/F No.	Substation	Transmission	Distribution	Total	Within Region	Within System	Reliability Ranking
No circuits experienced 10 or more momentary interruptions in 2023.									

d. WORST PERFORMING CIRCUIT ANALYSIS

For 2023, the Company is reporting on the nine worst performing feeders in the Genesee Region. The list consists of five 13.2kV feeders and four 4.8kV feeders.

For the Genesee Region, the CAIDI threshold is 2.049 and the SAIFI threshold is 1.037.

1. W HAMLIN 8254 – 13.2kV

Profile: 2,131 Customers, 113.7 Circuit Miles
Indices: CAIDI = 1.54, SAIFI = 4.77

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	11	31.43%	1,097	10.80%	2,411	15.38%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	9	25.71%	6,465	63.66%	10,666	68.04%
6	ACCIDENTS	2	5.71%	1,772	17.45%	1,190	7.59%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	6	17.14%	154	1.52%	400	2.55%
10	UNKNOWN	7	20.00%	667	6.57%	1,011	6.45%
Totals		35	100.00%	10,155	100.00%	15,677	100.00%

Problem Analysis:

- There were 35 interruptions on the W Hamlin 8254 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 35 events occurred at the distribution level.
- The distribution circuit breaker for the W Hamlin 8254 experienced 2 momentary operations in 2023.
- The distribution circuit breaker for the W Hamlin 8254 experienced 2 sustained operations (lockouts) in 2023. These interruptions accounted for 42% of the total amount of customers interrupted (4,279 out of 10,155) and 40% of the total amount of the customer-hours interrupted (6,337 out of 15,677).
 - The first lockout occurred on October 25, 2023, coded as a cause of deterioration (PSC cause code 05). This lockout accounted for 21% of the total customers interrupted (2,140 of 10,155), and 16% of the total customer-hours interrupted (2,481 of 15,677). This event resulted from a failed aerial cable due to deterioration which caused the feeder to lock out resulting in an outage for 1.17 hours.
 - The second lockout occurred on November 03, 2023, coded as a cause of deterioration (PSC cause code 05). This lockout accounted for 21% of the total customers interrupted (2,139 of 10,155), and 25% of the total customer-hours interrupted (3,856 of 15,677). This event resulted from a failed regulator bushing resulting in an outage for 1.8 hours.

- Trees were the leading cause of interruptions on the W Hamlin 8254 in 2023, accounting for 31% of total interruptions (11 of 35). Equipment Failures were the 2nd leading cause of interruptions, accounting for 26% of total interruptions (9 of 35). Unknown were the 3rd leading cause of interruptions, accounting for 20% of total interruptions (7 of 35).
- Equipment Failures were the leading cause of customers interrupted (CI) on the W Hamlin 8254 in 2023, accounting for 64% of total customers interrupted (6,465 of 10,155). Accidents were the 2nd leading cause of customers interrupted, accounting for 17% of total customers interrupted (1,772 of 10,155). Trees were the 3rd leading cause of customers interrupted, accounting for 11% of total customers interrupted (1,097 of 10,155).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the W Hamlin 8254 in 2023, accounting for 68% of total customer-hours interrupted (10,666 of 15,677). Trees were the 2nd leading cause of customer-hours interrupted, accounting for 15% of total customer-hours interrupted (2,411 of 15,677). Accidents were the 3rd leading cause of customer-hours interrupted, accounting for 8% of total customer-hours interrupted (1,190 of 15,677).
- Of the 35 interruptions on this circuit, 10 affected 10 customers or less, with 7 being single customer outages.

Action Taken:

- Distribution cycle tree trimming was completed in FY2022.
- Distribution line inspection was completed in October 2023. All Level 1 maintenance has been completed.

Action Plan:

- Complete Level 2 Distribution Line Inspection work due in 2024.
- Complete Level 3 Distribution Line Inspection work due in 2025.
- Distribution cycle tree trimming is scheduled for FY2027.

2. W HAMLIN 8255 – 13.2kV

Profile: 1,658 Customers, 36.7 Circuit Miles
 Indices: CAIDI = 1.93, SAIFI = 3.81

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	4	26.67%	46	0.73%	296	2.43%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	4	26.67%	4,460	70.67%	10,468	85.85%
6	ACCIDENTS	5	33.33%	150	2.38%	169	1.38%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	1	6.67%	1,654	26.21%	1,259	10.32%
10	UNKNOWN	1	6.67%	1	0.02%	2	0.02%
Totals		15	100.00%	6,311	100.00%	12,194	100.00%

Problem Analysis:

- There were 15 interruptions on the W Hamlin 8255 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 15 events occurred at the distribution level.
- The distribution circuit breaker for the W Hamlin 8255 experienced 1 momentary operation in 2023.
- The distribution circuit breaker for the W Hamlin 8255 experienced 2 sustained operations (lockouts) in 2023. These interruptions accounted for 52% of the total amount of customers interrupted (3,313 out of 6,311) and 73% of the total amount of the customer-hours interrupted (8,884 out of 12,194).
 - The first lockout occurred on March 03, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 26% of the total customers interrupted (1,659 of 6,311), and 63% of the total customer-hours interrupted (7,626 of 12,194). This event resulted from a failed conductor that fell causing the feeder to lock out resulting in an outage for 4.88 hours.
 - The second lockout occurred on July 15, 2023, coded as a cause of lightning (PSC cause code 09). This lockout accounted for 26% of the total customers interrupted (1,654 of 6,311), and 10% of the total customer-hours interrupted (1,259 of 12,194). This event resulted from primary wire that came down due to lightning and the feeder breaker was opened to make repairs resulting in an outage for 6 hours.

- Accidents were the leading cause of interruptions on the W Hamlin 8255 in 2023, accounting for 33% of total interruptions (5 of 15). Trees were the 2nd leading cause of interruptions, accounting for 27% of total interruptions (4 of 15). Equipment Failures were the 3rd leading cause of interruptions, accounting for 27% of total interruptions (4 of 15).
- Equipment Failures were the leading cause of customers interrupted (CI) on the W Hamlin 8255 in 2023, accounting for 71% of total customers interrupted (4,460 of 6,311). Lightning were the 2nd leading cause of customers interrupted, accounting for 26% of total customers interrupted (1,654 of 6,311). Accidents were the 3rd leading cause of customers interrupted, accounting for 2% of total customers interrupted (150 of 6,311).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the W Hamlin 8255 in 2023, accounting for 86% of total customer-hours interrupted (10,468 of 12,194). Lightning were the 2nd leading cause of customer-hours interrupted, accounting for 10% of total customer-hours interrupted (1,259 of 12,194). Trees were the 3rd leading cause of customer-hours interrupted, accounting for 2% of total customer-hours interrupted (296 of 12,194).
- Of the 15 interruptions on this circuit, 6 affected 10 customers or less, with 5 being single customer outages.

Action Taken:

- Distribution cycle tree trimming was completed in FY2022.
- Distribution line inspection was completed in May 2023. All Level 1 maintenance has been completed.

Action Plan:

- Complete Level 2 Distribution Line Inspection work due in 2024.
- Complete Level 3 Distribution Line Inspection work due in 2025.
- Distribution cycle tree trimming is scheduled for FY2027.

3. WETHERSFIELD STA 23 2361 – 4.8kV

Profile: 426 Customers, 48.8 Circuit Miles
 Indices: CAIDI = 3.51, SAIFI = 4.90

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	6	46.15%	577	27.65%	2,006	27.42%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	5	38.46%	1,468	70.34%	5,226	71.44%
6	ACCIDENTS	1	7.69%	4	0.19%	7	0.09%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	1	7.69%	38	1.82%	77	1.05%
Totals		13	100.00%	2,087	100.00%	7,315	100.00%

Problem Analysis:

- There were 13 interruptions on the Wethersfield Sta 23 2361 in 2023.
- There was 1 transmission interruption.
 - This Transmission interruption occurred on February 23, 2023, coded as a cause of deterioration (PSC cause code 05). This lockout accounted for 20% of the total customers interrupted (425 of 2,087), and 11% of the total customer-hours interrupted (772 of 7,315). This event resulted from a failed insulator in which Attica-Wethersfield Line 209 was de-energized to make repairs resulting in an outage for 1.82 hours.
- There were no substation interruptions.
- The remaining 12 events occurred at the distribution level.
- The distribution circuit breaker for the Wethersfield Sta 23 2361 experienced 0 momentary operations in 2023.
- The distribution circuit breaker for the Wethersfield Sta 23 2361 experienced 3 sustained operations (lockouts) in 2023. These interruptions accounted for 61% of the total amount of customers interrupted (1,277 out of 2,087) and 75% of the total amount of the customer-hours interrupted (5,454 out of 7,315).
 - The first lockout occurred on February 05, 2023, coded as a cause of deterioration (PSC cause code 05). This lockout accounted for 20% of the total customers interrupted (425 of 2,087), and 37% of the total customer-hours interrupted (2,713 of 7,315). This event resulted from a pole fire due to a failed insulator which caused Attica-Wethersfield Line 209 to lock out resulting in an outage of 6.38 hours.

- The second lockout occurred on February 23, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 20% of the total customers interrupted (426 of 2,087), and 18% of the total customer-hours interrupted (1,314 of 7,315). This event resulted from a tree that fell causing the feeder to lock out resulting in an outage for 3.93 hours.
- The third lockout occurred on August 09, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 20% of the total customers interrupted (426 of 2,087), and 20% of the total customer-hours interrupted (1,427 of 7,315). This event resulted from a failed regulator causing Attica-Wethersfield Line 209 to lock out resulting in an outage for 3.35 hours.
- Trees were the leading cause of interruptions on the Wethersfield Sta 23 2361 in 2023, accounting for 46% of total interruptions (6 of 13). Equipment Failures were the 2nd leading cause of interruptions, accounting for 38% of total interruptions (5 of 13). Accidents were the 3rd leading cause of interruptions, accounting for 8% of total interruptions (1 of 13).
- Equipment Failures were the leading cause of customers interrupted (CI) on the Wethersfield Sta 23 2361 in 2023, accounting for 70% of total customers interrupted (1,468 of 2,087). Trees were the 2nd leading cause of customers interrupted, accounting for 28% of total customers interrupted (577 of 2,087). Unknown were the 3rd leading cause of customers interrupted, accounting for 2% of total customers interrupted (38 of 2,087).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the Wethersfield Sta 23 2361 in 2023, accounting for 71% of total customer-hours interrupted (5,226 of 7,315). Trees were the 2nd leading cause of customer-hours interrupted, accounting for 27% of total customer-hours interrupted (2,006 of 7,315). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 1% of total customer-hours interrupted (77 of 7,315).
- Of the 13 interruptions on this circuit, 3 affected 10 customers or less, with 2 being single customer outages.

Action Taken:

- Distribution cycle tree trimming was completed in FY2019.
- Emerald Ash Bore removal completed in FY2019.
- Sub-T Line 209 inspection was completed in July 2019. All Level 1, Level 2 & Level 3 maintenance has been completed.
- Distribution line inspection was completed in August 2021. All Level 1, Level 2 & Level 3 maintenance has been completed.
- Sub-T cycle tree trimming & hazard tree removal on Line 209 completed in FY2024.

Action Plan:

- Sub-T Line 209 Inspection due in 2024.
- Distribution line inspection due in 2026.
- Distribution cycle tree trimming is scheduled for FY2026.
- Sub-T cycle tree trimming on Line 209 is scheduled for FY2030.

4. BYRON STA 18 1863 – 4.8kV

Profile: 699 Customers, 55.1 Circuit Miles
Indices: CAIDI = 3.31, SAIFI = 2.66

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	6	33.33%	1,398	75.20%	4,534	73.64%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	4	22.22%	83	4.46%	365	5.92%
6	ACCIDENTS	4	22.22%	285	15.33%	1,021	16.58%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	1	5.56%	1	0.05%	1	0.01%
10	UNKNOWN	3	16.67%	92	4.95%	237	3.84%
Totals		18	100.00%	1,859	100.00%	6,156	100.00%

Problem Analysis:

- There were 18 interruptions on the Byron Sta 18 1863 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 18 events occurred at the distribution level.
- The distribution circuit breaker for the Byron Sta 18 1863 experienced 0 momentary operations in 2023.
- The distribution circuit breaker for the Byron Sta 18 1863 experienced 1 sustained operation (lockout) in 2023. This interruption accounted for 38% of the total amount of customers interrupted (701 out of 1,859) and 41% of the total amount of the customer-hours interrupted (2,520 out of 6,156).
 - This lockout occurred on March 03, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 38% of the total customers interrupted (701 of 1,859), and 41% of the total customer-hours interrupted (2,520 of 6,156). This event resulted from a tree taking down primary wire which caused the feeder to lock out resulting in an outage for 3.6 hours.
- Trees were the leading cause of interruptions on the Byron Sta 18 1863 in 2023, accounting for 33% of total interruptions (6 of 18). Equipment Failures were the 2nd leading cause of interruptions, accounting for 22% of total interruptions (4 of 18). Accidents were the 3rd leading cause of interruptions, accounting for 22% of total interruptions (4 of 18).

- Trees were the leading cause of customers interrupted (CI) on the Byron Sta 18 1863 in 2023, accounting for 75% of total customers interrupted (1,398 of 1,859). Accidents were the 2nd leading cause of customers interrupted, accounting for 15% of total customers interrupted (285 of 1,859). Unknown were the 3rd leading cause of customers interrupted, accounting for 5% of total customers interrupted (92 of 1,859).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Byron Sta 18 1863 in 2023, accounting for 74% of total customer-hours interrupted (4,534 of 6,156). Accidents were the 2nd leading cause of customer-hours interrupted, accounting for 17% of total customer-hours interrupted (1,021 of 6,156). Equipment Failures were the 3rd leading cause of customer-hours interrupted, accounting for 6% of total customer-hours interrupted (365 of 6,156).
- Of the 18 interruptions on this circuit, 6 affected 10 customers or less, with 5 being single customer outages.

Action Taken:

- Distribution cycle tree trimming was completed in FY2018.
- Emerald Ash Bore removal completed in FY2018.
- Distribution line inspection was completed in May 2020. All Level 1, Level 2 & Level 3 maintenance has been completed.

Action Plan:

- Distribution line inspection due in 2025.
- Distribution cycle tree trimming is scheduled for FY2026.

5. LINDEN STA 21 2161 – 4.8kV

Profile: 384 Customers, 36.5 Circuit Miles
Indices: CAIDI = 3.76, SAIFI = 2.38

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	11	61.11%	846	92.56%	3,196	92.87%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	6	33.33%	41	4.49%	136	3.97%
6	ACCIDENTS	0	0.00%	0	0.00%	0	0.00%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	1	5.56%	27	2.95%	109	3.16%
Totals		18	100.00%	914	100.00%	3,441	100.00%

Problem Analysis:

- There were 18 interruptions on the Linden Sta 21 2161 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 18 events occurred at the distribution level.
- The distribution circuit breaker for the Linden Sta 21 2161 experienced 1 momentary operation in 2023.
- The distribution circuit breaker for the Linden Sta 21 2161 experienced 1 sustained operation (lockout) in 2023. This interruption accounted for 42% of the total amount of customers interrupted (381 out of 914) and 46% of the total amount of the customer-hours interrupted (1,570 out of 3,441).
 - This lockout occurred on February 23, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 42% of the total customers interrupted (381 of 914), and 46% of the total customer-hours interrupted (1,570 of 3,441). This event resulted from a tree taking down five sections of primary wire which caused the feeder to lock out resulting in an outage for 5.45 hours.
- Trees were the leading cause of interruptions on the Linden Sta 21 2161 in 2023, accounting for 61% of total interruptions (11 of 18). Equipment Failures were the 2nd leading cause of interruptions, accounting for 33% of total interruptions (6 of 18). Unknown were the 3rd leading cause of interruptions, accounting for 6% of total interruptions (1 of 18).

- Trees were the leading cause of customers interrupted (CI) on the Linden Sta 21 2161 in 2023, accounting for 93% of total customers interrupted (846 of 914). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 4% of total customers interrupted (41 of 914). Unknown were the 3rd leading cause of customers interrupted, accounting for 3% of total customers interrupted (27 of 914).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Linden Sta 21 2161 in 2023, accounting for 93% of total customer-hours interrupted (3,196 of 3,441). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 4% of total customer-hours interrupted (136 of 3,441). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 3% of total customer-hours interrupted (109 of 3,441).
- Of the 18 interruptions on this circuit, 9 affected 10 customers or less, with 2 being single customer outages.

Action Taken:

- Distribution cycle tree trimming was completed in FY2018.
- Emerald Ash Bore removal completed in FY2018.
- Distribution line inspection was completed in September 2020. All Level 1, Level 2 & Level 3 maintenance has been completed.

Action Plan:

- Distribution line inspection due in 2025.
- Distribution cycle tree trimming is scheduled for FY2026.

6. WETHERSFIELD STA 23 2362 – 4.8kV

Profile: 190 Customers, 25.6 Circuit Miles
 Indices: CAIDI = 2.83, SAIFI = 5.58

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	6	50.00%	287	27.08%	506	16.85%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	5	41.67%	721	68.02%	2,434	81.14%
6	ACCIDENTS	0	0.00%	0	0.00%	0	0.00%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	1	8.33%	52	4.91%	60	2.01%
Totals		12	100.00%	1,060	100.00%	3,000	100.00%

Problem Analysis:

- There were 12 interruptions on the Wethersfield Sta 23 2362 in 2023.
- There was 1 transmission interruption.
 - This Transmission interruption occurred on February 23, 2023, coded as a cause of deterioration (PSC cause code 05). This lockout accounted for 18% of the total customers interrupted (189 of 1,060), and 11% of the total customer-hours interrupted (340 of 3,000). This event resulted from a failed insulator in which Attica-Wethersfield Line 209 was de-energized to make repairs resulting in an outage for 1.8 hours.
- There were no substation interruptions.
- The remaining 11 events occurred at the distribution level.
- The distribution circuit breaker for the Wethersfield Sta 23 2362 experienced 0 momentary operations in 2023.
- The distribution circuit breaker for the Wethersfield Sta 23 2362 experienced 2 sustained operations (lockouts) in 2023. These interruptions accounted for 32% of the total amount of customers interrupted (335 out of 1,060) and 52% of the total amount of the customer-hours interrupted (1,559 out of 3,000).
 - The first lockout occurred on February 05, 2023, coded as a cause of deterioration (PSC cause code 05). This lockout accounted for 14% of the total customers interrupted (144 of 1,060), and 31% of the total customer-hours interrupted (919 of 3,000). This event resulted from a pole fire due to a failed insulator which caused Attica-Wethersfield Line 209 to lock out resulting in an outage of 6.38 hours.

- The second lockout occurred on August 09, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 18% of the total customers interrupted (191 of 1,060), and 21% of the total customer-hours interrupted (640 of 3,000). This event resulted from a failed regulator causing Attica-Wethersfield Line 209 to lock out resulting in an outage for 3.35 hours.
- Trees were the leading cause of interruptions on the Wethersfield Sta 23 2362 in 2023, accounting for 50% of total interruptions (6 of 12). Equipment Failures were the 2nd leading cause of interruptions, accounting for 42% of total interruptions (5 of 12). Unknown were the 3rd leading cause of interruptions, accounting for 8% of total interruptions (1 of 12).
- Equipment Failures were the leading cause of customers interrupted (CI) on the Wethersfield Sta 23 2362 in 2023, accounting for 68% of total customers interrupted (721 of 1,060). Trees were the 2nd leading cause of customers interrupted, accounting for 27% of total customers interrupted (287 of 1,060). Unknown were the 3rd leading cause of customers interrupted, accounting for 5% of total customers interrupted (52 of 1,060).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the Wethersfield Sta 23 2362 in 2023, accounting for 81% of total customer-hours interrupted (2,434 of 3,000). Trees were the 2nd leading cause of customer-hours interrupted, accounting for 17% of total customer-hours interrupted (506 of 3,000). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 2% of total customer-hours interrupted (60 of 3,000).
- Of the 12 interruptions on this circuit, 0 affected 10 customers or less, with 0 being single customer outages.

Action Taken:

- Distribution cycle tree trimming was completed in FY2019.
- Sub-T Line 209 inspection was completed in July 2019. All Level 1, Level 2 & Level 3 maintenance has been completed.
- Distribution line inspection was completed in July 2021. All Level 1, Level 2 & Level 3 maintenance has been completed.
- Sub-T cycle tree trimming & hazard tree removal on Line 209 completed in FY2024.

Action Plan:

- Sub-T Line 209 inspection due in 2024.
- Distribution line inspection due in 2026.
- Distribution cycle tree trimming is scheduled for FY2026.
- Sub-T cycle tree trimming on Line 209 is scheduled for FY2030.

7. E GOLAH 5155 - 13.2kV

Profile: 1,707 Customers, 70.2 Circuit Miles
 Indices: CAIDI = 0.76, SAIFI = 3.53

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	7	31.82%	1,602	26.59%	2,293	50.33%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	3	13.64%	8	0.13%	32	0.71%
6	ACCIDENTS	8	36.36%	3,074	51.02%	1,585	34.79%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	1	4.55%	1,332	22.11%	624	13.70%
10	UNKNOWN	3	13.64%	9	0.15%	22	0.48%
Totals		22	100.00%	6,025	100.00%	4,556	100.00%

Problem Analysis:

- There were 22 interruptions on the E Golah 5155 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 22 events occurred at the distribution level.
- The distribution circuit breaker for the E Golah 5155 experienced 0 momentary operations in 2023.
- The distribution circuit breaker for the E Golah 5155 experienced 1 sustained operation (lockout) in 2023. This interruption accounted for 28% of the total amount of customers interrupted (1,706 out of 6,025) and 16% of the total amount of the customer-hours interrupted (739 out of 4,556).
 - This lockout occurred on April 16, 2023, coded as a cause of vehicle (PSC cause code 06). This lockout accounted for 28% of the total customers interrupted (1,706 of 6,025), and 16% of the total customer-hours interrupted (739 of 4,556). This event resulted when a motor vehicle broke a pole, and the feeder was de-energized to make repairs resulting in an outage for 25.8 minutes.
- Accidents were the leading cause of interruptions on the E Golah 5155 in 2023, accounting for 36% of total interruptions (8 of 22). Trees were the 2nd leading cause of interruptions, accounting for 32% of total interruptions (7 of 22). Equipment Failures were the 3rd leading cause of interruptions, accounting for 14% of total interruptions (3 of 22).

- Accidents were the leading cause of customers interrupted (CI) on the E Golah 5155 in 2023, accounting for 51% of total customers interrupted (3,074 of 6,025). Trees were the 2nd leading cause of customers interrupted, accounting for 27% of total customers interrupted (1,602 of 6,025). Lightning were the 3rd leading cause of customers interrupted, accounting for 22% of total customers interrupted (1,332 of 6,025).
- Trees were the leading cause of customer-hours interrupted (CHI) on the E Golah 5155 in 2023, accounting for 50% of total customer-hours interrupted (2,293 of 4,556). Accidents were the 2nd leading cause of customer-hours interrupted, accounting for 35% of total customer-hours interrupted (1,585 of 4,556). Lightning were the 3rd leading cause of customer-hours interrupted, accounting for 14% of total customer-hours interrupted (624 of 4,556).
- Of the 22 interruptions on this circuit, 12 affected 10 customers or less, with 5 being single customer outages.

Action Taken:

- Distribution cycle tree trimming was completed in FY2024.
- Distribution line inspection was completed in September 2023. All Level 1 maintenance has been completed.

Action Plan:

- Complete Level 2 Distribution Line Inspection work due in 2024.
- Complete Level 3 Distribution Line Inspection work due in 2025.

8. YORK CTR 5352 - 13.2kV

Profile: 939 Customers, 73.5 Circuit Miles
Indices: CAIDI = 3.15, SAIFI = 1.54

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	10	43.48%	425	29.31%	1,499	32.83%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	4	17.39%	45	3.10%	108	2.35%
6	ACCIDENTS	7	30.43%	33	2.28%	59	1.30%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	2	8.70%	947	65.31%	2,900	63.52%
Totals		23	100.00%	1,450	100.00%	4,566	100.00%

Problem Analysis:

- There were 23 interruptions on the York Ctr 5352 in 2023.
- There was 1 transmission interruption.
 - This Transmission interruption occurred on April 01, 2023, coded as a cause of unknown (PSC cause code 10). This lockout accounted for 64% of the total customers interrupted (935 of 1,450), and 62% of the total customer-hours interrupted (2,852 of 4,566). This event occurred when Golah-South Perry Line 853 locked out for an unknown reason.
- There were no substation interruptions.
- The remaining 22 events occurred at the distribution level.
- The distribution circuit breaker for the York Ctr 5352 experienced 2 momentary operations in 2023.
- The distribution circuit breaker for the York Ctr 5352 experienced 0 sustained operations (lockouts) in 2023.
- Trees were the leading cause of interruptions on the York Ctr 5352 in 2023, accounting for 43% of total interruptions (10 of 23). Accidents were the 2nd leading cause of interruptions, accounting for 30% of total interruptions (7 of 23). Equipment Failures were the 3rd leading cause of interruptions, accounting for 17% of total interruptions (4 of 23).

- Unknown were the leading cause of customers interrupted (CI) on the York Ctr 5352 in 2023, accounting for 65% of total customers interrupted (947 of 1,450). Trees were the 2nd leading cause of customers interrupted, accounting for 29% of total customers interrupted (425 of 1,450). Equipment Failures were the 3rd leading cause of customers interrupted, accounting for 3% of total customers interrupted (45 of 1,450).
- Unknown were the leading cause of customer-hours interrupted (CHI) on the York Ctr 5352 in 2023, accounting for 64% of total customer-hours interrupted (2,900 of 4,566). Trees were the 2nd leading cause of customer-hours interrupted, accounting for 33% of total customer-hours interrupted (1,499 of 4,566). Equipment Failures were the 3rd leading cause of customer-hours interrupted, accounting for 2% of total customer-hours interrupted (108 of 4,566).
- Of the 23 interruptions on this circuit, 12 affected 10 customers or less, with 6 being single customer outages.

Action Taken:

- Distribution line inspection was completed in May 2022. All Level 1, & Level 2 maintenance has been completed.
- Distribution cycle tree trimming was completed in FY2024.

Action Plan:

- Complete Level 3 Distribution Line Inspection work due in 2024.

9. E GOLAH 5156 - 13.2kV

Profile: 1,993 Customers, 82.2 Circuit Miles
 Indices: CAIDI = 1.13, SAIFI = 2.42

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	7	38.89%	2,846	58.95%	3,221	59.24%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	5	27.78%	82	1.70%	293	5.39%
6	ACCIDENTS	5	27.78%	1,856	38.44%	1,881	34.60%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	1	5.56%	44	0.91%	42	0.77%
Totals		18	100.00%	4,828	100.00%	5,438	100.00%

Problem Analysis:

- There were 18 interruptions on the E Golah 5156 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 18 events occurred at the distribution level.
- The distribution circuit breaker for the E Golah 5156 experienced 0 momentary operations in 2023.
- The distribution circuit breaker for the E Golah 5156 experienced 1 sustained operation (lockout) in 2023. This interruption accounted for 41% of the total amount of customers interrupted (2,001 out of 4,828) and 33% of the total amount of the customer-hours interrupted (1,769 out of 5,438).
 - This lockout occurred on July 21, 2023, coded as a cause of tree - broken limb (PSC cause code 02). This lockout accounted for 41% of the total customers interrupted (2,001 of 4,828), and 33% of the total customer-hours interrupted (1,769 of 5,438). This event resulted from a tree limb that fell across primary wires causing the feeder to lock out resulting in an outage for 52.8 minutes.
- Trees were the leading cause of interruptions on the E Golah 5156 in 2023, accounting for 39% of total interruptions (7 of 18). Equipment Failures were the 2nd leading cause of interruptions, accounting for 28% of total interruptions (5 of 18). Accidents were the 3rd leading cause of interruptions, accounting for 28% of total interruptions (5 of 18).

- Trees were the leading cause of customers interrupted (CI) on the E Golah 5156 in 2023, accounting for 59% of total customers interrupted (2,846 of 4,828). Accidents were the 2nd leading cause of customers interrupted, accounting for 38% of total customers interrupted (1,856 of 4,828). Equipment Failures were the 3rd leading cause of customers interrupted, accounting for 2% of total customers interrupted (82 of 4,828).
- Trees were the leading cause of customer-hours interrupted (CHI) on the E Golah 5156 in 2023, accounting for 59% of total customer-hours interrupted (3,221 of 5,438). Accidents were the 2nd leading cause of customer-hours interrupted, accounting for 35% of total customer-hours interrupted (1,881 of 5,438). Equipment Failures were the 3rd leading cause of customer-hours interrupted, accounting for 5% of total customer-hours interrupted (293 of 5,438).
- Of the 18 interruptions on this circuit, 8 affected 10 customers or less, with 3 being single customer outages.

Action Taken:

- Distribution line inspection was completed in April 2020. All Level 1, Level 2 & Level 3 maintenance has been completed.
- Distribution cycle tree trimming was completed in FY2024.

Action Plan:

- Monitor feeder for cycle trim completed in FY2024.
- Distribution Line Inspection due in 2025.

3. ACTION PLAN SUMMARIES

a. SUMMARY OF ACTION PLANS FOR 2023 WORST PERFORMING CIRCUITS

Station	Feeder	Report Year	Action Plan	Estimated Completion Date	Comments
W. Hamlin	8254	2023	Complete Level 2 maintenance work	2024	
W. Hamlin	8254	2023	Complete Level 3 maintenance work	2025	
W. Hamlin	8255	2023	Complete Level 2 maintenance work	2024	
W. Hamlin	8255	2023	Complete Level 3 maintenance work	2025	
Wethersfield	2361	2023	Sub-T Line 209 Inspection	2024	
Wethersfield	2361	2023	Distribution Line Inspection	2026	
Wethersfield	2361	2023	Distribution Cycle Tree Trimming	FY2026	
Byron	1863	2023	Distribution Line Inspection	2025	
Byron	1863	2023	Distribution Cycle Tree Trimming	FY2026	
Linden	2161	2023	Distribution Line Inspection	2025	
Linden	2161	2023	Distribution Cycle Tree Trimming	FY2026	
Wethersfield	2362	2023	Sub-T Line 209 Inspection	2024	
Wethersfield	2362	2023	Distribution Line Inspection	2026	
Wethersfield	2362	2023	Distribution Cycle Tree Trimming	FY2026	
E. Golah	5155	2023	Complete Level 2 maintenance work	2024	
E. Golah	5155	2023	Complete Level 3 maintenance work	2025	
York Center	5352	2023	Complete Level 3 maintenance work	2024	
E. Golah	5156	2023	Distribution Line Inspection	2025	

b. STATUS OF ACTION PLANS FOR 2022 WORST PERFORMING CIRCUITS

Station	Feeder	Report Year	Action Plan	Estimated Completion Date	Comments
Orangeville	1961	2022	Complete Level 2 maintenance work	2023	Complete
Orangeville	1961	2022	Complete Level 3 maintenance work	2024	
Orangeville	1961	2022	Distribution Cycle Tree Trimming	2024	
Orangeville	1961	2022	Sub-T Cycle Tree Trimming	FY2024	Complete
Orangeville	1961	2022	Distribution Hazard Tree Removal	FY2024	Complete
Orangeville	1961	2022	Sub-T I&M Inspection	FY2024	
Wethersfield	2361	2022	Complete Level 2 maintenance work	2023	Complete
Wethersfield	2361	2022	Complete Level 3 maintenance work	2024	Complete
Wethersfield	2361	2022	Distribution Cycle Tree Trimming	FY2024	Completed January 2024
Wethersfield	2361	2022	Sub-T I&M Inspection	2024	
Richmond	3253	2022	Complete Level 3 maintenance work	2023	Complete
Richmond	3253	2022	Distribution Cycle Tree Trimming	FY2026	
Richmond	3253	2022	Complete Level 2 Sub-T maintenance work	2024	
Richmond	3253	2022	Complete Level 3 Sub-T maintenance work	2025	
Brockport	7457	2022	Complete Level 2 maintenance work	2023	Complete
Brockport	7457	2022	Complete Level 3 maintenance work	2024	
Brockport	7457	2022	Distribution Cycle Tree Trimming	FY2025	
Lyndonville	9561	2022	Complete Level 2 maintenance work	2024	Complete
Lyndonville	9561	2022	Complete Level 3 maintenance work	2025	
Lyndonville	9561	2022	Complete Level 3 Sub-T maintenance work	2024	
Richmond	3251	2022	Distribution Cycle Tree Trimming	FY2026	
Richmond	3251	2022	Complete Level 3 maintenance work	2023	Complete
Richmond	3251	2022	Complete Level 2 Sub-T maintenance work	2024	
Richmond	3251	2022	Complete Level 3 Sub-T maintenance work	2025	

G. MOHAWK VALLEY REGION

1. OPERATING REGIONAL PERFORMANCE

a. HISTORIC CAIDI AND SAIFI INDICES

IDS info:

	2023	2022	2021	2020	2019	2018
CAIDI (Threshold 2.150)	2.07	2.20	1.94	2.35	1.93	2.29
SAIFI (Threshold 1.483)	1.06	1.49	1.34	1.34	1.42	1.29
SAIDI	2.20	3.27	2.60	3.15	2.75	2.94
Interruptions	1,307	1,459	1,381	1,349	1,283	1,331
Customers Interrupted	149,214	209,062	187,636	186,722	197,595	177,829
Customer-Hours Interrupted	308,940	459,360	363,296	438,515	381,537	406,526
Customers Served	140,605	140,458	139,837	139,367	138,719	138,080
Customers Per Interruption	114.17	143.29	135.87	138.42	154.01	133.61
Availability Index	99.9749	99.9627	99.9703	99.9642	99.9686	99.9664
Interruptions/1000 Customers	9.30	10.39	9.88	9.68	9.25	9.64

b. DISCUSSION OF REGIONAL PERFORMANCE

In 2023, the Mohawk Valley Region met its CAIDI reliability target and met its SAIFI reliability target as set forth by the New York Public Service Commission (PSC). The final System Average Interruption Frequency Index (SAIFI) result was 1.06 interruptions, 29% below the PSC goal of 1.483 interruptions. As shown in the table above, the Customer Average Interruption Duration index (CAIDI) was 2.07 in 2023, 4% below the PSC's regional target of 2.150 hours.

The 2023 CAIDI result was 6% below the 2022 result of 2.2 hours, and 3% below the previous 5-year average of 2.14 hours. The 2023 SAIFI was 29% below the 2022 result of 1.49 interruptions, and 23% below the previous 5-year average of 1.38 interruptions.

In 2023, excluding major storms, the Mohawk Valley Region experienced 10 transmission interruptions. These interruptions accounted for 1% of the region's total interruptions (10 of 1,307), 31% of the region's total customers interrupted (CI), (45,885 of 149,214), and 28% (85,308 of 308,940) of the region's total customer-hours interrupted (CHI). Overall, transmission interruptions had a CAIDI of 1.86 hours, and a SAIFI of 0.33 interruptions.

The number of transmission-related interruptions decreased from 15 in 2022 to 10 in 2023 (a decrease of 33%). The number of customers interrupted decreased from 71,194 in 2022, to 45,885 in 2023 (a decrease of 36%), while the customer-hours interrupted decreased from 211,485 in 2022, to 85,308 in 2023 (a decrease of 60%).

In 2023, excluding major storms, the Mohawk Valley Region experienced 2 substation interruptions. These interruptions accounted for 0.2% of the region's total interruptions (2 of 1,307), 3% of the region's total customers interrupted, (4,804 of 149,214), and 2% (5,271 of 308,940) of the region's total customer-hours interrupted. Overall, substation interruptions had a CAIDI of 1.1 hours, and a SAIFI of 0.03 interruptions.

The number of substation-related interruptions decreased from 7 to 2 from 2022 to 2023 (a decrease of 71%). The number of customers interrupted decreased from 16,976 in 2022, to 4,804 in 2023 (a decrease of 72%), while the customer-hours interrupted decreased from 6,419 in 2022, to 5,271 in 2023 (a decrease of 18%).

In 2023, excluding major storms, the Mohawk Valley Region experienced 1,295 distribution interruptions. These interruptions accounted for 99% of the region's total interruptions (1,295 of 1,307), 66% of the region's total customers interrupted, (98,525 of 149,214), and 71% (218,361 of 308,940) of the region's total customer-hours interrupted. Overall, distribution interruptions had a CAIDI of 2.22 hours, and a SAIFI of 0.7 interruptions.

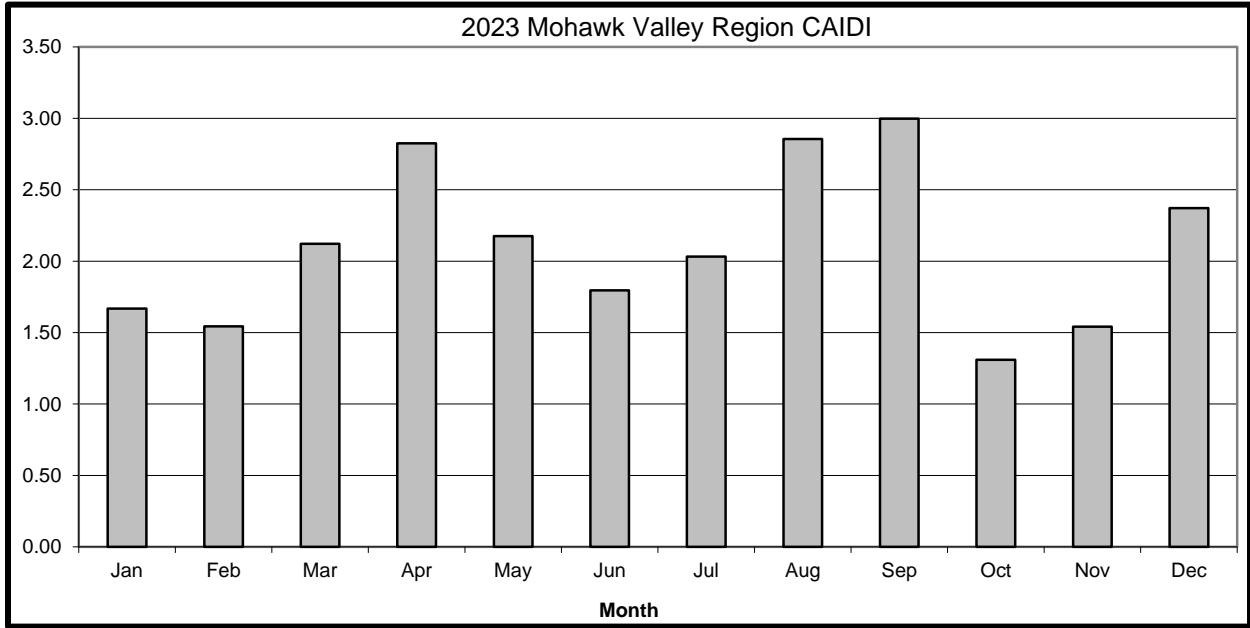
The number of distribution-related interruptions decreased from 1,437 to 1,295 from 2022 to 2023 (a decrease of 10%). The number of customers interrupted decreased from 120,892 in 2022, to 98,525 in 2023 (a decrease of 19%), while the customer-hours interrupted decreased from 241,455 in 2022, to 218,361 in 2023 (a decrease of 10%).

c. MONTHLY CAIDI AND SAIFI GRAPHS

The graphs on the following page show the monthly CAIDI and SAIFI for the Mohawk Valley Region for 2023 (Excluding Major Storms).

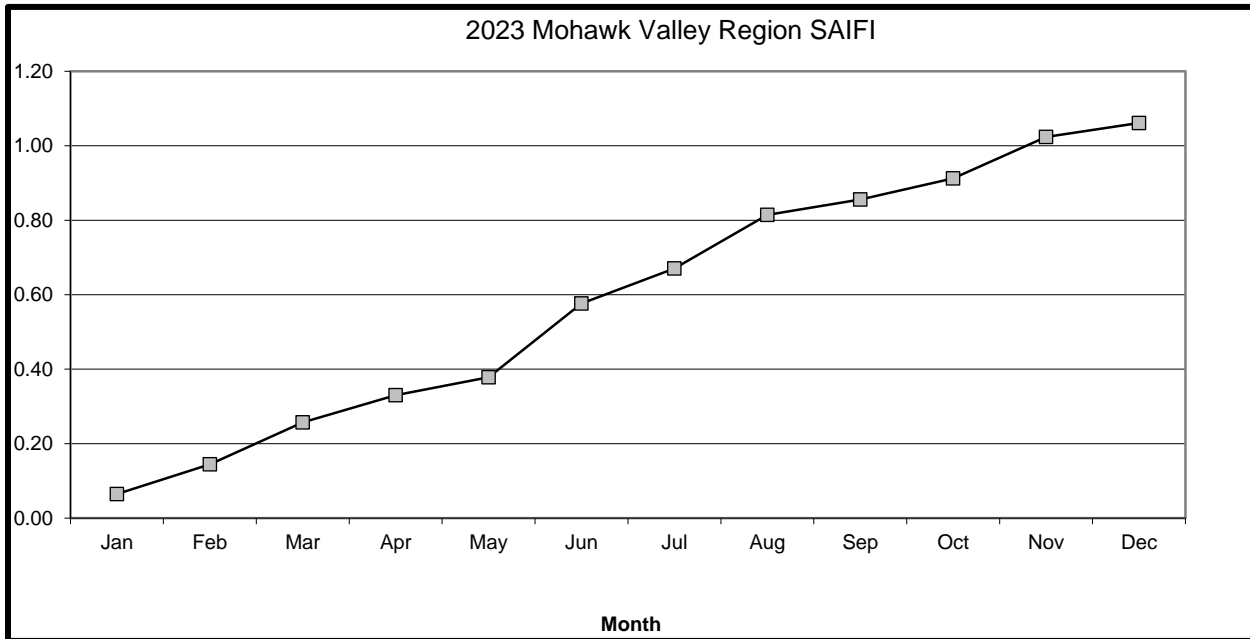
- The CAIDI graph shows the individual CAIDI by month for 2023. The Mohawk Valley Region was below the CAIDI threshold of 2.150 hours for five months of the year, with September being the highest month with a CAIDI of 3.0 hours, accounting for 7.4% of the number of interruptions (97 of 1,307), 3.9% of the total number of customers interrupted (5,789 of 149,214) and 5.6% of the total customer-hours interrupted (17,354 of 308,940). The Mohawk Valley Region ended the year with an overall CAIDI of 2.07.
- The SAIFI graph shows the cumulative SAIFI by month for 2023. The Mohawk Valley Region was under the SAIFI threshold of 1.483. June was the worst performing month in terms of customers interrupted with a SAIFI of 0.2, accounting for 9.4% of the number of interruptions (123 of 1,307), 18.6% of the total number of customers interrupted (27,782 of 149,214) and 16.1% of the total customer-hours interrupted (49,894 of 308,940). The Mohawk Valley Region ended the year with a SAIFI of 1.06

GRAPH OF MONTHLY CAIDI AND SAIFI FOR CENTRAL REGION



PSC CAIDI Goal:	
Threshold	2.150
2023 Actual	2.07

PSC SAIFI Goal:	
Threshold	1.483
2023 Actual	1.06



d. PSC CAUSE CODES

1) Number of Events by Cause – Historical

IDS info:

Cause Code	2023	2022	2021	2020	2019	2018
01 Major Storms	33	418	378	529	965	442
02 Tree Contacts	453	490	507	430	458	467
03 Overloads	4	16	16	6	26	5
04 Operator Error	3	8	9	5	4	0
05 Equipment	375	443	370	405	365	318
06 Accidents	206	247	202	158	201	196
07 Prearranged	57	53	48	62	37	20
08 Customer Equip.	-	-	-	-	-	-
09 Lightning	73	36	42	31	51	36
10 Unknown	136	166	187	186	189	167
Total	1,307	1,877	1,759	1,527	1,812	2,296

2) Customers Interrupted by Cause – Historical

IDS info:

Cause Code	2023	2022	2021	2020	2019	2018
01 Major Storms	4,247	54,610	54,789	52,904	136,049	69,505
02 Tree Contacts	43,804	49,992	61,727	79,647	45,181	68,831
03 Overloads	635	939	403	144	895	5,156
04 Operator Error	61	7,557	3,157	526	46	0
05 Equipment	58,919	104,771	58,880	62,802	77,836	43,625
06 Accidents	34,875	28,327	22,044	22,121	36,339	39,054
07 Prearranged	3,714	3,770	21,845	14,220	5,393	27,491
08 Customer Equip.	-	-	-	-	-	-
09 Lightning	1,550	2,719	5,269	1,691	3,573	8,813
10 Unknown	5,656	10,987	14,311	16,444	8,566	16,793
Total	149,214	263,672	242,425	212,827	250,499	313,878

3) Customer-Hours Interrupted by Cause – Historical

IDS info:

Cause Code	2023	2022	2021	2020	2019	2018
01 Major Storms	13,294	698,288	229,494	337,565	838,451	320,893
02 Tree Contacts	121,400	140,280	163,328	177,014	117,146	144,131
03 Overloads	466	1,600	1,534	471	2,021	2,550
04 Operator Error	47	968	3,820	702	31	0
05 Equipment	123,960	219,448	115,089	111,307	183,190	85,689
06 Accidents	39,159	51,266	33,260	48,395	73,199	49,038
07 Prearranged	8,294	7,449	13,783	11,821	4,133	7,050
08 Customer Equip.	-	-	-	-	-	-
09 Lightning	3,370	14,405	10,706	5,112	8,550	17,255
10 Unknown	12,246	23,943	21,775	26,717	18,255	24,120
Total	322,235	1,157,647	592,790	648,907	719,103	1,244,977

4) Interruptions, Customers Interrupted, and Customer-Hours Interrupted – 2023

Cause Code	Interruptions		Customers Interrupted		Customer-Hours Interrupted	
	Number	% Total	Number	% Total	Number	% Total
01 Major Storms	33	2.5%	4,247	2.8%	13,294	4.1%
02 Tree Contacts	453	33.8%	43,804	28.5%	121,400	37.7%
03 Overloads	4	0.3%	635	0.4%	466	0.1%
04 Operator Error	3	0.2%	61	0.0%	47	0.0%
05 Equipment	375	28.0%	58,919	38.4%	123,960	38.5%
06 Accidents	206	15.4%	34,875	22.7%	39,159	12.2%
07 Prearranged	57	4.3%	3,714	2.4%	8,294	2.6%
08 Customer Equip.	0	0.0%	0	0.0%	0	0.0%
09 Lightning	73	5.4%	1,550	1.0%	3,370	1.0%
10 Unknown	136	10.1%	5,656	3.7%	12,246	3.8%
Total	1,340	100.0%	153,461	100.0%	322,235	100.0%

e. **INTERRUPTION REVIEW BY PSC CAUSE CODES**

Cause Code 01 - Major Storms

In 2023, Major Storms accounted for 2% of interruptions, 3% of customers interrupted, and 4% of Customer-Hours Interrupted.

Interruptions due to Major Storm were down 92% from 2022, and down 93% over the 5-year average. Customers interrupted due to Major Storms were down 92% from 2022, and down 93% over the 5-year average. Customer-Hours interrupted were down 98% from 2022 and down 97% over the 5-year average.

The remaining PSC code descriptions do not include Major Storms in the percentages.

Cause Code 02 - Tree Contacts

In 2023, Tree Contacts accounted for 35% of interruptions, 29% of customers interrupted, and 39% of Customer-Hours Interrupted.

Interruptions due to Tree Contacts were down 8% from 2022, and down 3% over the 5-year average. Customers interrupted due to Tree Contacts were down 12% from 2022, and down 28% over the 5-year average. Customer-Hours interrupted were down 13% from 2022 and down 24% over the 5-year average.

Tree Contacts were the largest cause of interruptions in 2023.

Cause Code 03 - Overloads

In 2023, Overloads accounted for 0% of interruptions, 0% of customers interrupted, and 0% of Customer-Hours Interrupted.

Interruptions due to Overloads were down 75% from 2022, and down 75% over the 5-year average. Customers interrupted due to Overloads were down 32% from 2022, and up 25% over the 5-year average. Customer-Hours interrupted were down 71% from 2022 and down 62% over the 5-year average.

Overloads were the 7th largest cause of interruptions in 2023.

Cause Code 04 - Operator Error

In 2023, Operator Error accounted for 0% of interruptions, 0% of customers interrupted, and 0% of Customer-Hours Interrupted.

Interruptions due to Operator Error were down 63% from 2022, and down 57% over the 5-year average. Customers interrupted due to Operator Error were down 99% from 2022, and down 98% over the 5-year average. Customer-Hours interrupted were down 95% from 2022 and down 97% over the 5-year average.

Operator Error was the 8th largest cause of interruptions in 2023.

Cause Code 05 - Equipment Failure

In 2023, Equipment Failures accounted for 29% of interruptions, 39% of customers interrupted, and 40% of Customer-Hours Interrupted.

Interruptions due to Equipment Failure were down 15% from 2022, and down 5% over the 5-year average. Customers interrupted due to Equipment Failure were down 44% from 2022, and down 20% over the 5-year average. Customer-Hours interrupted were down 44% from 2022 and down 23% over the 5-year average.

Equipment Failures were the 2nd largest cause of interruptions in 2023.

Cause Code 06 - Accidents

In 2023, Accidents accounted for 16% of interruptions, 23% of customers interrupted, and 13% of Customer-Hours Interrupted.

Interruptions due to Accidents were down 17% from 2022, and down 1% over the 5-year average. Customers interrupted due to Accidents were up 23% from 2022, and up 25% over the 5-year average. Customer-Hours interrupted were down 24% from 2022 and down 21% over the 5-year average.

Accidents were the 3rd largest cause of interruptions in 2023.

Cause Code 07 - Prearranged

In 2023, Prearranged accounted for 4% of interruptions, 2% of customers interrupted, and 3% of Customer-Hours Interrupted.

Interruptions due to Prearranged were up 8% from 2022, and up 12% over the 5-year average. Customers interrupted due to Prearranged were down 1% from 2022, and down 63% over the 5-year average. Customer-Hours interrupted were up 11% from 2022 and down 0% over the 5-year average.

Prearranged was the 6th largest cause of interruptions in 2023.

Cause Code 08 - Customer Equipment

There were no Customer Equipment interruptions in 2023.

Cause Code 09 - Lightning

In 2023, Lightning accounted for 6% of interruptions, 1% of customers interrupted, and 1% of Customer-Hours Interrupted.

Interruptions due to Lightning were up 103% from 2022, and up 109% over the 5-year average. Customers interrupted due to Lightning were down 43% from 2022, and down 47% over the 5-year average. Customer-Hours interrupted were down 77% from 2022 and down 58% over the 5-year average.

Lightning was the 5th largest cause of interruptions in 2023.

Cause Code 10 - Unknown

In 2023, Unknown causes accounted for 10% of interruptions, 4% of customers interrupted, and 4% of Customer-Hours Interrupted.

Interruptions due to Unknown causes were down 18% from 2022, and down 26% over the 5-year average. Customers interrupted due to Unknown causes were down 49% from 2022, and down 58% over the 5-year average. Customer-Hours interrupted were down 49% from 2022 and down 46% over the 5-year average.

Unknown causes were the 4th largest cause of interruptions in 2023.

f. DISCUSSION OF REGIONAL CAPEX PROJECTS WITH 2022/23 SPENDS:

The Mohawk Valley Region continues to work on capital projects in order to maintain customer satisfaction and future reliability. Some specific projects that were constructed in either CY23 or will be constructed in CY24 are listed below. Additional descriptions of other major infrastructure projects will follow.

There are several projects where lines are being rebuilt or reconductored. These projects are either the result of engineering reliability reviews (ERRs) conducted on the Worst Performing Circuits or are the responses to customer inquiries via the Quick Resolution System (QRS). There are several sub-transmission line rebuild projects and a number of distribution line rebuild projects in progress.

There are additional load relief projects scheduled to be completed throughout the region. Most of these load relief projects are ratio transformer replacements or voltage conversions. Line reconductoring is also included in the voltage conversions, where appropriate.

There are also a number of substation projects that were completed, are underway or slated to begin in 2024. These projects are a combination of asset condition and load relief. These projects include Rock City, Raquette Lake, Terminal, Deerfield and Yahnundasis substations. The Rock City rebuild includes a conversion from 5kV to 13.2kV.

Major Capital Projects for Mohawk Valley Region:

Region	Project Name	Project Type	Fin Sys Proj No.	Finish	Total Spend
Mohawk Valley	EHI SEGMENT A Edic Line 14 Shift - C084708	Transmission Line	C084708	12/11/23	\$4,418,000
Mohawk Valley	EHI SEGMENT A SUBSTATIONS- EDIC UPGRADES - C086312	Transmission Sub	C086312	12/11/23	\$20,752,000
Mohawk Valley	Yahundasis - Porter 3 SWS X3-2- WO 29771902 - C076621	Transmission Line	C076621	3/31/23	\$3,050,000
Mohawk Valley	Lehigh 51 & 54 Tie Creation	Distribution Line	C050004	6/19/23	\$1,907,770
Mohawk Valley	Stittville 52 Rome 57 Tie Pt 3	Distribution Line	C081842	4/12/23	\$1,064,857
Mohawk Valley	Trenton Middleville 24 - Structure Relocation	Sub-Transmission	C083835	9/15/23	\$1,500,000
Mohawk Valley	New Terminal Feeder 651	Distribution Line	C092803	9/22/23	\$1,241,217
Mohawk Valley	MainSt13.2KVEExtUticaNY	Distribution Line	C092678	11/1/23	\$1,905,000
Mohawk Valley	MVHSColumbiaStDuctbankUticaNY	Distribution Line	C093013	9/22/23	\$1,505,257

g. DISCUSSION OF REGIONAL PERFORMANCE OF LVAC (LOW VOLTAGE AC) NETWORK DISTRIBUTION SYSTEM(S):

City Of Utica – Terminal Street LVAC Network

The Utica LVAC Network serves the downtown area, mainly Genesee Street and Lafayette Street. This network is supplied by four 13.2kV feeders that originate from the Terminal Substation. This system serves approximately 662 customer accounts and experienced a peak load of approximately 6.298 MVA in 2023.

The table below lists the breaker operations in 2023 that were a result of a fault and/or failure.

Substation	Feeder Number	Breaker Number	Breaker Number	# Breaker Operations from Failures
Terminal	65144	R440	R815	0
Terminal	65145	R450	R825	0
Terminal	65146	R460	R825	0
Terminal	65147	R470	R845	0

As shown above the Utica LVAC Network experienced no feeder outages in 2023. There were no customer interruptions. At no time was this network operated beyond its single contingency (N-1) design criteria.

There were no major events associated with the network in 2023.

Annual maintenance consisted of manhole and vault inspections, network protector and transformer inspections and network protector operation checks.

Equipment maintenance consisted of manhole and vault rebuilds, network protector and transformer replacements.

There are two major projects being worked / planned:

- 1) Rebuild of general network vault N0329 - N0329 is a below-grade company-owned network transformer vault installed in the City of Utica in a public side walk on east-side of Genesee Street between Hopper Street & Bank Place. This vault is subject to pedestrian traffic as well as vehicular traffic and is presently in-service with an operating 750 KVA network transformer.

This project is scheduled to start in FY2025

- 2) Relocation of the Terminal station which four of the eleven feeders supply to LVAC network.

This project is currently being planned Estimate start is FY2026

2. OPERATING CIRCUIT LIST

The next three tables will provide the following information for the Mohawk Valley Region.

- a. Worst Performing Circuit List
- b. Worst Performing Circuits with 3 Year History for CAIDI and SAIFI Indices
- c. Worst Performing Circuits by number of Momentary Interruptions

a. NATIONAL GRID WORST PERFORMING CIRCUIT LIST

MOHAWK VALLEY REGION

FEEDER #	A CUST. SERVED	B TOTAL INTER.	C # CUST. INTER.	D CUST. HRS. INTER.	C/A SAIFI	D/A SAIDI	D/C CAIDI	NUMBER OF MOMENTARIES
EAGLE BAY 38272	1,076	30	6,827	17,274	6.34	16.05	2.53	3
RAQUETTE LAKE 39861	515	26	5,146	18,717	9.99	36.34	3.64	3
SALISBURY 67857	1,048	36	6,256	10,537	5.97	10.05	1.68	2
OLD FORGE 38362	747	24	3,953	10,027	5.29	13.42	2.54	3
EAGLE BAY 38271	950	18	4,969	13,381	5.23	14.09	2.69	3
ALDER CREEK 70152	1,097	35	3,306	7,647	3.01	6.97	2.31	1
LEHIGH 66953	2,188	55	5,105	11,334	2.33	5.18	2.22	1
SHERMAN 33352	1,510	31	4,011	9,168	2.66	6.07	2.29	0
ALDER CREEK 70161	1,013	26	2,796	7,774	2.76	7.67	2.78	1
ONEIDA 50151	1,872	32	4,411	10,073	2.36	5.38	2.28	1
OLD FORGE 38361	619	15	3,891	8,843	6.29	14.29	2.27	3
LEHIGH 66954	777	27	1,885	6,146	2.43	7.91	3.26	1
OLD FORGE 38364	889	13	4,497	9,739	5.06	10.96	2.17	3
LEHIGH 66951	1,150	23	1,994	8,777	1.73	7.63	4.40	0
ROME 76258	1,125	17	2,914	7,227	2.59	6.42	2.48	0
WHITE LAKE 39963	996	15	2,617	6,520	2.63	6.55	2.49	3
POLAND - UTICA 62257	1,631	29	3,101	6,425	1.90	3.94	2.07	2
POLAND - UTICA 62258	1,618	48	2,100	8,018	1.30	4.96	3.82	2
DEERFIELD 60658	1,955	20	4,380	6,169	2.24	3.16	1.41	1
STITTVILLE 67052	1,712	32	2,877	5,447	1.68	3.18	1.89	0

Regional Goals:
CAIDI 2.15
SAIFI 1.483

b. NATIONAL GRID WORST PERFORMING CIRCUITS WITH 3 YEAR HISTORY FOR CAIDI & SAIFI INDICES

MOHAWK VALLEY REGION

FEEDER #	2023 CAIDI	2022 CAIDI	2021 CAIDI	2020 CAIDI	2023 SAIFI	2022 SAIFI	2021 SAIFI	2020 SAIFI
EAGLE BAY 38272	2.53	4.51	4.24	4.11	6.34	6.68	3.43	7.98
RAQUETTE LAKE 39861	3.64	5.86	3.73	5.46	9.99	10.61	6.05	9.73
SALISBURY 67857	1.68	2.14	1.92	2.95	5.97	1.67	5.43	2.44
OLD FORGE 38362	2.54	3.81	1.83	4.51	5.29	5.20	3.95	7.94
EAGLE BAY 38271	2.69	4.83	3.93	4.80	5.23	6.21	4.14	8.60
ALDER CREEK 70152	2.31	3.23	2.06	1.36	3.01	3.48	2.38	5.49
LEHIGH 66953	2.22	1.07	2.22	2.13	2.33	4.81	2.61	2.07
SHERMAN 33352	2.29	3.52	1.94	2.35	2.66	0.76	2.02	2.37
ALDER CREEK 70161	2.78	3.58	3.51	2.75	2.76	3.37	0.95	3.17
ONEIDA 50151	2.28	2.96	2.38	1.19	2.36	2.40	3.68	1.76
OLD FORGE 38361	2.27	3.20	3.30	4.15	6.29	4.29	2.74	9.28
LEHIGH 66954	3.26	3.56	2.01	1.56	2.43	3.60	2.32	1.31
OLD FORGE 38364	2.17	3.05	2.55	4.71	5.06	5.22	2.24	7.09
LEHIGH 66951	4.40	1.25	0.76	2.41	1.73	5.32	1.42	0.16
ROME 76258	2.48	1.02	3.98	5.40	2.59	0.23	0.21	0.10
WHITE LAKE 39963	2.49	2.59	4.82	4.15	2.63	3.33	0.77	4.68
POLAND - UTICA 62257	2.07	1.68	0.78	1.19	1.90	5.39	4.22	4.53
POLAND - UTICA 62258	3.82	4.36	1.48	2.60	1.30	3.55	7.23	7.13
DEERFIELD 60658	1.41	2.42	1.36	0.65	2.24	0.26	2.03	1.22
STITTVILLE 67052	1.89	2.00	1.93	2.25	1.68	1.23	0.84	0.64

Regional Goals:
 CAIDI 2.15
 SAIFI 1.483

c. NATIONAL GRID WORST PERFORMING CIRCUITS BY # OF MOMENTARY INTERRUPTIONS

MOHAWK VALLEY REGION

Feeders			Customer Momentaries				Ranks		
Volts (kV)	Station Name	Ckt/F No.	Substation	Transmission	Distribution	Total	Within Region	Within System	Reliability Ranking
No circuits experienced 10 or more momentary interruptions in 2023.									

d. WORST PERFORMING CIRCUIT ANALYSIS

For 2023, the Mohawk Valley Region is required to analyze and report on 20 of the worst performing circuits. The list consists of twelve 13.2kV and eight 4.8kV circuits.

The reliability performance thresholds for the Mohawk Valley Region are 2.15 for CAIDI and 1.483 for SAIFI.

1. EAGLE BAY 38272 – 4.8kV

Profile: 1,076 Customers, 48.1 Circuit Miles

Indices: CAIDI = 2.53, SAIFI = 6.34

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	17	56.67%	947	13.87%	4,209	24.37%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	8	26.67%	4,718	69.11%	11,359	65.76%
6	ACCIDENTS	1	3.33%	1,072	15.70%	1,329	7.69%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	2	6.67%	49	0.72%	96	0.56%
10	UNKNOWN	2	6.67%	41	0.60%	281	1.62%
Totals		30	100.00%	6,827	100.00%	17,274	100.00%

Problem Analysis:

- There were 30 interruptions on the Eagle Bay 38272 in 2023.
- There were 5 transmission interruptions.
 - The first Transmission interruption occurred on January 12, 2023, coded as a cause of vehicle (PSC cause code 06). This lockout accounted for 16% of the total customers interrupted (1,072 of 6,827), and 8% of the total customer-hours interrupted (1,329 of 17,274). White Lake R235 dropping customers for clearance to replace broken Sub-T pole TxP692.
 - The second Transmission interruption occurred on March 14, 2023, coded as a cause of fire on company equipment (PSC cause code 05). This lockout accounted for 16% of the total customers interrupted (1,072 of 6,827), and 4% of the total customer-hours interrupted (607 of 17,274). Pole fire on TxP211 #22.
 - The third Transmission interruption occurred on June 26, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 16% of the total customers interrupted (1,078 of 6,827), and 21% of the total customer-hours interrupted (3,542 of 17,274). Burnt customer equipment was found at Forestport Hydro. Hydro was isolated and station breaker (R210) was closed in at Boonville, restoring all customers.
 - The fourth Transmission interruption occurred on August 31, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 16% of the total customers interrupted (1,080 of 6,827), and 23% of the total customer-hours interrupted (3,942 of 17,274). The primary conductor on P52 cross arm caused pole fire.
 - The fifth Transmission interruption occurred on November 07, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 16% of the total customers interrupted (1,077 of 6,827), and 11% of the total customer-hours interrupted (1,984 of 17,274). Broken crossarm insulator on Sub-T P102 structure.

- There were no substation interruptions.
- The remaining 25 events occurred at the distribution level.
- The distribution circuit breaker for the Eagle Bay 38272 experienced 3 momentary operations in 2023.
- The distribution circuit breaker for the Eagle Bay 38272 experienced 0 sustained operations (lockouts) in 2023.
- Trees were the leading cause of interruptions on the Eagle Bay 38272 in 2023, accounting for 57% of total interruptions (17 of 30). Equipment Failures were the 2nd leading cause of interruptions, accounting for 27% of total interruptions (8 of 30). Lightning were the 3rd leading cause of interruptions, accounting for 7% of total interruptions (2 of 30).
- Equipment Failures were the leading cause of customers interrupted (CI) on the Eagle Bay 38272 in 2023, accounting for 69% of total customers interrupted (4,718 of 6,827). Accidents were the 2nd leading cause of customers interrupted, accounting for 16% of total customers interrupted (1,072 of 6,827). Trees were the 3rd leading cause of customers interrupted, accounting for 14% of total customers interrupted (947 of 6,827).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the Eagle Bay 38272 in 2023, accounting for 66% of total customer-hours interrupted (11,359 of 17,274). Trees were the 2nd leading cause of customer-hours interrupted, accounting for 24% of total customer-hours interrupted (4,209 of 17,274). Accidents were the 3rd leading cause of customer-hours interrupted, accounting for 8% of total customer-hours interrupted (1,329 of 17,274).
- Of the 30 interruptions on this circuit, 9 affected 10 customers or less, with 2 being single customer outages.

Action Taken:

- Completed Level 2 I&M in 2023.
- Completed I&M foot patrol in 2022.
- Completed cycle tree pruning in 2020.

Action Plan:

- Complete Level 3 I&M in 2025.
- Complete cycle tree pruning in 2026.
- Complete I&M foot patrol scheduled in 2027.

2. RAQUETTE LAKE 39861 – 4.8kV

Profile: 515 Customers, 37.3 Circuit Miles

Indices: CAIDI = 3.64, SAIFI = 9.99

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	4	15.38%	897	17.43%	3,545	18.94%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	17	65.38%	2,675	51.98%	9,914	52.97%
6	ACCIDENTS	1	3.85%	503	9.77%	624	3.33%
7	PREARRANGED	2	7.69%	528	10.26%	2,928	15.64%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	1	3.85%	27	0.52%	265	1.42%
10	UNKNOWN	1	3.85%	516	10.03%	1,441	7.70%
Totals		26	100.00%	5,146	100.00%	18,717	100.00%

Problem Analysis:

- There were 26 interruptions on the Raquette Lake 39861 in 2023.
- There were 7 transmission interruptions.
 - The first Transmission interruption occurred on January 12, 2023, coded as a cause of vehicle (PSC cause code 06). This lockout accounted for 10% of the total customers interrupted (503 of 5,146), and 3% of the total customer-hours interrupted (624 of 18,717). Broken Sub-T Pole (TxP692).
 - The second Transmission interruption occurred on March 14, 2023, coded as a cause of fire on company equipment (PSC cause code 05). This lockout accounted for 10% of the total customers interrupted (516 of 5,146), and 15% of the total customer-hours interrupted (2,881 of 18,717). Pole fire on line #22 (TxP211)
 - The third Transmission interruption occurred on June 26, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 10% of the total customers interrupted (519 of 5,146), and 9% of the total customer-hours interrupted (1,705 of 18,717). Burnt customer equipment was found at Forestport Hydro. Hydro was isolated and station breaker (R210) was closed in at Boonville, restoring all customers.
 - The fourth Transmission interruption occurred on August 31, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 10% of the total customers interrupted (520 of 5,146), and 10% of the total customer-hours interrupted (1,898 of 18,717). Primary on cross arm on P52 caught fire.
 - The fifth Transmission interruption occurred on November 07, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 10% of the total customers interrupted (520 of 5,146), and 5% of the total customer-hours interrupted (958 of 18,717). Broken crossarm insulator on Sub-T P102 structure.

- The sixth Transmission interruption occurred on March 14, 2023, coded as a cause of unknown (PSC cause code 10). This lockout accounted for 10% of the total customers interrupted (516 of 5,146), and 8% of the total customer-hours interrupted (1,441 of 18,717). A recloser tripped and lock out, no cause was found.
- The seventh Transmission interruption occurred on May 14, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 10% of the total customers interrupted (516 of 5,146), and 9% of the total customer-hours interrupted (1,763 of 18,717). A recloser tripped and locked out, a small tree was found between poles P520 and P521. c
- There was 1 substation interruption.
 - This Substation interruption occurred on July 19, 2023, coded as a cause of no cause associated (PSC cause code 07). This lockout accounted for 10% of the total customers interrupted (519 of 5,146), and 16% of the total customer-hours interrupted (2,918 of 18,717). This was a planned outage to complete work within the Raquette Lake substation.
- The remaining 18 events occurred at the distribution level.
- The distribution circuit breaker for the Raquette Lake 39861 experienced 3 momentary operations in 2023.
- The distribution circuit breaker for the Raquette Lake 39861 experienced 1 sustained operation (lockout) in 2023. This interruption accounted for 10% of the total amount of customers interrupted (516 out of 5,146) and 6% of the total amount of the customer-hours interrupted (1,206 out of 18,717).
- This lockout occurred on May 21, 2023, coded as a cause of deterioration (PSC cause code 05). This lockout accounted for 10% of the total customers interrupted (516 of 5,146), and 6% of the total customer-hours interrupted (1,206 of 18,717). The tagged out Sub-t line was a result of underbuilt on P99 for the State Hwy 28 replacement.
- Equipment Failures were the leading cause of interruptions on the Raquette Lake 39861 in 2023, accounting for 65% of total interruptions (17 of 26). Trees were the 2nd leading cause of interruptions, accounting for 15% of total interruptions (4 of 26). Prearranged were the 3rd leading cause of interruptions, accounting for 8% of total interruptions (2 of 26).
- Equipment Failures were the leading cause of customers interrupted (CI) on the Raquette Lake 39861 in 2023, accounting for 52% of total customers interrupted (2,675 of 5,146). Trees were the 2nd leading cause of customers interrupted, accounting for 17% of total customers interrupted (897 of 5,146). Prearranged were the 3rd leading cause of customers interrupted, accounting for 10% of total customers interrupted (528 of 5,146).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the Raquette Lake 39861 in 2023, accounting for 53% of total customer-hours interrupted (9,914 of 18,717). Trees were the 2nd leading cause of customer-hours interrupted, accounting for 19% of total customer-hours interrupted (3,545 of 18,717). Prearranged were the 3rd leading cause of customer-hours interrupted, accounting for 16% of total customer-hours interrupted (2,928 of 18,717).
- Of the 26 interruptions on this circuit, 11 affected 10 customers or less, with 1 being single customer outages.

Action Taken:

- Completed Level 3 I&M in 2023.
- Completed I&M foot patrol in 2020.
- Completed cycle tree pruning in 2023.

Action Plan:

- Complete cycle tree pruning in 2029.
- Complete I&M foot patrol scheduled in 2025.

3. SALISBURY 67857 – 13.2kV

Profile: 1,048 Customers, 90.5 Circuit Miles
 Indices: CAIDI = 1.68, SAIFI = 5.97

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	10	27.78%	2,204	35.23%	5,169	49.05%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	6	16.67%	2,188	34.97%	1,958	18.58%
6	ACCIDENTS	8	22.22%	1,340	21.42%	1,955	18.55%
7	PREARRANGED	2	5.56%	197	3.15%	796	7.55%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	1	2.78%	3	0.05%	7	0.06%
10	UNKNOWN	9	25.00%	324	5.18%	653	6.20%
Totals		36	100.00%	6,256	100.00%	10,537	100.00%

Problem Analysis:

- There were 36 interruptions on the Salisbury 67857 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 36 events occurred at the distribution level.
- The distribution circuit breaker for the Salisbury 67857 experienced 2 momentary operations in 2023.
- The distribution circuit breaker for the Salisbury 67857 experienced 2 sustained operations (lockouts) in 2023. These interruptions accounted for 33% of the total amount of customers interrupted (2,094 out of 6,256) and 17% of the total amount of the customer-hours interrupted (1,775 out of 10,537).
 - The first lockout occurred on June 12, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 17% of the total customers interrupted (1,047 of 6,256), and 2% of the total customer-hours interrupted (188 of 10,537). Failed regulators at P78 Burrell Rd, customer drop and pick to replace with new equipment.
 - The second lockout occurred on February 28, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 17% of the total customers interrupted (1,047 of 6,256), and 15% of the total customer-hours interrupted (1,587 of 10,537). Broken and burned pole top off, resulted in primary down at pole P146.
- Trees were the leading cause of interruptions on the Salisbury 67857 in 2023, accounting for 28% of total interruptions (10 of 36). Unknown were the 2nd leading cause of interruptions, accounting for 25% of total interruptions (9 of 36). Accidents were the 3rd leading cause of interruptions, accounting for 22% of total interruptions (8 of 36).

- Trees were the leading cause of customers interrupted (CI) on the Salisbury 67857 in 2023, accounting for 35% of total customers interrupted (2,204 of 6,256). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 35% of total customers interrupted (2,188 of 6,256). Accidents were the 3rd leading cause of customers interrupted, accounting for 21% of total customers interrupted (1,340 of 6,256).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Salisbury 67857 in 2023, accounting for 49% of total customer-hours interrupted (5,169 of 10,537). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 19% of total customer-hours interrupted (1,958 of 10,537). Accidents were the 3rd leading cause of customer-hours interrupted, accounting for 19% of total customer-hours interrupted (1,955 of 10,537).
- Of the 36 interruptions on this circuit, 12 affected 10 customers or less, with 4 being single customer outages.

Action Taken:

- Completed Level 3 I&M in 2023.
- Completed I&M foot patrol in 2020.
- Completed cycle tree pruning in 2020.

Action Plan:

- Complete I&M foot patrol scheduled in 2025.
- Complete cycle tree pruning in 2026.

4. OLD FORGE 38362 – 4.8kV

Profile: 747 Customers, 37.8 Circuit Miles
 Indices: CAIDI = 2.54, SAIFI = 5.29

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	4	16.67%	96	2.43%	635	6.34%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	13	54.17%	3,079	77.89%	8,216	81.94%
6	ACCIDENTS	3	12.50%	759	19.20%	978	9.75%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	2	8.33%	13	0.33%	124	1.24%
10	UNKNOWN	2	8.33%	6	0.15%	73	0.73%
Totals		24	100.00%	3,953	100.00%	10,027	100.00%

Problem Analysis:

- There were 24 interruptions on the Old Forge 38362 in 2023.
- There were 5 transmission interruptions.
 - The first Transmission interruption occurred on January 12, 2023, coded as a cause of vehicle (PSC cause code 06). This lockout accounted for 19% of the total customers interrupted (743 of 3,953), and 9% of the total customer-hours interrupted (921 of 10,027). White Lake R235 dropping customers for clearance to replace broken Sub-T pole.
 - The second Transmission interruption occurred on March 14, 2023, coded as a cause of fire on company equipment (PSC cause code 05). This lockout accounted for 19% of the total customers interrupted (745 of 3,953), and 6% of the total customer-hours interrupted (559 of 10,027). Pole fire at TxP211 #22 line.
 - The third Transmission interruption occurred on June 26, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 19% of the total customers interrupted (751 of 3,953), and 25% of the total customer-hours interrupted (2,468 of 10,027). Burnt customer equipment was found at Forestport Hydro. Hydro was isolated and station breaker (R210) was closed in at Boonville, restoring all customers.
 - The fourth Transmission interruption occurred on August 31, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 19% of the total customers interrupted (750 of 3,953), and 27% of the total customer-hours interrupted (2,738 of 10,027). Primary conductor on pole P52 cross arm caused a fire resulting in station breaker R235 to open.

- The fifth Transmission interruption occurred on November 07, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 19% of the total customers interrupted (747 of 3,953), and 14% of the total customer-hours interrupted (1,376 of 10,027). A broken insulator and crossarm on Sub-T P102, resulting in Boonville breaker R210 to open.
- There were no substation interruptions.
- The remaining 19 events occurred at the distribution level.
- The distribution circuit breaker for the Old Forge 38362 experienced 3 momentary operations in 2023.
- The distribution circuit breaker for the Old Forge 38362 experienced 0 sustained operations (lockouts) in 2023.
- Equipment Failures were the leading cause of interruptions on the Old Forge 38362 in 2023, accounting for 54% of total interruptions (13 of 24). Trees were the 2nd leading cause of interruptions, accounting for 17% of total interruptions (4 of 24). Accidents were the 3rd leading cause of interruptions, accounting for 13% of total interruptions (3 of 24).
- Equipment Failures were the leading cause of customers interrupted (CI) on the Old Forge 38362 in 2023, accounting for 78% of total customers interrupted (3,079 of 3,953). Accidents were the 2nd leading cause of customers interrupted, accounting for 19% of total customers interrupted (759 of 3,953). Trees were the 3rd leading cause of customers interrupted, accounting for 2% of total customers interrupted (96 of 3,953).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the Old Forge 38362 in 2023, accounting for 82% of total customer-hours interrupted (8,216 of 10,027). Accidents were the 2nd leading cause of customer-hours interrupted, accounting for 10% of total customer-hours interrupted (978 of 10,027). Trees were the 3rd leading cause of customer-hours interrupted, accounting for 6% of total customer-hours interrupted (635 of 10,027).
- Of the 24 interruptions on this circuit, 11 affected 10 customers or less, with 4 being single customer outages.

Action Taken:

- Completed Level 3 I&M in 2024.
- Completed I&M foot patrol in 2021.
- Completed cycle tree pruning in 2024.

Action Plan:

- Complete I&M foot patrol scheduled in 2026.

5. EAGLE BAY 38271 – 4.8kV

Profile: 950 Customers, 29.2 Circuit Miles

Indices: CAIDI = 2.69, SAIFI = 5.23

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	3	16.67%	34	0.68%	139	1.04%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	8	44.44%	3,943	79.35%	11,973	89.48%
6	ACCIDENTS	2	11.11%	975	19.62%	1,205	9.01%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	3	16.67%	7	0.14%	31	0.23%
10	UNKNOWN	2	11.11%	10	0.20%	33	0.25%
Totals		18	100.00%	4,969	100.00%	13,381	100.00%

Problem Analysis:

- There were 18 interruptions on the Eagle Bay 38271 in 2023.
- There were 5 transmission interruptions.
 - The first Transmission interruption occurred on January 12, 2023, coded as a cause of vehicle (PSC cause code 06). This lockout accounted for 19% of the total customers interrupted (946 of 4,969), and 9% of the total customer-hours interrupted (1,173 of 13,381). Broken Sub-T pole TxP692, breaker at White Lake R235 opened until repair could be made.
 - The second Transmission interruption occurred on March 14, 2023, coded as a cause of fire on company equipment (PSC cause code 05). This lockout accounted for 19% of the total customers interrupted (945 of 4,969), and 18% of the total customer-hours interrupted (2,457 of 13,381). Pole fire on Sub-T TxP211, line #22.
 - The third Transmission interruption occurred on June 26, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 19% of the total customers interrupted (959 of 4,969), and 24% of the total customer-hours interrupted (3,151 of 13,381). Burnt customer equipment was found at Forestport Hydro. Hydro was isolated and station breaker (R210) was closed in at Boonville, restoring all customers.
 - The fourth Transmission interruption occurred on August 31, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 19% of the total customers interrupted (959 of 4,969), and 26% of the total customer-hours interrupted (3,500 of 13,381). Primary on pole P52 cross arm caused pole fire.

- The fifth Transmission interruption occurred on November 07, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 19% of the total customers interrupted (949 of 4,969), and 13% of the total customer-hours interrupted (1,749 of 13,381). Broken insulator and crossarm on Sub-T pole P102, this opened station breaker R210.
- There were no substation interruptions.
- The remaining 13 events occurred at the distribution level.
- The distribution circuit breaker for the Eagle Bay 38271 experienced 3 momentary operations in 2023.
- The distribution circuit breaker for the Eagle Bay 38271 experienced 0 sustained operations (lockouts) in 2023.
- Equipment Failures were the leading cause of interruptions on the Eagle Bay 38271 in 2023, accounting for 44% of total interruptions (8 of 18). Trees were the 2nd leading cause of interruptions, accounting for 17% of total interruptions (3 of 18). Lightning were the 3rd leading cause of interruptions, accounting for 17% of total interruptions (3 of 18).
- Equipment Failures were the leading cause of customers interrupted (CI) on the Eagle Bay 38271 in 2023, accounting for 79% of total customers interrupted (3,943 of 4,969). Accidents were the 2nd leading cause of customers interrupted, accounting for 20% of total customers interrupted (975 of 4,969). Trees were the 3rd leading cause of customers interrupted, accounting for 1% of total customers interrupted (34 of 4,969).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the Eagle Bay 38271 in 2023, accounting for 89% of total customer-hours interrupted (11,973 of 13,381). Accidents were the 2nd leading cause of customer-hours interrupted, accounting for 9% of total customer-hours interrupted (1,205 of 13,381). Trees were the 3rd leading cause of customer-hours interrupted, accounting for 1% of total customer-hours interrupted (139 of 13,381).
- Of the 18 interruptions on this circuit, 8 affected 10 customers or less, with 2 being single customer outages.

Action Taken:

- Completed Level 2 I&M in 2023.
- Completed I&M foot patrol in 2022.
- Completed cycle tree pruning in 2019.

Action Plan:

- Complete Level 3 I&M in 2025.
- Complete cycle tree pruning in 2025.
- Complete I&M foot patrol scheduled in 2027.

6. ALDER CREEK 70152 – 13.2kV

Profile: 1,097 Customers, 85.4 Circuit Miles
Indices: CAIDI = 2.31, SAIFI = 3.01

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	18	51.43%	801	24.23%	1,430	18.70%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	8	22.86%	2,231	67.48%	5,769	75.44%
6	ACCIDENTS	2	5.71%	124	3.75%	94	1.23%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	4	11.43%	36	1.09%	147	1.92%
10	UNKNOWN	3	8.57%	114	3.45%	207	2.71%
Totals		35	100.00%	3,306	100.00%	7,647	100.00%

Problem Analysis:

- There were 35 interruptions on the Alder Creek 70152 in 2023.
- There were 2 transmission interruptions.
 - The first Transmission interruption occurred on June 26, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 33% of the total customers interrupted (1,107 of 3,306), and 48% of the total customer-hours interrupted (3,637 of 7,647). Burnt customer equipment was found at Forestport Hydro. Hydro was isolated and station breaker (R210) was closed in at Boonville, restoring all customers.
 - The second Transmission interruption occurred on November 07, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 34% of the total customers interrupted (1,115 of 3,306), and 27% of the total customer-hours interrupted (2,054 of 7,647). Broken insulator and crossarm on Sub-T pole P102, this opened station breaker R210.
- There were no substation interruptions.
- The remaining 33 events occurred at the distribution level.
- The distribution circuit breaker for the Alder Creek 70152 experienced 1 momentary operation in 2023.
- The distribution circuit breaker for the Alder Creek 70152 experienced 0 sustained operations (lockouts) in 2023.
- Trees were the leading cause of interruptions on the Alder Creek 70152 in 2023, accounting for 51% of total interruptions (18 of 35). Equipment Failures were the 2nd leading cause of interruptions, accounting for 23% of total interruptions (8 of 35). Lightning were the 3rd leading cause of interruptions, accounting for 11% of total interruptions (4 of 35).

- Equipment Failures were the leading cause of customers interrupted (CI) on the Alder Creek 70152 in 2023, accounting for 67% of total customers interrupted (2,231 of 3,306). Trees were the 2nd leading cause of customers interrupted, accounting for 24% of total customers interrupted (801 of 3,306). Accidents were the 3rd leading cause of customers interrupted, accounting for 4% of total customers interrupted (124 of 3,306).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the Alder Creek 70152 in 2023, accounting for 75% of total customer-hours interrupted (5,769 of 7,647). Trees were the 2nd leading cause of customer-hours interrupted, accounting for 19% of total customer-hours interrupted (1,430 of 7,647). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 3% of total customer-hours interrupted (207 of 7,647).
- Of the 35 interruptions on this circuit, 16 affected 10 customers or less, with 7 being single customer outages.

Action Taken:

- Completed Level 3 I&M in 2022
- Completed I&M foot patrol in 2019.
- Completed cycle tree pruning in 2018.

Action Plan:

- Complete I&M foot patrol scheduled in 2024.
- Complete cycle tree pruning in 2025.

7. LEHIGH 66953 – 13.2kV

Profile: 2,188 Customers, 117.3 Circuit Miles
 Indices: CAIDI = 2.22, SAIFI = 2.33

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	31	56.36%	1,753	34.34%	7,175	63.31%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	14	25.45%	1,021	20.00%	1,298	11.45%
6	ACCIDENTS	2	3.64%	1,897	37.16%	2,187	19.30%
7	PREARRANGED	4	7.27%	274	5.37%	387	3.41%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	2	3.64%	17	0.33%	49	0.44%
10	UNKNOWN	2	3.64%	143	2.80%	237	2.09%
Totals		55	100.00%	5,105	100.00%	11,334	100.00%

Problem Analysis:

- There were 55 interruptions on the Lehigh 66953 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 55 events occurred at the distribution level.
- The distribution circuit breaker for the Lehigh 66953 experienced 1 momentary operation in 2023.
- The distribution circuit breaker for the Lehigh 66953 experienced 0 sustained operations (lockouts) in 2023.
- Trees were the leading cause of interruptions on the Lehigh 66953 in 2023, accounting for 56% of total interruptions (31 of 55). Equipment Failures were the 2nd leading cause of interruptions, accounting for 25% of total interruptions (14 of 55). Prearranged were the 3rd leading cause of interruptions, accounting for 7% of total interruptions (4 of 55).
- Accidents were the leading cause of customers interrupted (CI) on the Lehigh 66953 in 2023, accounting for 37% of total customers interrupted (1,897 of 5,105). Trees were the 2nd leading cause of customers interrupted, accounting for 34% of total customers interrupted (1,753 of 5,105). Equipment Failures were the 3rd leading cause of customers interrupted, accounting for 20% of total customers interrupted (1,021 of 5,105).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Lehigh 66953 in 2023, accounting for 63% of total customer-hours interrupted (7,175 of 11,334). Accidents were the 2nd leading cause of customer-hours interrupted, accounting for 19% of total customer-hours interrupted (2,187 of 11,334). Equipment Failures were the 3rd leading cause of customer-hours interrupted, accounting for 11% of total customer-hours interrupted (1,298 of 11,334).
- Of the 55 interruptions on this circuit, 20 affected 10 customers or less, with 10 being single customer outages.

Action Taken:

- Completed Level 3 I&M in 2022.
- Completed I&M foot patrol in 2019.
- Completed cycle tree pruning in 2023.

Action Plan:

- Complete cycle tree pruning in 2029.
- Complete I&M foot patrol scheduled in 2024.

8. SHERMAN 33352 – 13.2kV

Profile: 1,510 Customers, 93.5 Circuit Miles
Indices: CAIDI = 2.29, SAIFI = 2.66

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	18	58.06%	2,185	54.48%	7,661	83.56%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	5	16.13%	1,548	38.59%	944	10.30%
6	ACCIDENTS	2	6.45%	192	4.79%	381	4.16%
7	PREARRANGED	1	3.23%	5	0.12%	6	0.07%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	5	16.13%	81	2.02%	175	1.91%
Totals		31	100.00%	4,011	100.00%	9,168	100.00%

Problem Analysis:

- There were 31 interruptions on the Sherman 33352 in 2023.
- There was 1 transmission interruption.
 - This Transmission interruption occurred on April 23, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 38% of the total customers interrupted (1,511 of 4,011), and 9% of the total customer-hours interrupted (832 of 9,168). Insulator broke causing pole fire on Sub-T pole TxP10, resulting in underbuilt also catching fire.
- There were no substation interruptions.
- The remaining 30 events occurred at the distribution level.
- The distribution circuit breaker for the Sherman 33352 experienced 0 momentary operations in 2023.
- The distribution circuit breaker for the Sherman 33352 experienced 1 sustained operation (lockout) in 2023. This interruption accounted for 38% of the total amount of customers interrupted (1,511 out of 4,011) and 55% of the total amount of the customer-hours interrupted (5,011 out of 9,168).
 - This lockout occurred on April 09, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 38% of the total customers interrupted (1,511 of 4,011), and 55% of the total customer-hours interrupted (5,011 of 9,168). Tree took phases down between pole P20 and P21 (Trenton Falls and Prospect Rd).
- Trees were the leading cause of interruptions on the Sherman 33352 in 2023, accounting for 58% of total interruptions (18 of 31). Equipment Failures were the 2nd leading cause of interruptions, accounting for 16% of total interruptions (5 of 31). Unknown were the 3rd leading cause of interruptions, accounting for 16% of total interruptions (5 of 31).

- Trees were the leading cause of customers interrupted (CI) on the Sherman 33352 in 2023, accounting for 54% of total customers interrupted (2,185 of 4,011). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 39% of total customers interrupted (1,548 of 4,011). Accidents were the 3rd leading cause of customers interrupted, accounting for 5% of total customers interrupted (192 of 4,011).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Sherman 33352 in 2023, accounting for 84% of total customer-hours interrupted (7,661 of 9,168). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 10% of total customer-hours interrupted (944 of 9,168). Accidents were the 3rd leading cause of customer-hours interrupted, accounting for 4% of total customer-hours interrupted (381 of 9,168).
- Of the 31 interruptions on this circuit, 14 affected 10 customers or less, with 6 being single customer outages.

Action Taken:

- Completed Level 3 I&M in 2023.
- Completed I&M foot patrol in 2020.
- Completed cycle tree pruning in 2020.

Action Plan:

- Complete cycle tree pruning in 2026.
- Complete I&M foot patrol scheduled in 2025.

9. ALDER CREEK 70161 – 4.8kV

Profile: 1,013 Customers, 60.3 Circuit Miles
 Indices: CAIDI = 2.78, SAIFI = 2.76

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	12	46.15%	577	20.64%	2,045	26.31%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	8	30.77%	2,176	77.83%	5,581	71.79%
6	ACCIDENTS	0	0.00%	0	0.00%	0	0.00%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	4	15.38%	19	0.68%	91	1.18%
10	UNKNOWN	2	7.69%	24	0.86%	57	0.73%
Totals		26	100.00%	2,796	100.00%	7,774	100.00%

Problem Analysis:

- There were 26 interruptions on the Alder Creek 70161 in 2023.
- There were 2 transmission interruptions.
 - The first Transmission interruption occurred on June 26, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 36% of the total customers interrupted (1,014 of 2,796), and 43% of the total customer-hours interrupted (3,332 of 7,774). Burnt customer equipment was found at Forestport Hydro. Hydro was isolated and station breaker (R210) was closed in at Boonville, restoring all customers.
 - The second Transmission interruption occurred on November 07, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 36% of the total customers interrupted (1,017 of 2,796), and 24% of the total customer-hours interrupted (1,874 of 7,774). Broken insulator and crossarm on Sub-T pole P102, this opened station breaker R210.
- There were no substation interruptions.
- The remaining 24 events occurred at the distribution level.
- The distribution circuit breaker for the Alder Creek 70161 experienced 1 momentary operation in 2023.
- The distribution circuit breaker for the Alder Creek 70161 experienced 0 sustained operations (lockouts) in 2023.
- Trees were the leading cause of interruptions on the Alder Creek 70161 in 2023, accounting for 46% of total interruptions (12 of 26). Equipment Failures were the 2nd leading cause of interruptions, accounting for 31% of total interruptions (8 of 26). Lightning were the 3rd leading cause of interruptions, accounting for 15% of total interruptions (4 of 26).

- Equipment Failures were the leading cause of customers interrupted (CI) on the Alder Creek 70161 in 2023, accounting for 78% of total customers interrupted (2,176 of 2,796). Trees were the 2nd leading cause of customers interrupted, accounting for 21% of total customers interrupted (577 of 2,796). Unknown were the 3rd leading cause of customers interrupted, accounting for 1% of total customers interrupted (24 of 2,796).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the Alder Creek 70161 in 2023, accounting for 72% of total customer-hours interrupted (5,581 of 7,774). Trees were the 2nd leading cause of customer-hours interrupted, accounting for 26% of total customer-hours interrupted (2,045 of 7,774). Lightning were the 3rd leading cause of customer-hours interrupted, accounting for 1% of total customer-hours interrupted (91 of 7,774).
- Of the 26 interruptions on this circuit, 13 affected 10 customers or less, with 4 being single customer outages.

Action Taken:

- Completed Level 3 I&M in 2022.
- Completed I&M foot patrol in 2019.
- Completed cycle tree pruning in 2022.

Action Plan:

- Complete cycle tree pruning in 2028.
- Complete I&M foot patrol scheduled in 2025.

10. ONEIDA 50151 – 13.2kV

Profile: 1,872 Customers, 98.6 Circuit Miles
 Indices: CAIDI = 2.28, SAIFI = 2.36

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	8	25.00%	2,056	46.61%	7,404	73.51%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	9	28.13%	2,023	45.86%	1,749	17.36%
6	ACCIDENTS	6	18.75%	183	4.15%	438	4.35%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	2	6.25%	48	1.09%	231	2.29%
10	UNKNOWN	7	21.88%	101	2.29%	251	2.49%
Totals		32	100.00%	4,411	100.00%	10,073	100.00%

Problem Analysis:

- There were 32 interruptions on the Oneida 50151 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 32 events occurred at the distribution level.
- The distribution circuit breaker for the Oneida 50151 experienced 1 momentary operation in 2023.
- The distribution circuit breaker for the Oneida 50151 experienced 2 sustained operations (lockouts) in 2023. These interruptions accounted for 85% of the total amount of customers interrupted (3,739 out of 4,411) and 79% of the total amount of the customer-hours interrupted (7,919 out of 10,073).
 - The first lockout occurred on August 12, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 42% of the total customers interrupted (1,869 of 4,411), and 66% of the total customer-hours interrupted (6,696 of 10,073). A tree took primary down on Seneca Ave and on Glenwood Ave.
 - The second lockout occurred on October 22, 2023, coded as a cause of deterioration (PSC cause code 05). This lockout accounted for 42% of the total customers interrupted (1,870 of 4,411), and 12% of the total customer-hours interrupted (1,223 of 10,073). Broken insulator at pole P33 (Glenwood Dr).
- Equipment Failures were the leading cause of interruptions on the Oneida 50151 in 2023, accounting for 28% of total interruptions (9 of 32). Trees were the 2nd leading cause of interruptions, accounting for 25% of total interruptions (8 of 32). Unknown were the 3rd leading cause of interruptions, accounting for 22% of total interruptions (7 of 32).

- Trees were the leading cause of customers interrupted (CI) on the Oneida 50151 in 2023, accounting for 47% of total customers interrupted (2,056 of 4,411). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 46% of total customers interrupted (2,023 of 4,411). Accidents were the 3rd leading cause of customers interrupted, accounting for 4% of total customers interrupted (183 of 4,411).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Oneida 50151 in 2023, accounting for 74% of total customer-hours interrupted (7,404 of 10,073). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 17% of total customer-hours interrupted (1,749 of 10,073). Accidents were the 3rd leading cause of customer-hours interrupted, accounting for 4% of total customer-hours interrupted (438 of 10,073).
- Of the 32 interruptions on this circuit, 14 affected 10 customers or less, with 6 being single customer outages.

Action Taken:

- Completed Level 2 I&M in 2024.
- Completed I&M foot patrol in 2023.
- Completed cycle tree pruning in 2019.

Action Plan:

- Complete Level 3 I&M in 2026.
- Complete cycle tree pruning in 2025.
- Complete I&M foot patrol scheduled in 2028.

11. OLD FORGE 38361 – 4.8kV

Profile: 619 Customers, 33.4 Circuit Miles
 Indices: CAIDI = 2.27, SAIFI = 6.29

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	6	40.00%	576	14.80%	1,588	17.96%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	5	33.33%	2,485	63.87%	5,826	65.88%
6	ACCIDENTS	1	6.67%	622	15.99%	771	8.72%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	3	20.00%	208	5.35%	658	7.44%
Totals		15	100.00%	3,891	100.00%	8,843	100.00%

Problem Analysis:

- There were 15 interruptions on the Old Forge 38361 in 2023.
- There were 5 transmission interruptions.
 - The first Transmission interruption occurred on January 12, 2023, coded as a cause of vehicle (PSC cause code 06). This lockout accounted for 16% of the total customers interrupted (622 of 3,891), and 9% of the total customer-hours interrupted (771 of 8,843). White Lake R235 dropping customers for clearance to replace broken Sub-T pole.
 - The second Transmission interruption occurred on March 14, 2023, coded as a cause of fire on company equipment (PSC cause code 05). This lockout accounted for 16% of the total customers interrupted (615 of 3,891), and 4% of the total customer-hours interrupted (349 of 8,843). Pole fire at TxP211 #22 line.
 - The third Transmission interruption occurred on June 26, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 16% of the total customers interrupted (623 of 3,891), and 23% of the total customer-hours interrupted (2,047 of 8,843). Burnt customer equipment was found at Forestport Hydro. Hydro was isolated and station breaker (R210) was closed in at Boonville, restoring all customers.
 - The fourth Transmission interruption occurred on August 31, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 16% of the total customers interrupted (624 of 3,891), and 26% of the total customer-hours interrupted (2,278 of 8,843). Primary conductor on pole P52 cross arm caused a fire resulting in station breaker R235 to open.

- The fifth Transmission interruption occurred on November 07, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 16% of the total customers interrupted (622 of 3,891), and 13% of the total customer-hours interrupted (1,146 of 8,843). A broken insulator and crossarm on Sub-T P102, resulting in Boonville breaker R210 to open
- There were no substation interruptions.
- The remaining 10 events occurred at the distribution level.
- The distribution circuit breaker for the Old Forge 38361 experienced 3 momentary operations in 2023.
- The distribution circuit breaker for the Old Forge 38361 experienced 0 sustained operations (lockouts) in 2023.
- Trees were the leading cause of interruptions on the Old Forge 38361 in 2023, accounting for 40% of total interruptions (6 of 15). Equipment Failures were the 2nd leading cause of interruptions, accounting for 33% of total interruptions (5 of 15). Unknown were the 3rd leading cause of interruptions, accounting for 20% of total interruptions (3 of 15).
- Equipment Failures were the leading cause of customers interrupted (CI) on the Old Forge 38361 in 2023, accounting for 64% of total customers interrupted (2,485 of 3,891). Accidents were the 2nd leading cause of customers interrupted, accounting for 16% of total customers interrupted (622 of 3,891). Trees were the 3rd leading cause of customers interrupted, accounting for 15% of total customers interrupted (576 of 3,891).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the Old Forge 38361 in 2023, accounting for 66% of total customer-hours interrupted (5,826 of 8,843). Trees were the 2nd leading cause of customer-hours interrupted, accounting for 18% of total customer-hours interrupted (1,588 of 8,843). Accidents were the 3rd leading cause of customer-hours interrupted, accounting for 9% of total customer-hours interrupted (771 of 8,843).
- Of the 15 interruptions on this circuit, 2 affected 10 customers or less, with 1 being single customer outages.

Action Taken:

- Completed I&M foot patrol in 2021.
- Completed cycle tree pruning in 2023.
- Completed Level 3 I&M in 2024.

Action Plan:

- Complete cycle tree pruning in 2028.
- Complete I&M foot patrol scheduled in 2026.

12. LEHIGH 66954 – 13.2kV

Profile: 777 Customers, 67.1 Circuit Miles
 Indices: CAIDI = 3.26, SAIFI = 2.43

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	8	29.63%	912	48.38%	4,238	68.96%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	6	22.22%	532	28.22%	1,158	18.84%
6	ACCIDENTS	4	14.81%	145	7.69%	217	3.53%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	3	11.11%	52	2.76%	87	1.42%
10	UNKNOWN	6	22.22%	244	12.94%	446	7.26%
Totals		27	100.00%	1,885	100.00%	6,146	100.00%

Problem Analysis:

- There were 27 interruptions on the Lehigh 66954 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 27 events occurred at the distribution level.
- The distribution circuit breaker for the Lehigh 66954 experienced 1 momentary operation in 2023.
- The distribution circuit breaker for the Lehigh 66954 experienced 0 sustained operations (lockouts) in 2023.
- Trees were the leading cause of interruptions on the Lehigh 66954 in 2023, accounting for 30% of total interruptions (8 of 27). Equipment Failures were the 2nd leading cause of interruptions, accounting for 22% of total interruptions (6 of 27). Unknown were the 3rd leading cause of interruptions, accounting for 22% of total interruptions (6 of 27).
- Trees were the leading cause of customers interrupted (CI) on the Lehigh 66954 in 2023, accounting for 48% of total customers interrupted (912 of 1,885). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 28% of total customers interrupted (532 of 1,885). Unknown were the 3rd leading cause of customers interrupted, accounting for 13% of total customers interrupted (244 of 1,885).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Lehigh 66954 in 2023, accounting for 69% of total customer-hours interrupted (4,238 of 6,146). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 19% of total customer-hours interrupted (1,158 of 6,146). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 7% of total customer-hours interrupted (446 of 6,146).
- Of the 27 interruptions on this circuit, 8 affected 10 customers or less, with 3 being single customer outages.

Action Taken:

- Completed Level 3 I&M in 2022.
- Completed I&M foot patrol in 2019.
- Completed cycle tree pruning in 2020.

Action Plan:

- Complete I&M foot patrol scheduled in 2024.
- Complete cycle tree pruning in 2026.

13. OLD FORGE 38364 – 4.8kV

Profile: 889 Customers, 26.1 Circuit Miles
 Indices: CAIDI = 2.17, SAIFI = 5.06

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	6	46.15%	40	0.89%	196	2.01%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	5	38.46%	3,565	79.28%	8,341	85.64%
6	ACCIDENTS	2	15.38%	892	19.84%	1,202	12.34%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	0	0.00%	0	0.00%	0	0.00%
Totals		13	100.00%	4,497	100.00%	9,739	100.00%

Problem Analysis:

- There were 13 interruptions on the Old Forge 38364 in 2023.
- There were 5 transmission interruptions.
 - The first Transmission interruption occurred on January 12, 2023, coded as a cause of vehicle (PSC cause code 06). This lockout accounted for 20% of the total customers interrupted (887 of 4,497), and 11% of the total customer-hours interrupted (1,100 of 9,739). White Lake R235 dropping customers for clearance to replace broken Sub-T pole.
 - The second Transmission interruption occurred on March 14, 2023, coded as a cause of fire on company equipment (PSC cause code 05). This lockout accounted for 20% of the total customers interrupted (889 of 4,497), and 5% of the total customer-hours interrupted (504 of 9,739). Pole fire at TxP211 #22 line.
 - The third Transmission interruption occurred on June 26, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 20% of the total customers interrupted (892 of 4,497), and 30% of the total customer-hours interrupted (2,931 of 9,739). Burnt customer equipment was found at Forestport Hydro. Hydro was isolated and station breaker (R210) was closed in at Boonville, restoring all customers.
 - The fourth Transmission interruption occurred on August 31, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 20% of the total customers interrupted (895 of 4,497), and 34% of the total customer-hours interrupted (3,267 of 9,739). Primary conductor on pole P52 cross arm caused a fire resulting in station breaker R235 to open.

- The fifth Transmission interruption occurred on November 07, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 20% of the total customers interrupted (888 of 4,497), and 17% of the total customer-hours interrupted (1,636 of 9,739). A broken insulator and crossarm on Sub-T P102, resulting in Boonville breaker R210 to open.
- There were no substation interruptions.
- The remaining 8 events occurred at the distribution level.
- The distribution circuit breaker for the Old Forge 38364 experienced 3 momentary operations in 2023.
- The distribution circuit breaker for the Old Forge 38364 experienced 0 sustained operations (lockouts) in 2023.
- Trees were the leading cause of interruptions on the Old Forge 38364 in 2023, accounting for 46% of total interruptions (6 of 13). Equipment Failures were the 2nd leading cause of interruptions, accounting for 38% of total interruptions (5 of 13). Accidents were the 3rd leading cause of interruptions, accounting for 15% of total interruptions (2 of 13).
- Equipment Failures were the leading cause of customers interrupted (CI) on the Old Forge 38364 in 2023, accounting for 79% of total customers interrupted (3,565 of 4,497). Accidents were the 2nd leading cause of customers interrupted, accounting for 20% of total customers interrupted (892 of 4,497). Trees were the 3rd leading cause of customers interrupted, accounting for 1% of total customers interrupted (40 of 4,497).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the Old Forge 38364 in 2023, accounting for 86% of total customer-hours interrupted (8,341 of 9,739). Accidents were the 2nd leading cause of customer-hours interrupted, accounting for 12% of total customer-hours interrupted (1,202 of 9,739). Trees were the 3rd leading cause of customer-hours interrupted, accounting for 2% of total customer-hours interrupted (196 of 9,739).
- Of the 13 interruptions on this circuit, 6 affected 10 customers or less, with 2 being single customer outages.

Action Taken:

- Completed Level 3 I&M in 2023.
- Completed I&M foot patrol in 2020.
- Completed cycle tree pruning in 2022.

Action Plan:

- Complete cycle tree pruning in 2027.
- Complete I&M foot patrol scheduled in 2025.

14. LEHIGH 66951 – 13.2kV

Profile: 1,150 Customers, 70.5 Circuit Miles
 Indices: CAIDI = 4.40, SAIFI = 1.73

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	11	47.83%	427	21.41%	1,666	18.99%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	4	17.39%	1,079	54.11%	4,408	50.22%
6	ACCIDENTS	3	13.04%	351	17.60%	2,374	27.05%
7	PREARRANGED	1	4.35%	5	0.25%	1	0.01%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	1	4.35%	75	3.76%	225	2.57%
10	UNKNOWN	3	13.04%	57	2.86%	103	1.18%
Totals		23	100.00%	1,994	100.00%	8,777	100.00%

Problem Analysis:

- There were 23 interruptions on the Lehigh 66951 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 23 events occurred at the distribution level.
- The distribution circuit breaker for the Lehigh 66951 experienced 0 momentary operations in 2023.
- The distribution circuit breaker for the Lehigh 66951 experienced 0 sustained operations (lockouts) in 2023.
- Trees were the leading cause of interruptions on the Lehigh 66951 in 2023, accounting for 48% of total interruptions (11 of 23). Equipment Failures were the 2nd leading cause of interruptions, accounting for 17% of total interruptions (4 of 23). Accidents were the 3rd leading cause of interruptions, accounting for 13% of total interruptions (3 of 23).
- Equipment Failures were the leading cause of customers interrupted (CI) on the Lehigh 66951 in 2023, accounting for 54% of total customers interrupted (1,079 of 1,994). Trees were the 2nd leading cause of customers interrupted, accounting for 21% of total customers interrupted (427 of 1,994). Accidents were the 3rd leading cause of customers interrupted, accounting for 18% of total customers interrupted (351 of 1,994).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the Lehigh 66951 in 2023, accounting for 50% of total customer-hours interrupted (4,408 of 8,777). Accidents were the 2nd leading cause of customer-hours interrupted, accounting for 27% of total customer-hours interrupted (2,374 of 8,777). Trees were the 3rd leading cause of customer-hours interrupted, accounting for 19% of total customer-hours interrupted (1,666 of 8,777).
- Of the 23 interruptions on this circuit, 9 affected 10 customers or less, with 4 being single customer outages.

Action Taken:

- Completed Level 2 I&M in 2023.
- Completed I&M foot patrol in 2022.

Action Plan:

- Complete Level 3 I&M in 2025.
- Complete cycle tree pruning in 2027.
- Complete I&M foot patrol scheduled in 2027.

15. ROME 76258 – 13.2kV

Profile: 1,125 Customers, 39 Circuit Miles
 Indices: CAIDI = 2.48, SAIFI = 2.59

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	6	35.29%	1,319	45.26%	5,470	75.69%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	8	47.06%	1,574	54.02%	1,729	23.92%
6	ACCIDENTS	1	5.88%	11	0.38%	14	0.19%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	1	5.88%	8	0.27%	9	0.12%
10	UNKNOWN	1	5.88%	2	0.07%	6	0.08%
Totals		17	100.00%	2,914	100.00%	7,227	100.00%

Problem Analysis:

- There were 17 interruptions on the Rome 76258 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 17 events occurred at the distribution level.
- The distribution circuit breaker for the Rome 76258 experienced 0 momentary operations in 2023.
- The distribution circuit breaker for the Rome 76258 experienced 2 sustained operations (lockouts) in 2023. These interruptions accounted for 77% of the total amount of customers interrupted (2,249 out of 2,914) and 80% of the total amount of the customer-hours interrupted (5,785 out of 7,227).
 - The first lockout occurred on March 17, 2023, coded as a cause of deterioration (PSC cause code 05). This lockout accounted for 39% of the total customers interrupted (1,129 of 2,914), and 16% of the total customer-hours interrupted (1,180 of 7,227). Pole fire at P42 (Martin St).
 - The second lockout occurred on August 12, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 38% of the total customers interrupted (1,120 of 2,914), and 64% of the total customer-hours interrupted (4,605 of 7,227). A few trees fell between P1-1 and P1-2 broke a pole and caused down primary.
- Equipment Failures were the leading cause of interruptions on the Rome 76258 in 2023, accounting for 47% of total interruptions (8 of 17). Trees were the 2nd leading cause of interruptions, accounting for 35% of total interruptions (6 of 17). Accidents were the 3rd leading cause of interruptions, accounting for 6% of total interruptions (1 of 17).

- Equipment Failures were the leading cause of customers interrupted (CI) on the Rome 76258 in 2023, accounting for 54% of total customers interrupted (1,574 of 2,914). Trees were the 2nd leading cause of customers interrupted, accounting for 45% of total customers interrupted (1,319 of 2,914). Accidents were the 3rd leading cause of customers interrupted, accounting for 0% of total customers interrupted (11 of 2,914).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Rome 76258 in 2023, accounting for 76% of total customer-hours interrupted (5,470 of 7,227). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 24% of total customer-hours interrupted (1,729 of 7,227). Accidents were the 3rd leading cause of customer-hours interrupted, accounting for 0% of total customer-hours interrupted (14 of 7,227).
- Of the 17 interruptions on this circuit, 11 affected 10 customers or less, with 6 being single customer outages.

Action Taken:

- Completed Level 3 I&M in 2022.
- Completed I&M foot patrol in 2019.
- Completed cycle tree pruning in 2018.

Action Plan:

- Complete I&M foot patrol scheduled in 2024.
- Complete cycle tree pruning in 2025.

16. WHITE LAKE 39963 – 4.8kV

Profile: 996 Customers, 37.7 Circuit Miles

Indices: CAIDI = 2.49, SAIFI = 2.63

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	6	40.00%	260	9.94%	917	14.06%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	5	33.33%	2,044	78.10%	5,385	82.58%
6	ACCIDENTS	2	13.33%	265	10.13%	137	2.10%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	2	13.33%	48	1.83%	82	1.26%
Totals		15	100.00%	2,617	100.00%	6,520	100.00%

Problem Analysis:

- There were 15 interruptions on the White Lake 39963 in 2023.
- There were 2 transmission interruptions.
 - The first Transmission interruption occurred on June 26, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 38% of the total customers interrupted (1,005 of 2,617), and 51% of the total customer-hours interrupted (3,302 of 6,520). Burnt customer equipment was found at Forestport Hydro. Hydro was isolated and station breaker (R210) was closed in at Boonville, restoring all customers.
 - The second Transmission interruption occurred on November 07, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 38% of the total customers interrupted (1,000 of 2,617), and 28% of the total customer-hours interrupted (1,843 of 6,520). A broken insulator and crossarm on Sub-T P102, resulting in Boonville breaker R210 to open.
- There were no substation interruptions.
- The remaining 13 events occurred at the distribution level.
- The distribution circuit breaker for the White Lake 39963 experienced 3 momentary operations in 2023.
- The distribution circuit breaker for the White Lake 39963 experienced 0 sustained operations (lockouts) in 2023.
- Trees were the leading cause of interruptions on the White Lake 39963 in 2023, accounting for 40% of total interruptions (6 of 15). Equipment Failures were the 2nd leading cause of interruptions, accounting for 33% of total interruptions (5 of 15). Accidents were the 3rd leading cause of interruptions, accounting for 13% of total interruptions (2 of 15).

- Equipment Failures were the leading cause of customers interrupted (CI) on the White Lake 39963 in 2023, accounting for 78% of total customers interrupted (2,044 of 2,617). Accidents were the 2nd leading cause of customers interrupted, accounting for 10% of total customers interrupted (265 of 2,617). Trees were the 3rd leading cause of customers interrupted, accounting for 10% of total customers interrupted (260 of 2,617).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the White Lake 39963 in 2023, accounting for 83% of total customer-hours interrupted (5,385 of 6,520). Trees were the 2nd leading cause of customer-hours interrupted, accounting for 14% of total customer-hours interrupted (917 of 6,520). Accidents were the 3rd leading cause of customer-hours interrupted, accounting for 2% of total customer-hours interrupted (137 of 6,520).
- Of the 15 interruptions on this circuit, 7 affected 10 customers or less, with 2 being single customer outages.

Action Taken:

- Completed I&M foot patrol in 2022.
- Completed Level 2 I&M in 2023.
- Completed cycle tree pruning in 2018.

Action Plan:

- Complete Level 3 I&M in 2025.
- Complete cycle tree pruning in 2025.
- Complete I&M foot patrol scheduled in 2027.

17. POLAND - UTICA 62257 - 13.2kV

Profile: 1,631 Customers, 108.4 Circuit Miles
Indices: CAIDI = 2.07, SAIFI = 1.90

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	14	48.28%	1,600	51.60%	4,262	66.33%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	3	10.34%	74	2.39%	518	8.07%
6	ACCIDENTS	2	6.90%	1,279	41.24%	1,347	20.96%
7	PREARRANGED	1	3.45%	65	2.10%	89	1.38%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	4	13.79%	19	0.61%	41	0.64%
10	UNKNOWN	5	17.24%	64	2.06%	168	2.62%
Totals		29	100.00%	3,101	100.00%	6,425	100.00%

Problem Analysis:

- There were 29 interruptions on the Poland - Utica 62257 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 29 events occurred at the distribution level.
- The distribution circuit breaker for the Poland - Utica 62257 experienced 2 momentary operations in 2023.
- The distribution circuit breaker for the Poland - Utica 62257 experienced 0 sustained operations (lockouts) in 2023.
- Trees were the leading cause of interruptions on the Poland - Utica 62257 in 2023, accounting for 48% of total interruptions (14 of 29). Unknown were the 2nd leading cause of interruptions, accounting for 17% of total interruptions (5 of 29). Lightning were the 3rd leading cause of interruptions, accounting for 14% of total interruptions (4 of 29).
- Trees were the leading cause of customers interrupted (CI) on the Poland - Utica 62257 in 2023, accounting for 52% of total customers interrupted (1,600 of 3,101). Accidents were the 2nd leading cause of customers interrupted, accounting for 41% of total customers interrupted (1,279 of 3,101). Equipment Failures were the 3rd leading cause of customers interrupted, accounting for 2% of total customers interrupted (74 of 3,101).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Poland - Utica 62257 in 2023, accounting for 66% of total customer-hours interrupted (4,262 of 6,425). Accidents were the 2nd leading cause of customer-hours interrupted, accounting for 21% of total customer-hours interrupted (1,347 of 6,425). Equipment Failures were the 3rd leading cause of customer-hours interrupted, accounting for 8% of total customer-hours interrupted (518 of 6,425).
- Of the 29 interruptions on this circuit, 13 affected 10 customers or less, with 3 being single customer outages.

Action Taken:

- Completed Level 3 I&M in 2024.
- Completed cycle tree pruning in FY19.
- Completed I&M foot patrol in 2021.

Action Plan:

- Complete I&M foot patrol scheduled in 2026.
- Complete cycle tree pruning in 2025.

18. POLAND - UTICA 62258 – 13.2kV

Profile: 1,618 Customers, 135.8 Circuit Miles
Indices: CAIDI = 3.82, SAIFI = 1.30

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	27	56.25%	1,154	54.95%	6,383	79.60%
3	OVERLOADS	1	2.08%	77	3.67%	113	1.40%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	8	16.67%	695	33.10%	1,041	12.99%
6	ACCIDENTS	4	8.33%	8	0.38%	28	0.35%
7	PREARRANGED	1	2.08%	93	4.43%	49	0.62%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	3	6.25%	26	1.24%	72	0.90%
10	UNKNOWN	4	8.33%	47	2.24%	331	4.13%
Totals		48	100.00%	2,100	100.00%	8,018	100.00%

Problem Analysis:

- There were 48 interruptions on the Poland - Utica 62258 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 48 events occurred at the distribution level.
- The distribution circuit breaker for the Poland - Utica 62258 experienced 2 momentary operations in 2023.
- The distribution circuit breaker for the Poland - Utica 62258 experienced 0 sustained operations (lockouts) in 2023.
- Trees were the leading cause of interruptions on the Poland - Utica 62258 in 2023, accounting for 56% of total interruptions (27 of 48). Equipment Failures were the 2nd leading cause of interruptions, accounting for 17% of total interruptions (8 of 48). Accidents were the 3rd leading cause of interruptions, accounting for 8% of total interruptions (4 of 48).
- Trees were the leading cause of customers interrupted (CI) on the Poland - Utica 62258 in 2023, accounting for 55% of total customers interrupted (1,154 of 2,100). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 33% of total customers interrupted (695 of 2,100). Prearranged were the 3rd leading cause of customers interrupted, accounting for 4% of total customers interrupted (93 of 2,100).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Poland - Utica 62258 in 2023, accounting for 80% of total customer-hours interrupted (6,383 of 8,018). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 13% of total customer-hours interrupted (1,041 of 8,018). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 4% of total customer-hours interrupted (331 of 8,018).
- Of the 48 interruptions on this circuit, 16 affected 10 customers or less, with 7 being single customer outages.

Action Taken:

- Completed Level 3 I&M in 2023.
- Completed I&M foot patrol in 2020.

Action Plan:

- Complete I&M foot patrol scheduled in 2025.
- Complete cycle tree pruning in 2025.

19. DEERFIELD 60658 - 13.2kV

Profile: 1,955 Customers, 40.1 Circuit Miles
 Indices: CAIDI = 1.41, SAIFI = 2.24

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	7	35.00%	1,365	31.16%	3,506	56.83%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	3	15.00%	37	0.84%	214	3.46%
6	ACCIDENTS	6	30.00%	2,455	56.05%	1,350	21.88%
7	PREARRANGED	1	5.00%	22	0.50%	74	1.20%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	3	15.00%	501	11.44%	1,026	16.63%
Totals		20	100.00%	4,380	100.00%	6,169	100.00%

Problem Analysis:

- There were 20 interruptions on the Deerfield 60658 in 2023.
- There were no transmission interruptions.
- There was 1 substation interruption.
 - This Substation interruption occurred on November 27, 2023, coded as a cause of animal (PSC cause code 06). This lockout accounted for 45% of the total customers interrupted (1,960 of 4,380), and 14% of the total customer-hours interrupted (882 of 6,169). Low side bushings failure on station breaker due to a squirrel.
- The remaining 19 events occurred at the distribution level.
- The distribution circuit breaker for the Deerfield 60658 experienced 1 momentary operation in 2023.
- The distribution circuit breaker for the Deerfield 60658 experienced 1 sustained operation (lockout) in 2023. This interruption accounted for 24% of the total amount of customers interrupted (1,036 out of 4,380) and 48% of the total amount of the customer-hours interrupted (2,982 out of 6,169).
 - This lockout occurred on September 07, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 24% of the total customers interrupted (1,036 of 4,380), and 48% of the total customer-hours interrupted (2,982 of 6,169). This outage was a result three separate fallen trees. First, fell between span P7 and P8 on Trenton Rd, resulting in a broken crossarm and bring down the primary conductor. Second, a tree fell and broke P57 on Cosby Rd. Third, fallen tree took down primary between P85 and P86 on Walker Rd, this blown the line fuse. Field switching took place to restore customers where available.

- Trees were the leading cause of interruptions on the Deerfield 60658 in 2023, accounting for 35% of total interruptions (7 of 20). Accidents were the 2nd leading cause of interruptions, accounting for 30% of total interruptions (6 of 20). Equipment Failures were the 3rd leading cause of interruptions, accounting for 15% of total interruptions (3 of 20).
- Accidents were the leading cause of customers interrupted (CI) on the Deerfield 60658 in 2023, accounting for 56% of total customers interrupted (2,455 of 4,380). Trees were the 2nd leading cause of customers interrupted, accounting for 31% of total customers interrupted (1,365 of 4,380). Unknown were the 3rd leading cause of customers interrupted, accounting for 11% of total customers interrupted (501 of 4,380).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Deerfield 60658 in 2023, accounting for 57% of total customer-hours interrupted (3,506 of 6,169). Accidents were the 2nd leading cause of customer-hours interrupted, accounting for 22% of total customer-hours interrupted (1,350 of 6,169). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 17% of total customer-hours interrupted (1,026 of 6,169).
- Of the 20 interruptions on this circuit, 4 affected 10 customers or less, with 3 being single customer outages.

Action Taken:

- Completed Level 3 I&M in 2024.
- Completed I&M foot patrol in 2021.

Action Plan:

- Complete I&M foot patrol scheduled in 2026.
- Complete cycle tree pruning in 2025.

20. STITTVILLE 67052 - 13.2kV

Profile: 1,712 Customers, 67.3 Circuit Miles
 Indices: CAIDI = 1.89, SAIFI = 1.68

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	19	59.38%	2,038	70.84%	4,083	74.96%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	4	12.50%	517	17.97%	707	12.97%
6	ACCIDENTS	2	6.25%	52	1.81%	48	0.89%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	4	12.50%	128	4.45%	468	8.60%
10	UNKNOWN	3	9.38%	142	4.94%	141	2.58%
Totals		32	100.00%	2,877	100.00%	5,447	100.00%

Problem Analysis:

- There were 32 interruptions on the Stittville 67052 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 32 events occurred at the distribution level.
- The distribution circuit breaker for the Stittville 67052 experienced 0 momentary operations in 2023.
- The distribution circuit breaker for the Stittville 67052 experienced 0 sustained operations (lockouts) in 2023.
- Trees were the leading cause of interruptions on the Stittville 67052 in 2023, accounting for 59% of total interruptions (19 of 32). Equipment Failures were the 2nd leading cause of interruptions, accounting for 13% of total interruptions (4 of 32). Lightning was the 3rd leading cause of interruptions, accounting for 13% of total interruptions (4 of 32).
- Trees were the leading cause of customers interrupted (CI) on the Stittville 67052 in 2023, accounting for 71% of total customers interrupted (2,038 of 2,877). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 18% of total customers interrupted (517 of 2,877). Unknown were the 3rd leading cause of customers interrupted, accounting for 5% of total customers interrupted (142 of 2,877).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Stittville 67052 in 2023, accounting for 75% of total customer-hours interrupted (4,083 of 5,447). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 13% of total customer-hours interrupted (707 of 5,447). Lightning were the 3rd leading cause of customer-hours interrupted, accounting for 9% of total customer-hours interrupted (468 of 5,447).
- Of the 32 interruptions on this circuit, 9 affected 10 customers or less, with 4 being single customer outages.

Action Taken:

- Completed Level 2 I&M in 2022.
- Completed I&M foot patrol in 2021.

Action Plan:

- Complete Level 3 I&M in 2025.
- Complete cycle tree pruning in 2025.

3. ACTION PLAN SUMMARIES

a. SUMMARY OF ACTION PLANS FOR 2023 WORST PERFORMING CIRCUITS

Station	Feeder	Report Year	Action Plan	Estimated Completion Date	Comments
Eagle Bay	38272	2024	Complete Level 3 I&M in 2025.	2025	
			Complete cycle tree pruning in 2026.	2026	
			Complete I&M foot patrol scheduled in 2027.	2027	
Raquette Lake	39861	2024	Complete cycle tree pruning in 2029.	2029	
			Complete I&M foot patrol scheduled in 2025.	2025	
Salisbury	67857	2024	Complete I&M foot patrol scheduled in 2025.	2025	
			Complete cycle tree pruning in 2026.	2026	
Old Forge	38362	2024	Complete I&M foot patrol scheduled in 2026.	2026	
Eagle Bay	38271	2024	Complete Level 3 I&M in 2025.	2025	
			Complete cycle tree pruning in 2025.	2025	
			Complete I&M foot patrol scheduled in 2027.	2027	
Alder Creek	70152	2024	Complete I&M foot patrol scheduled in 2024.	2024	
			Complete cycle tree pruning in 2025.	2025	
Lehigh	66953	2024	Complete cycle tree pruning in 2029.	2029	
			Complete I&M foot patrol scheduled in 2024.	2024	
Sherman	33352	2024	Complete cycle tree pruning in 2026.	2026	
			Complete I&M foot patrol scheduled in 2025.	2025	
Alder Creek	70161	2024	Complete cycle tree pruning in 2028.	2028	
			Complete I&M foot patrol scheduled in 2025.	2025	
Oneida	50151	2024	Complete Level 3 I&M in 2026.	2026	
			Complete cycle tree pruning in 2025.	2025	
			Complete I&M foot patrol scheduled in 2028.	2028	
Old Forge	38361	2024	Complete cycle tree pruning in 2028.	2028	
			Complete I&M foot patrol scheduled in 2026.	2026	
Lehigh	66954	2024	Complete I&M foot patrol scheduled in 2024.	2024	
			Complete cycle tree pruning in 2026.	2026	
Old Forge	38364	2024	Complete cycle tree pruning in 2027.	2027	
			Complete I&M foot patrol scheduled in 2025.	2025	
Lehigh	66951	2024	Complete Level 3 I&M in 2025.	2025	
			Complete cycle tree pruning in 2027.	2027	
			Complete I&M foot patrol scheduled in 2027.	2027	
Rome	76258	2024	Complete I&M foot patrol scheduled in 2024.	2024	
			Complete cycle tree pruning in 2025.	2025	
White Lake	39963	2024	Complete Level 3 I&M in 2025.	2025	
			Complete cycle tree pruning in 2025.	2025	
			Complete I&M foot patrol scheduled in 2027.	2027	
Poland	62257	2024	Complete I&M foot patrol scheduled in 2026.	2026	
			Complete cycle tree pruning in 2025.	2025	
Poland	62258	2024	Complete I&M foot patrol scheduled in 2025.	2025	
			Complete cycle tree pruning in 2025.	2025	
Deerfield	60658	2024	Complete I&M foot patrol scheduled in 2026.	2026	
			Complete cycle tree pruning in 2025.	2025	
Stittville	67052	2024	Complete Level 3 I&M in 2025.	2025	
			Complete cycle tree pruning in 2025.	2025	

b. STATUS OF ACTION PLANS FOR 2022 WORST PERFORMING CIRCUITS

Station	Feeder	Report Year	Action Plan	Estimated Completion Date	Comments
Raquette Lake	39861	2022	Complete Level 3 I&M in 2023.	2023	
			Complete cycle tree pruning in FY25.	FY25	
Eagle Bay	38272	2022	Complete Level 2 I&M in 2023.	2023	
			Complete Level 3 I&M in 2025.	2025	
			Complete cycle tree pruning in FY25.	FY25	
Poland - Utica	62258	2022	Complete Level 3 I&M in 2023.	2023	
			Complete I&M foot patrol in 2025.	2025	
			Hazard Tree work in progress	FY24	
Poland - Utica	62257	2022	Complete Level 3 I&M in 2024.	2024	
			Hazard Tree work in progress	FY24	
Lehigh	66952	2022	Hazard Tree review to be scheduled.	FY25	
			Complete I&M foot patrol in 2023.	2023	
			Complete Level 2 I&M in 2024.	2024	
			Complete Level 3 I&M in 2026.	2026	
Alder Creek	70152	2022	Complete cycle tree pruning in FY24.	FY24	
			Complete I&M foot patrol in 2024.	2024	
			Complete Level 2 I&M in 2025.	2025	
			Hazard Tree work in progress	FY24	
Eagle Bay	38271	2022	Complete Level 2 I&M in 2023.	2023	
			Complete cycle tree pruning in FY25.	FY25	
			Complete Level 3 I&M in 2025.	2025	
Alder Creek	70161	2022	Complete I&M foot patrol in 2024.	2024	
			Complete cycle tree pruning in FY25.	FY25	
			Complete Level 2 I&M in 2025.	2025	
			Hazard Tree work in progress	FY24	
Lehigh	66953	2022	Complete I&M foot patrol in 2024.	2024	
			Complete cycle tree pruning in FY26.	FY26	
			Complete Level 2 I&M in 2025.	2025	
			Hazard Tree review scheduled.	FY25	
Lehigh	66954	2022	Complete I&M foot patrol in 2024.	2024	
			Complete cycle tree pruning in FY26.	FY26	
			Complete Level 2 I&M in 2025.	2025	
			Hazard Tree Review to be scheduled.	FY25	
Lehigh	66951	2022	Complete Level 2 I&M in 2023.	2023	
			Complete Level 3 I&M in 2025.	2025	
			Complete cycle tree pruning in FY26.	FY26	
			Hazard Tree Review to be scheduled.	FY25	
Old Forge	38362	2022	Complete Level 3 I&M in 2024.	2024	
			Complete cycle tree pruning in FY25.	FY25	
Oneida	50151	2022	Complete I&M foot patrol in 2023.	2023	
			Complete Level 2 I&M in 2024.	2024	
			Hazard Tree work in progress.	FY24	
Peterboro	51452	2022	Complete I&M foot patrol in 2023.	2023	
			Complete Level 2 I&M in 2024.	2024	
			Hazard Tree work in progress.	FY24	
Old Forge	38361	2022	Complete Level 3 I&M in 2024.	2024	

Station	Feeder	Report Year	Action Plan	Estimated Completion Date	Comments
			Complete cycle tree pruning in FY25.	FY25	
White Lake	39963	2022	Complete Level 2 I&M in 2023.	2023	
			Complete Level 3 I&M in 2025.	2025	
			Complete cycle tree pruning in FY25.	FY25	
Chadwicks	66851	2022	Complete Level 3 I&M in 2023.	2023	
			Complete cycle tree pruning in FY25.	FY25	
			Hazard Tree work in progress.	FY24	
Old Forge	38364	2022	Complete Level 3 I&M in 2023.	2023	
			Complete cycle tree pruning in FY25.	FY25	
			Complete I&M foot patrol in 2025.	2025	
Turin Road	65356	2022	Complete cycle tree pruning in FY24.	FY24	
			Complete I&M foot patrol in 2024.	2024	
			Hazard Tree work in progress.	FY24	
Deerfield	60656	2022	Complete I&M foot patrol in 2023.	2023	
			Complete Level 2 I&M in 2024.	2024	
			Hazard Tree work in progress.	FY24	

H. NORTHEAST REGION

1. OPERATING REGIONAL PERFORMANCE

a. HISTORIC CAIDI AND SAIFI INDICES

IDS info:

	2023	2022	2021	2020	2019	2018
CAIDI (Threshold 2.578)	2.57	2.43	2.40	2.29	2.72	2.42
SAIFI (Threshold 1.372)	1.36	1.31	1.34	1.39	1.26	1.22
SAIDI	3.49	3.17	3.21	3.19	3.43	2.97
Interruptions	2,622	2,607	2,842	2,872	2,329	2,611
Customers Interrupted	314,511	301,690	307,303	317,036	284,974	275,133
Customer-Hours Interrupted	806,843	733,541	737,313	727,392	776,275	667,045
Customers Served	231,363	231,070	229,747	228,239	226,518	224,817
Customers Per Interruption	119.95	115.72	108.13	110.39	122.36	105.37
Availability Index	99.9602	99.9638	99.9634	99.9637	99.9609	99.9661
Interruptions/1000 Customers	11.33	11.28	12.37	12.58	10.28	11.61

b. DISCUSSION OF REGIONAL PERFORMANCE

In 2023, the Northeast Region met its CAIDI reliability target and met its SAIFI reliability target as set forth by the New York Public Service Commission (PSC). The final System Average Interruption Frequency Index (SAIFI) result was 1.36 interruptions, 1% below the PSC goal of 1.372 interruptions. As shown in the table above, the Customer Average Interruption Duration index (CAIDI) was 2.57 in 2023, 0.3% below the PSC's regional target of 2.578 hours.

The 2023 CAIDI result was 6% above the 2022 result of 2.43 hours, and 5% above the previous 5-year average of 2.45 hours. The 2023 SAIFI was 4% above the 2022 result of 1.31 interruptions, and 5% above the previous 5-year average of 1.30 interruptions.

In 2023, excluding major storms, the Northeast Region experienced 12 transmission interruptions. These interruptions accounted for 0.5% of the region's total interruptions (12 of 2,622), 22% of the region's total customers interrupted (CI), (69,707 of 314,511), and 21% (167,650 of 806,843) of the region's total customer-hours interrupted (CHI). Overall, transmission interruptions had a CAIDI of 2.41 hours, and a SAIFI of 0.3 interruptions.

The number of transmission-related interruptions decreased from 18 in 2022 to 12 in 2023 (a decrease of 33%). The number of customers interrupted decreased from 72,779 in 2022, to 69,707 in 2023 (a decrease of 4%), while the customer-hours interrupted increased from 144,629 in 2022, to 167,650 in 2023 (an increase of 16%).

In 2023, excluding major storms, the Northeast Region experienced 2 substation interruptions. These interruptions accounted for 0.08% of the region's total interruptions (2 of 2,622), 2% of the region's total customers interrupted, (5,912 of 314,511), and 1% (10,851 of 806,843) of the region's total customer-hours interrupted. Overall, substation interruptions had a CAIDI of 1.84 hours, and a SAIFI of 0.03 interruptions.

The number of substation-related interruptions decreased from 7 to 2 from 2022 to 2023 (a decrease of 71%). The number of customers interrupted decreased from 18,514 in 2022, to 5,912 in 2023 (a decrease of 68%), while the customer-hours interrupted decreased from 65,367 in 2022, to 10,851 in 2023 (a decrease of 83%).

In 2023, excluding major storms, the Northeast Region experienced 2,608 distribution interruptions. These interruptions accounted for 99% of the region's total interruptions (2,608 of 2,622), 76% of the region's total customers interrupted, (238,892 of 314,511), and 78% (628,342 of 806,843) of the region's total customer-hours interrupted. Overall, distribution interruptions had a CAIDI of 2.63 hours, and a SAIFI of 1.03 interruptions.

The number of distribution-related interruptions increased from 2,582 to 2,608 from 2022 to 2023 (an increase of 1%). The number of customers interrupted increased from 210,397 in 2022, to 238,892 in 2023 (an increase of 14%), while the customer-hours interrupted increased from 523,545 in 2022, to 628,342 in 2023 (an increase of 20%).

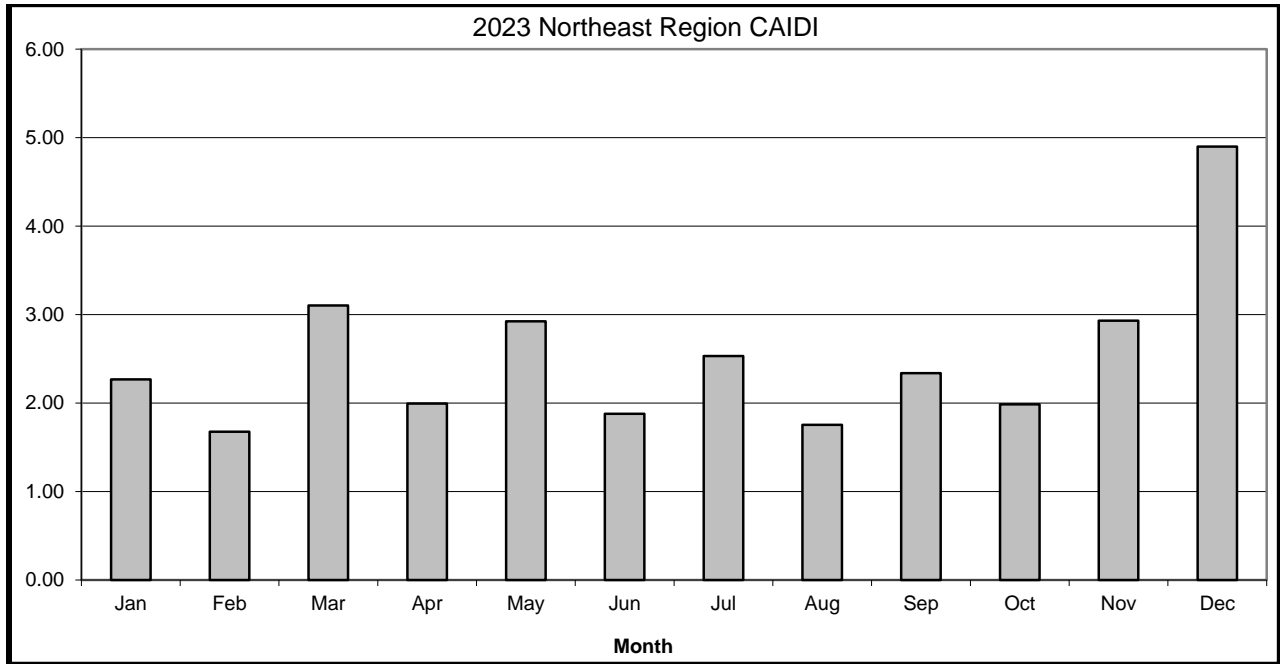
c. MONTHLY CAIDI AND SAIFI GRAPHS

The graphs on the following page show the monthly CAIDI and SAIFI for the Northeast Region for 2023.

The CAIDI graph shows the individual CAIDI, by month, for the Northeast Region for 2023. The year-end CAIDI was below the CAIDI threshold of 2.578 hours, and the Northeast Region ended 2023 with a CAIDI of 2.570. The three best performing months were February (1.68), June (1.88), and August (1.75). CAIDI was above the threshold for four months in 2023; March (3.10), May (2.92), November (2.93), and December (4.90). The CAIDI for the Northeast was at 99% of the threshold for 2023.

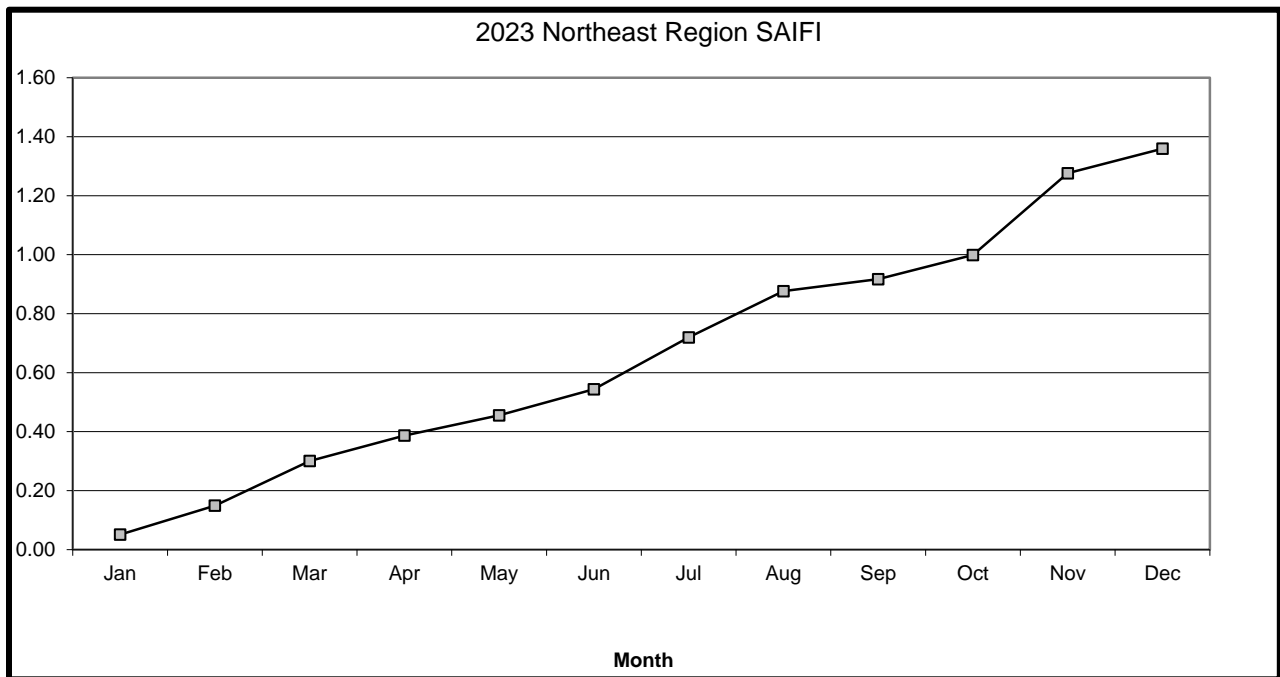
The SAIFI graph shows the cumulative SAIFI, by month, for the Northeast Region for 2023. The year-end SAIFI was below the SAIFI threshold of 1.372 for the year. The Northeast Region ended 2023 with a SAIFI of 1.360, approximately 1% below the threshold. The three greatest increase in 2023 occurred during the months of July (0.18), August (0.16), and November (0.28). These months accounted for 46% of the total SAIFI accrued. The lowest three months for SAIFI were January (0.05), May (0.07), and September (0.04). These months contributed to only 12% of the total SAIFI.

GRAPH OF MONTHLY CAIDI AND SAIFI FOR THE NORTHEAST REGION



PSC CAIDI Goal:	
Threshold	2.578
2023 Actual	2.57

PSC SAIFI Goal:	
Threshold	1.372
2023 Actual	1.36



d. PSC CAUSE CODES

1) Number of Events by Cause – Historical

IDS info:

Cause Code	2023	2022	2021	2020	2019	2018
01 Major Storms	963	1,879	515	1,810	1,650	2,304
02 Tree Contacts	1,049	960	1,246	1,028	927	909
03 Overloads	2	13	7	22	14	42
04 Oper. Error	3	10	5	6	7	2
05 Equipment	505	531	501	547	477	525
06 Accidents	359	428	372	437	303	448
07 Prearranged	57	81	76	60	68	53
08 Cust. Equip.	-	-	-	-	-	-
09 Lightning	63	42	73	44	55	37
10 Unknown	584	542	562	728	478	595
Total	3,585	4,486	3,357	4,682	3,979	4,915

2) Customers Interrupted by Cause – Historical

Cause Code	2023	2022	2021	2020	2019	2018
01 Major Storms	107,268	295,331	64,474	267,534	216,504	225,645
02 Tree Contacts	135,972	123,905	154,159	111,947	126,288	100,589
03 Overloads	6	3,327	1,363	3,463	413	2,494
04 Oper. Error	22,441	7,131	1,305	259	4,608	73
05 Equipment	62,375	79,771	68,122	98,147	69,852	57,743
06 Accidents	44,190	36,065	42,557	46,889	37,753	70,225
07 Prearranged	16,578	8,143	9,870	13,683	10,799	16,957
08 Cust. Equip.	-	-	-	-	-	-
09 Lightning	2,732	928	1,651	3,752	3,723	877
10 Unknown	30,217	42,420	28,276	38,886	31,538	26,175
Total	421,779	597,021	371,777	584,570	501,478	500,778

3) Customer-Hours Interrupted by Cause – Historical

Cause Code	2023	2022	2021	2020	2019	2018
01 Major Storms	776,831	2,460,171	328,427	3,238,855	2,002,382	2,984,805
02 Tree Contacts	418,852	346,208	434,652	334,255	405,495	297,256
03 Overloads	9	10,252	668	10,271	1,302	8,426
04 Oper. Error	7,746	10,110	2,150	210	7,357	1,382
05 Equipment	167,991	229,374	160,875	198,551	213,150	97,352
06 Accidents	90,451	79,527	77,779	94,607	72,733	189,072
07 Prearranged	68,050	9,371	9,748	11,108	11,589	17,969
08 Cust. Equip.	-	-	-	-	-	-
09 Lightning	5,313	2,922	3,873	8,901	6,563	2,877
10 Unknown	48,431	45,779	47,568	69,487	58,088	52,713
Total	1,583,673	3,193,713	1,065,740	3,966,246	2,778,657	3,651,851

4) Interruptions, Customers Interrupted and Customer-Hours Interrupted – 2023

Cause Code	Interruptions		Customers Interrupted		Customer Hours Interrupted	
	Number	% Total	Number	% Total	Number	% Total
01 Major Storms	963	26.9%	107,268	25.4%	776,831	49.1%
02 Tree Contacts	1,049	29.3%	135,972	32.2%	418,852	26.4%
03 Overloads	2	0.1%	6	0.0%	9	0.0%
04 Oper. Error	3	0.1%	22,441	5.3%	7,746	0.5%
05 Equipment	505	14.1%	62,375	14.8%	167,991	10.6%
06 Accidents	359	10.0%	44,190	10.5%	90,451	5.7%
07 Prearranged	57	1.6%	16,578	3.9%	68,050	4.3%
08 Cust. Equip.	0	0.0%	0	0.0%	0	0.0%
09 Lightning	63	1.8%	2,732	0.6%	5,313	0.3%
10 Unknown	584	16.3%	30,217	7.2%	48,431	3.1%
Total	3,585	100.0%	421,779	100.0%	1,583,673	100.0%

e. **INTERRUPTION REVIEW BY PSC CAUSE CODES**

Cause Code 01 - Major Storms

In 2023, Major Storms accounted for 27% of interruptions, 25% of customers interrupted, and 49% of Customer-Hours Interrupted.

Interruptions due to Major Storm were down 49% from 2022, and down 41% over the 5-year average. Customers interrupted due to Major Storms were down 64% from 2022, and down 50% over the 5-year average. Customer-Hours interrupted were down 68% from 2022 and down 65% over the 5-year average.

The remaining PSC code descriptions do not include Major Storms in the percentages.

Cause Code 02 - Tree Contacts

In 2023, Tree Contacts accounted for 40% of interruptions, 43% of customers interrupted, and 52% of Customer-Hours Interrupted.

Interruptions due to Tree Contacts were up 9% from 2022, and up 3% over the 5-year average. Customers interrupted due to Tree Contacts were up 10% from 2022, and up 10% over the 5-year average. Customer-Hours interrupted were up 21% from 2022 and up 15% over the 5-year average.

Tree Contacts were the largest cause of interruptions in 2023.

Cause Code 03 - Overloads

In 2023, Overloads accounted for 0% of interruptions, 0% of customers interrupted, and 0% of Customer-Hours Interrupted.

Interruptions due to Overloads were down 85% from 2022, and down 90% over the 5-year average. Customers interrupted due to Overloads were down 100% from 2022, and down 100% over the 5-year average. Customer-Hours interrupted were down 100% from 2022 and down 100% over the 5-year average.

Overloads were the 8th largest cause of interruptions in 2023.

Cause Code 04 - Operator Error

In 2023, Operator Error accounted for 0% of interruptions, 7% of customers interrupted, and 1% of Customer-Hours Interrupted.

Interruptions due to Operator Error were down 70% from 2022, and down 50% over the 5-year average. Customers interrupted due to Operator Error were up 215% from 2022, and up 739% over the 5-year average. Customer-Hours interrupted were down 23% from 2022 and up 83% over the 5-year average.

Operator Error was the 7th largest cause of interruptions in 2023.

Cause Code 05 - Equipment Failure

In 2023, Equipment Failures accounted for 19% of interruptions, 20% of customers interrupted, and 21% of Customer-Hours Interrupted.

Interruptions due to Equipment Failure were down 5% from 2022, and down 2% over the 5-year average. Customers interrupted due to Equipment Failure were down 22% from 2022, and down 17% over the 5-year average. Customer-Hours interrupted were down 27% from 2022 and down 7% over the 5-year average.

Equipment Failures were the 3rd largest cause of interruptions in 2023.

Cause Code 06 - Accidents

In 2023, Accidents accounted for 14% of interruptions, 14% of customers interrupted, and 11% of Customer-Hours Interrupted.

Interruptions due to Accidents were down 16% from 2022, and down 10% over the 5-year average. Customers interrupted due to Accidents were up 23% from 2022, and down 5% over the 5-year average. Customer-Hours interrupted were up 14% from 2022 and down 12% over the 5-year average.

Accidents were the 4th largest cause of interruptions in 2023.

Cause Code 07 - Prearranged

In 2023, Prearranged accounted for 2% of interruptions, 5% of customers interrupted, and 8% of Customer-Hours Interrupted.

Interruptions due to Prearranged were down 30% from 2022, and down 16% over the 5-year average. Customers interrupted due to Prearranged were up 104% from 2022, and up 39% over the 5-year average. Customer-Hours interrupted were up 626% from 2022 and up 469% over the 5-year average.

Prearranged was the 6th largest cause of interruptions in 2023.

Cause Code 08 - Customer Equipment

There were no Customer Equipment interruptions in 2023.

Cause Code 09 - Lightning

In 2023, Lightning accounted for 2% of interruptions, 1% of customers interrupted, and 1% of Customer-Hours Interrupted.

Interruptions due to Lightning were up 50% from 2022, and up 26% over the 5-year average. Customers interrupted due to Lightning were up 194% from 2022, and up 25% over the 5-year average. Customer-Hours interrupted were up 82% from 2022 and up 6% over the 5-year average.

Lightning was the 5th largest cause of interruptions in 2023.

Cause Code 10 - Unknown

In 2023, Unknown causes accounted for 22% of interruptions, 10% of customers interrupted, and 6% of Customer-Hours Interrupted.

Interruptions due to Unknown causes were up 8% from 2022, and up 1% over the 5-year average. Customers interrupted due to Unknown causes were down 29% from 2022, and down 10% over the 5-year average. Customer-Hours interrupted were up 6% from 2022 and down 12% over the 5-year average.

Unknown causes were the 2nd largest cause of interruptions in 2023.

f. **DISCUSSION OF REGIONAL CAPEX PROJECTS WITH 2023/24 SPENDS**

The Company continues to work on capital projects in the Northeast Region to maintain customer satisfaction and future reliability. Engineering works with Operations to address localized concerns raised through PSC complaints and other customer inquiries in the Northeast Region. These solutions were varied and included fusing, adding tree wire, small rebuilds, adding animal guards and tree trimming.

Some of the specific projects that were either constructed in CY2023 or are scheduled to be designed and/or constructed in CY2024 are listed below.

Construct New Mohican Distribution Substation

A multi-year project to rebuild the existing Mohican substation, which is currently a transmission only substation in the Town of Moreau in the northeast corner of Saratoga County, began in 2021 and the substation once completed in 2026 will also serve distribution load in South Glens Falls, Glens Falls and Fort Edward. The Mohican substation will have a 40 MVA, 115/13.2 kV transformer with four new distribution feeders. The new distribution work associated with the Mohican substation, which includes adding a new distribution feeder in the Ogden Brook substation, will allow for the retirement of the Farnan Road, Henry Street, Hudson Falls and McCrea Street substations.

The addition of a new feeder in the Ogden Brook substation was completed in 2022, after which work began on the rebuild and conversion of the 4.16 kV Henry Street feeders and their transfer to Ogden Brook. Four of the six Henry Street feeders will be retired and transferred to Ogden Brook prior to the completion of the Mohican substation. In addition, work has already begun on the construction of the new Mohican distribution feeders in an attempt to have the majority of the distribution construction completed prior to the energization of the substation so that the substations being retired can be retired soon after the Mohican substation is complete.

St. Johnsville Feeder Tie Construction

The St. Johnsville substation has two 13.2 kV distribution feeders and currently has only one very limited feeder tie to the nearby Clinton substation which does not allow for the transfer of much load between the two substations. Design work began in 2022 to construct new feeder ties for each of the two St. Johnsville distribution feeders which will allow the feeders to be backed-up in their entirety from the adjacent Inghams and Salisbury substations. Each of these new feeder ties will be at least 5 miles in length and will be in service by the end of 2025.

Construct New Maple Avenue Distribution Substation

A multi-year project to construct a new substation in the Town of Perth in Fulton County, north of the City of Amsterdam, began in early 2019. This substation has a 25 MVA, 115/13.2 kV transformer with four new distribution feeders. Construction of the substation was completed by the end of 2019 and load began being placed on this substation in the spring of 2020. The main driver for this new substation was asset condition issues at the Market Hill 69/4.16 kV substation.

Construction of the distribution to be attached to the Maple Avenue substation began in 2019 with construction of the distribution duct bank from the substation to the intersection of State Highway 30 and Maple Avenue about ½ mile south of the substation. The overhead distribution construction began in 2020 by extending two overhead distribution feeders (the Maple Avenue 50251 and 50252) south along State Highway 30 from Maple Avenue to Golf Course Road. The construction of the Maple Avenue 50253 and 50254 feeders which were double circuited on Maple Avenue from State Highway 30 to Midline Road was completed in 2022 which allowed for the completion of the rebuild and conversion of the four Market Hill 4.16 kV distribution feeders. The Market Hill feeder conversions were completed in early 2023 distributing the customers previously served out of Market Hill to 13.2 kV Maple Avenue and Church Street feeders. The Market Hill substation has since been de-energized and the 69 kV transmission tap into Market Hill and the Market Hill substation itself were retired in FY2024.

Cobleskill 4.8 to 13.2 kV Conversion

A multi-year project to convert the distribution in Cobleskill from 4.8 kV to 13.2 kV was begun in 2019 when one of the two 4.8 kV distribution transformers in the Cobleskill substation failed. A new 13.2 kV distribution transformer was installed to replace the failed 4.8 kV bank; however, a high side circuit switcher must be procured to allow the bank to become energized. The distribution in Cobleskill will be systematically converted to 13.2 kV one feeder each year to allow for the load to be tied off during conversion. The Cobleskill feeder 21413 is to be sent to final engineering and design in FY25, which will be followed by the 21412, and finally the 21411. The order of these feeders being converted allows for the reuse of some existing feeder breakers minimizing the requirement for new 15 kV breakers.

Battenkill 34258 - Washington Street Conversion

A capital improvement project to convert approximately 2.7 miles of the Battenkill 34258 feeder from 4.8 kV to 13.2 kV due to a step-down ratio transformer exceeding its loading capacity was completed in 2023. Also included in this job was the installation of two cutout-mounted reclosers and the relocation of a 3-phase recloser. These protection coordination changes will increase reliability and decrease the number of sustained outages in this area. Switches were installed to allow for further opportunities to isolate faults and restore customers sooner.

Hague Road – Construct Fourth Feeder

A capital improvement project is planned to utilize the existing R540 breaker position at Hague Road substation to install a fourth 13.2 kV feeder out of the station, the 41854. The new feeder will be double circuit with the Hague Road 41853 for 1,600 feet along State Highway 9N and then proceed down Alexandria Avenue, supplying much of downtown Ticonderoga. The Hague Road 41854 will absorb parts of the 41852 and 41853 circuits – approximately 12% of the Hague Road 41852 (25% of load & 42% of customers) and 26% of the Hague Road 41853 (36% of load & 41% of customers). This will increase reliability by transferring a large number of customers off of the 41853 and 41852, the first and twelfth worst performing feeders in 2023. The project is planned to be sent to design in FY2025, with construction in FY2026 and FY2027.

Port Henry 4.8 kV to 13.2 kV Conversion

A multi-year set of distribution projects are proposed which will convert the remaining 4.16 kV distribution in the village of Port Henry to 13.2 kV. The first project will convert most of the village of Port Henry fed from the Port Henry 38551, removing the ratio transformer on Tunnel Avenue and rebuilding the 3- phase mainline to 336 AL OH conductor, installing another ratio just south of Elizabeth Street along Main Street. A second project will convert a section of Plank Road/Broad Street on the Port Henry 38552 from the intersection with Forge Hollow Road bringing 13.2 kV to more of the village, and restore use of the primary 3-phase tie between the two circuits, located near the intersection of Broad Street and Spring Street.

Northeast Region Capital Projects in Excess of \$1M Completed in 2023:

Region	Project Name	Project Type	Fin Sys Proj No.	Finish Date	Total Spend
Northeast	Ticonderoga - Whitehall#3 / Ticonderoga	T Line	C039521	12/28/2023	\$53,621,000
Northeast	Market Hill 69kV Retirement	T Line	C081473	9/1/2023	\$4,818,000
Northeast	Mt. Defiance Access Road	T Line	C084017	10/2/2023	\$6,179,000
Northeast	RC-MOD/Switch - Ticonderoga - Republic 2	T Line	C076621	10/11/2023	\$3,520,000
Northeast	Maple Ave - New Feeder 53/54	D Line	C069911	4/28/2023	\$3,405,000
Northeast	34258 Washington St. Conversion	D Line	C088789	12/15/2023	\$2,027,554
Northeast	PIN# 2029.67 Route 5S Climbing Lane	D Line	C091610	10/10/2023	\$1,000,000
Northeast	Queensbury – 34.5kV OCB & TB2 Replacement	T Line	C080869	5/9/2023	\$7,114,000
Northeast	Vail Mills Station 392 – DSCADA	D Line	C077972	11/20/2023	\$2,344,000

g. DISCUSSION OF REGIONAL PERFORMANCE OF LVAC NETWORK DISTRIBUTION SYSTEM(S)

Glens Falls LVAC Network

The Glens Falls Secondary Network serves the area of Glen Street between Mohican and Glen Streets. This network is supplied by four - 4.160 kV feeders from the Glens Falls and Henry Street Substations. This system serves approximately 290 customer accounts and experienced an estimated / simulated peak load of approximately 2.0 MVA in 2023.

The table below lists each distribution circuit serving the Glens Falls Secondary Network with the number of events that caused an operation of the Substation Breaker.

Substation	Feeder	# Breaker Operations from Faults / Failures
Glens Falls	7505	0
Glens Falls	7507	0
Henry Street	31638	0
Henry Street	31639	0

As shown above the Glens Falls Secondary Network experienced no unplanned distribution circuit outages in 2023.

Annual maintenance consisted of manhole and vault inspections, network protector and transformer inspections, and network protector operation checks.

2. OPERATING CIRCUIT LISTS

This section includes the following three tables and worst performing feeder analysis for the Northeast Region.

- a. Worst Performing Circuit List
- b. Worst Performing Circuits with 3 Year History for CAIDI & SAIFI Indices
- c. Worst Performing Circuits by # of Momentary Interruptions

a. NATIONAL GRID WORST PERFORMING CIRCUIT LIST

NORTHEAST REGION

FEEDER #	A CUST. SERVED	B TOTAL INTER.	C # CUST. INTER.	D CUST. HRS. INTER.	C/A SAIFI	D/A SAIDI	D/C CAIDI	NUMBER OF MOMENTARIES
HAGUE ROAD 41853	2,237	42	18,836	42,097	8.42	18.82	2.23	0
PORT HENRY 38551	1,809	43	10,298	28,869	5.69	15.96	2.80	0
CHESTERTOWN 04252	2,408	56	10,629	42,244	4.41	17.54	3.97	1
SCHROON LAKE 42951	2,410	56	9,375	30,682	3.89	12.73	3.27	2
ST. JOHNSVILLE 33551	967	51	4,483	10,647	4.64	11.01	2.37	0
POTTERSVILLE 42451	1,144	23	6,170	18,709	5.39	16.35	3.03	2
CHESTERTOWN 04251	1,441	26	5,082	20,588	3.53	14.29	4.05	2
QUEENSBURY 29554	1,901	27	9,898	17,886	5.21	9.41	1.81	6
SCOFIELD 45053	1,466	27	4,220	21,896	2.88	14.94	5.19	1
GILMANTOWN 15451	2,068	32	6,687	16,017	3.23	7.75	2.40	0
CROWN POINT 24951	1,117	23	4,130	13,057	3.70	11.69	3.16	0
HAGUE ROAD 41852	1,881	20	6,996	21,305	3.72	11.33	3.05	1
BUTLER 36251	2,109	25	7,681	15,195	3.64	7.20	1.98	2
PORT HENRY 38552	1,617	19	6,530	18,385	4.04	11.37	2.82	1
EAST SPRINGFIELD 47751	1,023	24	3,063	11,542	2.99	11.28	3.77	0
UNION STREET 37654	577	18	2,808	10,028	4.87	17.38	3.57	1
BURGOYNE 33751	1,833	45	4,611	9,586	2.52	5.23	2.08	1
OTTEN 41213	555	16	2,549	9,933	4.59	17.90	3.90	0
EJ WEST 03851	1,467	26	3,326	12,877	2.27	8.78	3.87	0
WILTON 32951	1,601	30	4,410	8,394	2.75	5.24	1.90	4

Regional Goals:
CAIDI 2.578
SAIFI 1.372

b. NATIONAL GRID WORST PERFORMING CIRCUITS WITH 3 YEAR HISTORY FOR CAIDI AND SAIFI INDICES

NORTHEAST REGION

FEEDER #	2023 CAIDI	2022 CAIDI	2021 CAIDI	2020 CAIDI	2023 SAIFI	2022 SAIFI	2021 SAIFI	2020 SAIFI
HAGUE ROAD 41853	2.23	1.73	3.72	2.48	8.42	4.92	4.91	3.62
PORT HENRY 38551	2.80	2.55	5.03	2.77	5.69	5.21	2.52	0.71
CHESTERTOWN 04252	3.97	1.33	1.97	2.30	4.41	2.33	1.17	1.58
SCHROON LAKE 42951	3.27	2.73	1.82	1.59	3.89	3.86	2.21	3.16
ST. JOHNSVILLE 33551	2.37	4.45	4.38	3.47	4.64	0.70	0.10	0.79
POTTERSVILLE 42451	3.03	2.20	1.94	1.92	5.39	3.98	5.18	3.83
CHESTERTOWN 04251	4.05	1.68	3.61	3.47	3.53	2.55	0.63	2.13
QUEENSBURY 29554	1.81	3.22	1.24	1.47	5.21	0.11	1.11	1.11
SCOFIELD 45053	5.19	3.76	6.67	2.52	2.88	2.35	0.27	1.46
GILMANTOWN 15451	2.40	4.02	3.23	3.39	3.23	2.19	0.94	3.00
CROWN POINT 24951	3.16	0.53	5.39	3.35	3.70	4.07	2.30	0.63
HAGUE ROAD 41852	3.05	1.29	6.70	1.55	3.72	1.59	1.93	1.34
BUTLER 36251	1.98	1.68	2.35	2.19	3.64	0.11	2.06	1.38
PORT HENRY 38552	2.82	2.48	4.93	1.65	4.04	5.40	2.90	0.86
EAST SPRINGFIELD 47751	3.77	6.68	1.62	2.28	2.99	2.84	3.17	2.62
UNION STREET 37654	3.57	3.72	2.88	2.89	4.87	0.76	2.93	0.94
BURGOYNE 33751	2.08	1.81	2.73	2.82	2.52	2.81	0.62	1.03
OTTEN 41213	3.90	1.63	4.87	3.62	4.59	2.98	2.51	1.33
EJ WEST 03851	3.87	3.68	2.53	5.36	2.27	1.58	2.41	2.04
WILTON 32951	1.90	1.45	1.08	2.23	2.75	4.15	6.48	2.09

Regional Goals:
CAIDI 2.578
SAIFI 1.372

c. NATIONAL GRID WORST PERFORMING CIRCUITS BY # OF MOMENTARY INTERRUPTIONS

NORTHEAST REGION

Feeders			Customer Momentaries				Ranks		
Volts (kV)	Station Name	Ckt/F No.	Substation	Transmission	Distribution	Total	Within Region	Within System	Reliability Ranking
No circuits experienced 10 or more momentary interruptions in 2023.									

a. **WORST PERFORMING CIRCUIT ANALYSIS**

For 2023, the Company is reporting on the 20 Worst Performing Feeders in the Northeast Region. This year, the Northeast Region's list of Worst Performing Feeders consists of nineteen 13.2 kV feeders and one 4.8 kV feeder.

For the Northeast Region, the CAIDI threshold is 2.578 hours and the SAIFI threshold is 1.372 interruptions.

1. HAGUE ROAD 41853 – 13.2 kV

Profile: 2,237 Customers, 71.8 Circuit Miles

Indices: CAIDI = 2.23, SAIFI = 8.42

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	28	66.67%	10,227	54.30%	17,992	42.74%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	7	16.67%	3,588	19.05%	8,712	20.70%
6	ACCIDENTS	2	4.76%	516	2.74%	1,095	2.60%
7	PREARRANGED	1	2.38%	2,233	11.86%	13,696	32.53%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	4	9.52%	2,272	12.06%	601	1.43%
Totals		42	100.00%	18,836	100.00%	42,097	100.00%

Problem Analysis:

- There were 42 interruptions on the Hague Road 41853 in 2023.
- There were 3 transmission interruptions which affected the Hague Road 41853 in 2023, one of which was an unknown cause, and two of which were caused by outages for emergency maintenance. These interruptions accounted for 6,719 customers interrupted (36%) and 21,468 customer-hours of interruption (51%).
 - The first transmission interruption occurred on August 15, 2023, the cause of which was unknown (PSC cause code 10). This lockout accounted for 12% of the total customers interrupted (2,244 of 18,836), and 1% of the total customer-hours interrupted (524 of 42,097).
 - The second transmission interruption was an emergency outage taken on November 16, 2023 to repair a badly damaged transmission structure identified during the maintenance on the Ticonderoga-Whitehall #3 line (PSC cause code 05). This lockout accounted for 12% of the total customers interrupted (2,242 of 18,836), and 17% of the total customer-hours interrupted (7,249 of 42,097).
 - The third transmission interruption was an emergency outage on December 09, 2023 taken to replace a failing 115 kV structure (PSC cause code 07). This event accounted for 12% of the total customers interrupted (2,233 of 18,836), and 33% of the total customer-hours interrupted (13,696 of 42,097).
- There were no substation interruptions.
- The remaining 39 events occurred at the distribution level with the largest distribution interruption affecting 1,263 customers (7%) and accounting for 4,185 customer-hours of interruption (10%).
- The distribution circuit breaker for the Hague Road 41853 experienced 0 momentary operations in 2023.

- The distribution circuit breaker for the Hague Road 41853 experienced 0 sustained operations (lockouts) in 2023.
- There were ten 3-phase distribution recloser lockouts on the Hague Road 41853 in 2023, eight of which were caused by trees, one of which was caused by equipment deterioration, and one of which was caused by animals. These interruptions accounted for 11,128 customers interrupted (59%) and 17,245 customer-hours of interruption (41%).
 - The first 3-phase distribution recloser lockout occurred on February 3rd, 2023 when recloser R8670 on pole 33 State Highway 9N locked out due to a downed tree breaking pole 13 on State Highway 9N. This event accounted for 5% of the total customers interrupted (1,021 of 18,836), and 6% of the customer-hours interrupted (2,370 of 42,097).
 - The second 3-phase distribution recloser lockout occurred on February 17th, 2023 when recloser R7534 on pole 170 State Highway 9N locked out due to a broken insulator on pole 146 on State Highway 9N. This event accounted for 5% of the total customers interrupted (1,251 of 18,836), and 6% of the total customer-hours interrupted (1,117 of 42,096).
 - The third 3-phase distribution recloser lockout occurred on April 24th, 2023 when recloser R89678 on pole 16 Alexandria Avenue locked out due to an osprey nest built on top of the recloser pole. This event accounted for 7% of the total customers interrupted (513 of 18,836), and 3% of the total customer-hours interrupted (1,089 of 42,096).
 - The fourth 3-phase distribution recloser lockout occurred on June 28th, 2023 when recloser R8670 on pole 33 State Highway 9N locked out due to tree falling and damaging pole 13. This event accounted for 5% of the total customers interrupted (1,025 of 18,836), and 4% of the total customer-hours interrupted (1,853 of 42,096).
 - The fifth 3-phase distribution recloser lockout occurred on July 1st, 2023 when recloser R8670 on pole 33 State Highway 9N locked out due to a limb on the primary at pole 28. This event accounted for 5% of the total customers interrupted (1,025 of 18,836), and 3% of the total customer-hours interrupted (1,401 of 42,096).
 - The sixth 3-phase distribution recloser lockout occurred July 7th, 2023 when recloser R7534 on pole 170 State Highway 9N locked out due to a tree falling and taking down the primary between poles 142 and 143 on State Highway 9N. This event accounted for 7% of the total customers interrupted (1,260 of 18,836), and 5% of the total customer-hours interrupted (2,021 of 42,096).
 - The seventh 3-phase distribution recloser lockout occurred August 4th, 2023 when recloser R7534 on pole 170 State Highway 9N was opened in order to make an emergency repair necessary after a tree fell a broke insulators on pole 39 on State Highway 9N. This event accounted for 7% of the total customers interrupted (1,264 of 18,836), and 0% of the total customer-hours interrupted (126 of 42,096).
 - The eighth 3-phase distribution recloser lockout occurred on August 16th, 2023 when recloser R7534 on pole 170 State Highway 9N locked out due to a tree falling and breaking pole 185 on State Highway 9N. This event accounted for 7% of the total customers interrupted (1,263 of 18,836), and 10% of the total customer-hours interrupted (4,185 of 42,096).
 - The ninth 3-phase distribution recloser lockout occurred November 22nd, 2023 when recloser R7534 on pole 170 State Highway 9N locked out due to a tree branch contacting the primary lines near pole 169 on State Highway 9N. This event accounted for 7% of the total customers interrupted (1,253 of 18,836), and 4% of the total customer-hours interrupted (1,808 of 42,096).

- The tenth 3-phase distribution recloser lockout occurred November 22nd, 2023 when recloser R7534 on pole 170 State Highway 9N locked out due to a limb on the primary at pole 116 on State Highway 9N. This event accounted for 7% of the total customers interrupted (1,253 of 18,836), and 3% of the total customer-hours interrupted (1,269 of 42,096).
- The three transmission events when combined with the ten 3-phase line recloser lockouts accounted for thirteen of the interruptions on the Hague Road 41853 in 2023 (31%) but affected 17,847 customers (95%) and accounted for 38,713 customer-hours of interruption (92%).
- When considering distribution interruptions only, the Hague Road 41853 had a SAIFI of 5.42 and a CAIDI of 1.70.
- Trees were the leading cause of interruptions on the Hague Road 41853 in 2023, accounting for 67% of total interruptions (28 of 42). Equipment Failures were the 2nd leading cause of interruptions, accounting for 17% of total interruptions (7 of 42). Unknown were the 3rd leading cause of interruptions, accounting for 10% of total interruptions (4 of 42).
- Trees were the leading cause of customers interrupted (CI) on the Hague Road 41853 in 2023, accounting for 54% of total customers interrupted (10,227 of 18,836). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 19% of total customers interrupted (3,588 of 18,836). Unknown were the 3rd leading cause of customers interrupted, accounting for 12% of total customers interrupted (2,272 of 18,836).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Hague Road 41853 in 2023, accounting for 43% of total customer-hours interrupted (17,992 of 42,097). Prearranged were the 2nd leading cause of customer-hours interrupted, accounting for 33% of total customer-hours interrupted (13,696 of 42,097). Equipment Failures were the 3rd leading cause of customer-hours interrupted, accounting for 21% of total customer-hours interrupted (8,712 of 42,097).
- Of the 42 interruptions on this circuit, 16 affected 10 customers or less, with 10 being single customer outages.

Actions Taken:

- There are five 3-phase distribution reclosers and one single-phase recloser on the Hague Road 41853. These reclosers have proven to be beneficial to the reliability of the feeder since ten of the mainline interruptions in 2023 were isolated by a three-phase recloser instead of affecting the entire feeder.
- Reclosers R7534 on pole 170 State Highway 9N and R8670 on pole 33 State Highway 9N, which were originally install in the late 1990's, were replaced in 2021 with new state of the art 3-phase line reclosers with communications and remote operating capabilities.
- A Minor Storm Hardening project was completed in 2014, at a cost of \$959,928, to rebuild and convert about 7,000 feet of Baldwin Road to 13.2 kV and install a new 3-phase recloser to protect the tap.
- A small capital improvement project was completed in 2019 to reconfigure the tap on Silver Bay Road to reduce exposure for customers in Silver Bay to tree related interruptions.
- A maintenance foot patrol of the Hague Road 41853 was completed in 2023 and all level 1 maintenance was completed.
- Tree trimming and a hazard tree review, which removed 538 hazard trees and another 96 Ash trees infested with the Emerald Ash Borer, was completed on the Hague Road 41853 in FY2024.

- A maintenance foot patrol of the Ticonderoga-Whitehall #3, 115 kV transmission line was completed in 2020 and all identified maintenance was completed in 2023 during the line rebuild project identified below.
- A multi-year capital project was completed in 2023 which replaced about 200 115 kV transmission structures on the Ticonderoga-Whitehall #3 and Ticonderoga-Republic #2, 115 kV transmission lines and recondored sections of each line to replace conductors which were in poor condition, or which had multiple splices due to past conductor failures.
- Integrated Vegetation Management was completed on the Ticonderoga-Whitehall #3, 115 kV transmission line in FY2018.
- Integrated Vegetation Management was completed on the Ticonderoga-Republic #2, 115 kV transmission line in FY2020.

Action Plan:

- Complete all level 2 and 3 maintenance items identified during the 2023 foot patrol.
- Investigate R7534 and determine if additional protection is required to prevent recloser lockouts.
- Review duration of tree trimming cycle to reduce number of years between trimming due to number of tree related events.
- A capital improvement project to rebuild and convert Alexandria Avenue and a portion of the former Village of Ticonderoga from 4.8 kV to 13.2 kV is budgeted for FY2026.
- A capital improvement project to build a fourth feeder from the Hague Road substation, utilizing an existing circuit breaker position in the substation. The new feeder will absorb a portion of the existing Hague Road 41852 and 41853 circuits.

2. PORT HENRY 38551 – 13.2 kV

Profile: 1,809 Customers, 99.5 Circuit Miles

Indices: CAIDI = 2.80, SAIFI = 5.69

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	16	37.21%	1,486	14.43%	2,816	9.76%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	10	23.26%	2,721	26.42%	7,547	26.14%
6	ACCIDENTS	4	9.30%	2,305	22.38%	6,018	20.84%
7	PREARRANGED	1	2.33%	1,809	17.57%	11,246	38.96%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	1	2.33%	1	0.01%	6	0.02%
10	UNKNOWN	11	25.58%	1,976	19.19%	1,236	4.28%
Totals		43	100.00%	10,298	100.00%	28,869	100.00%

Problem Analysis:

- There were 43 interruptions on the Port Henry 38551 in 2023.
- There were 3 transmission interruptions which affected the Port Henry 38551, one of which was an unknown cause, and two of which were caused by outages for emergency maintenance. These interruptions accounted for 5,427 customers interrupted (53%) and 17,514 customer-hours of interruption (61%).
 - The first transmission interruption occurred on August 15, 2023 the cause of which was unknown (PSC cause code 10). This lockout accounted for 18% of the total customers interrupted (1,810 of 10,298), and 1% of the total customer-hours interrupted (422 of 28,869).
 - The second transmission interruption was an emergency outage taken on November 16, 2023 to repair a badly damaged transmission structure identified during the maintenance on the Ticonderoga-Whitehall #3 line (PSC cause code 05). This lockout accounted for 18% of the total customers interrupted (1,808 of 10,298), and 20% of the total customer-hours interrupted (5,846 of 28,869).
 - The third transmission interruption was an emergency outage on December 09, 2023 taken to replace a failing 115 kV structure (PSC cause code 07). This lockout accounted for 18% of the total customers interrupted (1,809 of 10,298), and 39% of the total customer-hours interrupted (11,246 of 28,869).
- There were no substation interruptions.
- The remaining 40 events occurred at the distribution level with the largest distribution interruption affecting 1,119 customers (11%) and accounting for 3,523 customer-hours of interruption (12%).
- The distribution circuit breaker for the Port Henry 38551 experienced 0 momentary operations in 2023.

- The distribution circuit breaker for the Port Henry 38551 experienced 0 sustained operations (lockouts) in 2023.
- There were three 3-phase distribution recloser lockouts on the Port Henry 38551 in 2023, two of which were caused by animals and one of which was caused by a tree. These interruptions accounted for 3,357 customers, interrupted (33%) and 7,347 customer-hours of interruption (25%).
 - The first 3-phase distribution recloser lockout occurred on April 23rd, 2023 when recloser R19205 on pole 63 State Highway 9N locked out due to a birds nest between phases at pole 217 on State Highway 9N. This event accounted for 11% of the total customers interrupted (1,119 of 10,298), and 12% of the customer-hours interrupted (3,523 of 28,869).
 - The second 3-phase distribution recloser lockout occurred on June 6th, 2023 when recloser R19205 on pole 63 State Highway 9N locked out due a tree taking down the primary near pole 64 on State Highway 9N. This event accounted for 11% of the total customers interrupted (1,119 of 10,298), and 5% of the customer-hours interrupted (1,473 of 28,869).
 - The third 3-phase distribution recloser lockout occurred on June 13th, 2023 when recloser R19205 on pole 63 State Highway 9N locked out due to an osprey nest causing a pole fire on pole 114 on State Highway 9N. This event accounted for 11% of the total customers interrupted (1,119 of 10,298), and 8% of the customer-hours interrupted (2,350 of 28,869).
- The three transmission events when combined with the three 3-phase line recloser lockouts accounted for six of the interruptions on the Port Henry 38551 in 2023 (14%) but affected 8,784 customers (85%) and accounted for 24,861 customer-hours of interruption (86%).
- When considering distribution interruptions only, the Port Henry 38551 had a SAIFI of 2.69 and a CAIDI of 2.33.
- Trees were the leading cause of interruptions on the Port Henry 38551 in 2023, accounting for 37% of total interruptions (16 of 43). Unknown were the 2nd leading cause of interruptions, accounting for 26% of total interruptions (11 of 43). Equipment Failures were the 3rd leading cause of interruptions, accounting for 23% of total interruptions (10 of 43).
- Equipment Failures were the leading cause of customers interrupted (CI) on the Port Henry 38551 in 2023, accounting for 26% of total customers interrupted (2,721 of 10,298). Accidents were the 2nd leading cause of customers interrupted, accounting for 22% of total customers interrupted (2,305 of 10,298). Unknown were the 3rd leading cause of customers interrupted, accounting for 19% of total customers interrupted (1,976 of 10,298).
- Prearranged were the leading cause of customer-hours interrupted (CHI) on the Port Henry 38551 in 2023, accounting for 39% of total customer-hours interrupted (11,246 of 28,869). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 26% of total customer-hours interrupted (7,547 of 28,869). Accidents were the 3rd leading cause of customer-hours interrupted, accounting for 21% of total customer-hours interrupted (6,018 of 28,869).
- Of the 43 interruptions on this circuit, 17 affected 10 customers or less, with 8 being single customer outages.

Actions Taken:

- There are four 3-phase reclosers on the Port Henry 38551. Two of the 3-phase reclosers were originally installed in 2006, the third 3-phase recloser was installed in 2012 as part of the Westport conversion project. The fourth 3-phase recloser was installed in 2018 due to a recloser failure and as part of the Wadham's Hydro recloser upgrade project. Two of the three 3-phase line reclosers between the Port Henry substation and the Wadham's Hydroelectric plant in Wadhams were replaced in 2021 to better protect the distribution system from faults at the hydroelectric facility and protect against islanding. A new PCC recloser was also be installed at the Wadham's Hydroelectric facility at that time.
- Three TripSaver, cut-out mounted, single-phase reclosers were installed on the Port Henry 38551 in early 2019 and one additional TripSaver was installed in 2022.
- A major project was completed on the Port Henry 38551 in 2012 to rebuild the 3-phase backbone within the Town of Westport, to allow the conversion from 4.8 kV to 13.2 kV, and to provide better voltage performance and fuse coordination throughout the feeder, at a total cost in excess of \$1,600,000.
- A capital improvement project was completed in 2014, at a cost of approximately \$239,000, to construct new 3-phase distribution along State Highway 9N between poles 148 and 158, to allow the retirement of approximately 2,000 feet of rear lot distribution.
- A capital improvement project was completed in 2017, at a cost of about \$356,250, to construct new 3-phase distribution along State Highway 9N between poles 195 and 205 and single-phase along Napper Road, to allow the retirement of approximately 1,956 feet of 3-phase rear lot distribution and another 1,473 feet of rear lot single-phase distribution.
- A capital improvement project was completed in 2021 at a cost of about \$309,000 to construct approximately 2,500 feet of new single-phase 4.8 kV distribution along State Highway 9N, near the intersection of Sam Spear Road, to allow the retirement of a similar amount of rear lot distribution.
- A small capital project was completed in 2022 to construct about 250 feet of new 7.62 kV, single-phase distribution on Whitney Street to transfer 15 customers from the Port Henry 38552 to the Port Henry 38551 allowing the removal of 1,700 feet of heavily wooded rear-lot distribution.
- Tree trimming and a hazard tree review, which removed 732 hazard trees and another 191 Ash trees infested with the Emerald Ash Borer, was completed on the Port Henry 38551 in FY2019.
- A maintenance foot patrol was performed on the Port Henry 38551 in 2022 and all identified level 1 and 2 maintenance has been completed.
- A maintenance foot patrol of the Ticonderoga-Whitehall #3, 115 kV transmission line was completed in 2020 and all identified maintenance was completed in 2023 during the line rebuild project identified below.
- A multi-year capital project was completed in 2023 which replaced about 200 115 kV transmission structures on the Ticonderoga-Whitehall #3 and Ticonderoga-Republic #2, 115 kV transmission lines and reconducted sections of each line to replace conductors which were in poor condition, or which had multiple splices due to past conductor failures.
- Integrated Vegetation Management was completed on the Ticonderoga-Whitehall #3, 115 kV transmission line in FY2018.
- Integrated Vegetation Management was completed on the Ticonderoga-Republic #2, 115 kV transmission line in FY2020.

Action Plan:

- Complete all identified level 3 maintenance on the Port Henry 38551.
- A hazard tree review is scheduled to be performed on the Port Henry 38551 in FY2024.
- A capital improvement project to rebuild and convert the Hamlet of Port Henry from 4.8 kV to 13.2 kV to relieve the overloaded step-down ratio transformer serving this area is budgeted for FY2026.
- A capital improvement project to rebuild and convert Broad Street in Port Henry from 4.8 kV to 13.2 kV to create a 13.2 kV feeder tie with the Port Henry 38552 feeder is budgeted for FY2027.

3. CHESTERTOWN 04252 – 13.2 kV

Profile: 2,408 Customers, 121.2 Circuit Miles

Indices: CAIDI = 3.97, SAIFI = 4.41

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	39	69.64%	10,059	94.64%	39,950	94.57%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	7	12.50%	16	0.15%	90	0.21%
6	ACCIDENTS	4	7.14%	504	4.74%	2,125	5.03%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	1	1.79%	1	0.01%	2	0.01%
10	UNKNOWN	5	8.93%	49	0.46%	77	0.18%
Totals		56	100.00%	10,629	100.00%	42,244	100.00%

Problem Analysis:

- There were 56 interruptions on the Chestertown 04252 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 56 events occurred at the distribution level with the largest distribution interruption affecting 2,409 customers (27%) and accounting for 21,582 customer-hours of interruption (51%).
- The distribution circuit breaker for the Chestertown 04252 experienced 1 momentary operation in 2023.
- The distribution circuit breaker for the Chestertown 04252 experienced three sustained operations (lockouts) in 2023, all caused by tree events. These interruptions accounted for 68% of the total amount of customers interrupted (7,227 out of 10,629) and 76% of the total amount of the customer-hours interrupted (32,021 out of 42,244).
 - The first lockout occurred on March 23, 2023 by a tree falling on pole 157 County Highway 30, which damaged recloser R88839 (PSC cause code 02). This lockout accounted for 23% of the total customers interrupted (2,398 of 10,629), and 4% of the total customer-hours interrupted (1,666 of 42,244).
 - The second lockout occurred on July 05, 2023 caused by a tree falling directly outside of the Chestertown substation, breaking multiple poles and causing a lockout of both feeder breakers (PSC cause code 02). This lockout accounted for 23% of the total customers interrupted (2,420 of 10,629), and 21% of the total customer-hours interrupted (8,773 of 42,244).
 - The third lockout occurred on November 27, 2023, caused by multiple downed trees across the Chestertown 04252 circuit (PSC cause code 02). This lockout accounted for 23% of the total customers interrupted (2,409 of 10,629), and 51% of the total customer-hours interrupted (21,582 of 42,244).

- There were two 3-phase distribution recloser lockouts on the Chestertown 04252 in 2023, one of which was caused by a motor vehicle accident and one of which was caused by a tree. These interruptions accounted for 1,627 customers, interrupted (16%) and 2,205 customer-hours of interruption (5%).
 - The first 3-phase distribution recloser lockout occurred on January 23rd, 2023 when recloser R88848 on pole 146 State Highway 8 locked out due to a motor vehicle accident breaking the pole the recloser was on. This event accounted for 5% of the total customers interrupted (474 of 10,629), and 5% of the customer-hours interrupted (1,994 of 42,244).
 - The second 3-phase distribution recloser lockout occurred on August 17th, 2023 when recloser R88845 on pole 11 State Highway 8 was opened for an emergency outage to remove a downed tree on pole 18 on State Highway 8. This event accounted for 11% of the total customers interrupted (1,203 of 10,629), and 1% of the customer-hours interrupted (211 of 42,244).
- The three feeder lockout events when combined with the two 3-phase recloser lockouts accounted for five of the interruptions on the Chestertown 04252 in 2023 (9%) but affected 8,904 customers (84%) and accounted for 34,226 customer-hours of interruption (81%).
- When considering distribution interruptions only, the Chestertown 04252 had a SAIFI of 4.41 and a CAIDI of 3.97.
- Trees were the leading cause of interruptions on the Chestertown 04252 in 2023, accounting for 70% of total interruptions (39 of 56). Equipment Failures were the 2nd leading cause of interruptions, accounting for 13% of total interruptions (7 of 56). Unknown were the 3rd leading cause of interruptions, accounting for 9% of total interruptions (5 of 56).
- Trees were the leading cause of customers interrupted (CI) on the Chestertown 04252 in 2023, accounting for 95% of total customers interrupted (10,059 of 10,629). Accidents were the 2nd leading cause of customers interrupted, accounting for 5% of total customers interrupted (504 of 10,629). Unknown were the 3rd leading cause of customers interrupted, accounting for 0% of total customers interrupted (49 of 10,629).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Chestertown 04252 in 2023, accounting for 95% of total customer-hours interrupted (39,950 of 42,244). Accidents were the 2nd leading cause of customer-hours interrupted, accounting for 5% of total customer-hours interrupted (2,125 of 42,244). Equipment Failures were the 3rd leading cause of customer-hours interrupted, accounting for 0% of total customer-hours interrupted (90 of 42,244).
- Of the 56 interruptions on this circuit, 24 affected 10 customers or less, with 10 being single customer outages.

Action Taken:

- There are five 3-phase reclosers and three single-phase reclosers on the Chestertown 04252, which were installed between 1999 and 2011. One 3-phase recloser, R88848 on pole 146 State Highway 8 was replaced in 2023 with a new recloser (R830106) after the original device was destroyed in a motor vehicle accident.
- A maintenance foot patrol was performed on the Chestertown 04252 in 2022.
- A capital project was completed in 2010 at a cost of \$1,335,489 to rebuild and convert to 13.2 kV County Highway 64 between State Highway 8 and U.S. Highway 9 to create a 3-phase feeder tie between the Chestertown 04252 and the Pottersville 42451, which was subsequently automated through the installation of loop scheme reclosers.

- A capital project was completed in 2012 to rebuild the rear lot 4.8 kV, 3-phase distribution near Palisades Road with new 13.2 kV distribution along the road at a cost of \$752,485.
- A Minor Storm Hardening project was completed in 2017 to rebuild approximately 1.4 miles of 4.8 kV single-phase rear lot distribution near Palisades Road with new 7.62 kV single-phase distribution along the road at a cost of \$604,448, which included installing two cutout mounted reclosers and replacing the controller of one of the existing 3-phase reclosers, including a communications package.
- Tree trimming and a hazard tree review was completed on the Chestertown 04252 in FY2021.
- A maintenance foot patrol of the Warrensburg-Chestertown #6, 34.5 kV sub-transmission line was completed in 2016, and all identified maintenance has been completed.
- Integrated Vegetation Management was completed on the Warrensburg–Chestertown #6, 34.5 kV transmission line in FY2018.
- The Warrensburg–Chestertown #6, 34.5kV sub-transmission line was widened in 2011 at a cost of approximately \$850,000.

Action Plan:

- Complete all identified level 3 maintenance on the Chestertown 04252.
- A maintenance foot patrol of the Warrensburg-Chestertown #6, 34.5 kV sub-transmission line is scheduled in FY25.
- A capital project to extend 7.62 kV distribution on County Highway 31 for approximate 1,100 feet to transfer 105 customers off of a heavily loaded 4.8 kV delta ratio transformer is currently under construction and should be completed by mid-2024.
- A capital project to rebuild Hayesburg Road to single phase 7.62 kV in order to eliminate a significant rear lot distribution corridor, currently forecasted for FY2027.

4. SCHROON LAKE 42951 – 13.2 kV

Profile: 2,410 Customers, 127.0 Circuit Miles

Indices: CAIDI = 3.27, SAIFI = 3.89

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	35	62.50%	6,545	69.81%	22,206	72.38%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	10	17.86%	2,752	29.35%	8,218	26.78%
6	ACCIDENTS	3	5.36%	21	0.22%	40	0.13%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	2	3.57%	14	0.15%	76	0.25%
10	UNKNOWN	6	10.71%	43	0.46%	142	0.46%
Totals		56	100.00%	9,375	100.00%	30,682	100.00%

Problem Analysis:

- There were 56 interruptions on the Schroon Lake 42951 in 2023.
- There was 1 transmission interruption, which occurred on February 03, 2023, caused by a device failure (PSC cause code 05). This lockout accounted for 25% of the total customers interrupted (2,383 of 9,375), and 23% of the total customer-hours interrupted (7,072 of 30,682).
- There were no substation interruptions.
- The remaining 55 events occurred at the distribution level with the largest distribution interruption affecting 2,401 customers (26%) and accounting for 16,589 customer-hours of interruption (54%).
- The distribution circuit breaker for the Schroon Lake 42951 experienced two momentary operations in 2023.
- The distribution circuit breaker for the Schroon Lake 42951 experienced one sustained operation (lockout) in 2023. This lockout occurred on November 27, 2023 due to several trees taking down the primary conductor along US Highway 9, including between poles 178 and 179, as well as between poles 184 and 185(PSC cause code 02). This lockout accounted for 26% of the total customers interrupted (2,401 of 9,375), and 54% of the total customer-hours interrupted (16,589 of 30,682).
- There were three 3-phase distribution recloser lockouts on the Schroon Lake 42951 in 2023, all of which were caused by trees. These interruptions accounted for 2,930 customers, interrupted (31%) and 2,789 customer-hours of interruption (9%).
 - The first 3-phase distribution recloser lockout occurred on April 13th, 2023 when recloser R89128 on pole 26 US Highway 9 locked out due to a tree on the primary near pole 92 Miller Road. This event accounted for 11% of the total customers interrupted (1,053 of 9,375), and 3% of the customer-hours interrupted (882 of 30,682).

- The second 3-phase distribution recloser lockout occurred on July 29th, 2023 when recloser R87511 on pole 319 US Highway 9 locked open due to a tree limb on the primary near pole 219 US Highway 9. This event accounted for 11% of the total customers interrupted (932 of 9,375), and 4% of the customer-hours interrupted (1,175 of 30,682).
- The third 3-phase distribution recloser lockout occurred on November 17th, 2023 when recloser R87511 on pole 319 US Highway 9 locked open due to a tree limb on the primary near pole 214 US Highway 9. This event accounted for 10% of the total customers interrupted (945 of 9,375), and 2% of the customer-hours interrupted (732 of 30,682).
- The one transmission interruption and one feeder lockout events when combined with the two 3-phase line recloser lockouts accounted for five of the interruptions on the Schroon Lake 42951 in 2023 (9%) but affected 7,714 customers (82%) and accounted for 26,449 customer-hours of interruption (86%).
- When considering distribution interruptions only, the Schroon Lake 42951 had a SAIFI of 2.90 and a CAIDI of 3.38.
- Trees were the leading cause of interruptions on the Schroon Lake 42951 in 2023, accounting for 63% of total interruptions (35 of 56). Equipment Failures were the 2nd leading cause of interruptions, accounting for 18% of total interruptions (10 of 56). Unknown were the 3rd leading cause of interruptions, accounting for 11% of total interruptions (6 of 56).
- Trees were the leading cause of customers interrupted (CI) on the Schroon Lake 42951 in 2023, accounting for 70% of total customers interrupted (6,545 of 9,375). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 29% of total customers interrupted (2,752 of 9,375). Unknown were the 3rd leading cause of customers interrupted, accounting for 0% of total customers interrupted (43 of 9,375).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Schroon Lake 42951 in 2023, accounting for 72% of total customer-hours interrupted (22,206 of 30,682). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 27% of total customer-hours interrupted (8,218 of 30,682). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 0% of total customer-hours interrupted (142 of 30,682).
- Of the 56 interruptions on this circuit, 28 affected 10 customers or less, with 9 being single customer outages.

Actions Taken:

- There are four 3-phase distribution reclosers, three single-phase reclosers, and nine single-phase TripSaver reclosers on the Schroon Lake 42951. Two of the 3-phase reclosers are part of the Pottersville 51/Schroon Lake 51 loop scheme that was installed in 2010 which automatically restores service to 1,017 of the 2,393 customers on the Schroon Lake 42951 (42%) in the event of a transmission or substation outage. In addition, the loop scheme reclosers allow the remote transfer of additional load during an interruption depending upon the loading of the Pottersville and Schroon Lake feeders at the time of the interruption.

- A capital project was completed in 2014 at a cost in excess of \$423,000 to rebuild approximately one mile of Blue Ridge Road along the road, allowing the retirement of approximately one mile of heavily wooded rear lot distribution.
- A capital project was completed in 2018 to replace the submarine cable serving Clark's Island and the 17 additional customers on the east shore of Schroon Lake only accessible by water at a cost of \$305,193.
- A Minor Storm Hardening project was completed on the Schroon Lake 42951 in 2019 rebuilding approximately 2 miles of rear lot 4.8 kV single-phase distribution near Hoffman Road with new 7.62 kV single-phase distribution along the road at a cost of \$523,458.
- A Minor Storm Hardening project was completed on the Schroon Lake 42951 in early 2021, rebuilding approximately 1/2 mile of rear lot 4.8 kV, 3-phase distribution adjacent to Blue Ridge Road with new 13.2 kV, 3-phase distribution directly adjacent to the road.
- The distribution across Interstate 87 between Woodbury Road and Miller Road was replaced in 2021 at a cost of just over \$80,000.
- The bi-directional voltage regulator on pole 206 on U.S. Highway 9 which is an integral part of the Potterville 51/Schroon Lake 51 loop scheme was replaced in 2021.
- A maintenance foot patrol was performed on the Schroon Lake 42951 in 2019 and all maintenance has been completed.
- Tree trimming and a hazard tree review was completed on the Schroon Lake 42951 in FY2022.
- A project to add external, expulsion fuses to 93 completely self-protected (CSP) transformers on the 3-phase mainline was built in 2023.
- A voltage improvement project was constructed in 2023 on the Schroon Lake 42951 to add capacitors in various locations throughout the feeder and better balance the load on the feeder to provide more consistent voltage across the feeder for a total cost of \$39,600.
- A project was constructed in 2023 to increase the size of existing voltage regulators and add additional voltage regulators on U.S. Highway 9 to increase the capacity of the feeder in North Hudson for a total cost of \$106,000.

Action Plan:

- Install fault indicators at each road crossing of the Chestertown-Schroon #3, 34.5 kV sub-transmission line to allow for the faster location of faults on this line.
- A capital project is planned to relocate approximately 6,500 ft of 3-phase mainline for the Schroon Lake 42951 from Miller Road to US Highway 9. This section of the circuit has had numerous reliability issues in the past, and access has been problematic, as Miller Road washes out regularly from being adjacent to the Schroon River.

5. ST. JOHNSVILLE 33551 – 13.2 kV

Profile: 967 Customers, 122.7 Circuit Miles

Indices: CAIDI = 2.37, SAIFI = 4.64

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	15	29.41%	1,057	23.58%	2,759	25.91%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	9	17.65%	2,586	57.68%	6,637	62.34%
6	ACCIDENTS	6	11.76%	747	16.66%	966	9.08%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	3	5.88%	20	0.45%	69	0.65%
10	UNKNOWN	18	35.29%	73	1.63%	216	2.03%
Totals		51	100.00%	4,483	100.00%	10,647	100.00%

Problem Analysis:

- There were 51 interruptions on the St. Johnsville 33551 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 51 events occurred at the distribution level.
- The distribution circuit breaker for the St. Johnsville 33551 experienced 0 momentary operations in 2023.
- The distribution circuit breaker for the St. Johnsville 33551 experienced one sustained operation (lockout) in 2023. This lockout occurred on March 29, 2023, coded as a device failure (PSC cause code 05) when a phase came off an insulator between the substation and the first protective device. This interruption accounted for 21% of the total amount of customers interrupted (963 out of 4,483) and 21% of the total amount of the customer-hours interrupted (2,190 out of 10,647).
- There were three 3-phase distribution recloser lockouts on the St. Johnsville 33551 in 2023 one each caused by trees, equipment, and accidents. These interruptions accounted for 2,162 customers interrupted (48%) and 5,142 customer-hours of interruption (48%).
 - The first 3-phase distribution recloser lockout occurred on July 10th, 2023 when recloser R96514 on pole 51 Sanders Road locked open when a tree fell on the primary at pole 69 Cooperstown Road. This event accounted for 16% of the total customers interrupted (720 of 4,483), and 17% of the customer-hours interrupted (1,779 of 10,647).
 - The second 3-phase distribution recloser lockout occurred on October 3rd, 2023 when recloser R96514 on pole 51 Sanders Road locked open when pole 103½ on Brookman’s Corners Road was broken when it was hit by a piece of farm equipment. This event accounted for 16% of the total customers interrupted (718 of 4,483), and 9% of the customer-hours interrupted (913 of 10,647).

- The third 3-phase distribution recloser lockout occurred on November 7th, 2023 when recloser R96514 on pole 51 Sanders Road locked open due to a device failure which brought the primary down between poles 37 and 38 on State Highway 168. This event accounted for 16% of the total customers interrupted (724 of 4,483), and 23% of the customer-hours interrupted (2,451 of 10,647).
- The one feeder lockout when combined with the three 3-phase line recloser lockouts accounted for only four of the 51 interruptions on the St. Johnsville 33551 in 2023 (8%) but they affected 3,125 customers (70%) and accounted for 7,332 customer-hours of interruption (69%).
- Unknown were the leading cause of interruptions on the St. Johnsville 33551 in 2023, accounting for 35% of total interruptions (18 of 51). Trees were the 2nd leading cause of interruptions, accounting for 29% of total interruptions (15 of 51). Equipment Failures were the 3rd leading cause of interruptions, accounting for 18% of total interruptions (9 of 51).
- Equipment Failures were the leading cause of customers interrupted (CI) on the St. Johnsville 33551 in 2023, accounting for 58% of total customers interrupted (2,586 of 4,483). Trees were the 2nd leading cause of customers interrupted, accounting for 24% of total customers interrupted (1,057 of 4,483). Accidents were the 3rd leading cause of customers interrupted, accounting for 17% of total customers interrupted (747 of 4,483).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the St. Johnsville 33551 in 2023, accounting for 62% of total customer-hours interrupted (6,637 of 10,647). Trees were the 2nd leading cause of customer-hours interrupted, accounting for 26% of total customer-hours interrupted (2,759 of 10,647). Accidents were the 3rd leading cause of customer-hours interrupted, accounting for 9% of total customer-hours interrupted (966 of 10,647).
- Of the 51 interruptions on this circuit, 32 affected 10 customers or less, with 23 affecting only one or two customers.

Actions Taken:

- There are three 3-phase reclosers and six single-phase reclosers on the St. Johnsville 33551. Two of the 3-phase reclosers have been in service since the late 1990's, one of which was relocated and upgraded to a new G&W Viper recloser in 2019, while the third recloser was installed in 2008. All the single-phase reclosers have been placed in service since 2006, two of which have subsequently been replaced with cutout-mounted reclosers (CMR's).
- A maintenance foot patrol was performed on the St. Johnsville 33551 in 2022 and all level 1 maintenance has been completed.
- Tree trimming and a hazard tree review, which removed 81 hazard trees and another 42 Ash trees infested with the Emerald Ash Borer, was completed on the St. Johnsville 33551 in FY2019.

Action Plan:

- Complete all identified level 2 and 3 maintenance on the St. Johnsville 33551.
- Tree trimming and a hazard tree review is scheduled to be performed on the St. Johnsville 33551 in FY2025.
- A capital improvement project will be completed by the end of 2025 to support CLCPA by constructing a feeder tie about 4.6 miles on State Highway 5 west to the Salisbury 67853. This feeder tie will be automated to transfer part or all of the St. Johnsville 51 automatically to the Salisbury 53 depending upon the location of the fault.

6. POTTERSVILLE 42451 – 13.2 kV

Profile: 1,144 Customers, 44.5 Circuit Miles

Indices: CAIDI = 3.03, SAIFI = 5.39

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	17	73.91%	4,665	75.61%	14,820	79.21%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	3	13.04%	1,332	21.59%	3,448	18.43%
6	ACCIDENTS	1	4.35%	68	1.10%	110	0.59%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	2	8.70%	105	1.70%	332	1.77%
Totals		23	100.00%	6,170	100.00%	18,709	100.00%

Problem Analysis:

- There were 23 interruptions on the Pottersville 42451 in 2023.
- There was one transmission interruption on the Pottersville 42451. This Transmission interruption occurred on February 03, 2023, caused by a device failure (PSC cause code 05). This lockout accounted for 19% of the total customers interrupted (1,142 of 6,170), and 12% of the total customer-hours interrupted (2,265 of 18,709).
- There were no substation interruptions.
- The remaining 22 events occurred at the distribution level with the largest distribution interruption affecting 1,141 customers (19%) and accounting for 10,303 customer-hours of interruption (55%).
- The distribution circuit breaker for the Pottersville 42451 experienced two momentary operations in 2023.
- The distribution circuit breaker for the Pottersville 42451 experienced three sustained operations (lockouts) in 2023. These interruptions accounted for 56% of the total amount of customers interrupted (3,437 out of 6,170) and 65% of the total amount of the customer-hours interrupted (12,097 out of 18,709).
 - The first lockout occurred on June 26, 2023, caused by a fallen tree (PSC cause code 02). This lockout accounted for 19% of the total customers interrupted (1,148 of 6,170), and 6% of the total customer-hours interrupted (1,104 of 18,709). This event was caused by a tree on the primary near pole 104 US Route 9. This event would normally have been isolated by R88888, however it was out of service at the time as it was being repair from a previous interruption.
 - The second lockout occurred on June 29, 2023, caused by a tree limb on the primary at pole 96 US Highway 9 (PSC cause code 02). This lockout accounted for 19% of the total customers interrupted (1,148 of 6,170), and 4% of the total customer-hours interrupted (689 of 18,709).

- The third lockout occurred on November 27, 2023, caused by a fallen tree on the primary (PSC cause code 02). This lockout accounted for 18% of the total customers interrupted (1,141 of 6,170), and 55% of the total customer-hours interrupted (10,303 of 18,709).
- There was one distribution 3-phase recloser lockout on the Pottersville 42451 in 2023 which occurred when R88888 on pole 28 U.S. Highway 9 was opened to clear a tree at pole 219. This interruption accounted for 2% of the total customers interrupted (151 of 6,170) and 0% of the total customer-hours interrupted (25 of 18,709).
- The one transmission interruption when combined with the three substation lockouts and one feeder recloser lockout accounted for five of the total interruptions on the Pottersville 42451 in 2023 (22%), but affected 4,730 customers (77%) and accounted for 14,387 customer-hours of interruption (77%).
- When considering distribution interruptions only, the Pottersville 42451 had a SAIFI of 4.40 and a CAIDI of 3.27.
- Trees were the leading cause of interruptions on the Pottersville 42451 in 2023, accounting for 74% of total interruptions (17 of 23). Equipment Failures were the 2nd leading cause of interruptions, accounting for 13% of total interruptions (3 of 23). Unknown were the 3rd leading cause of interruptions, accounting for 9% of total interruptions (2 of 23).
- Trees were the leading cause of customers interrupted (CI) on the Pottersville 42451 in 2023, accounting for 76% of total customers interrupted (4,665 of 6,170). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 22% of total customers interrupted (1,332 of 6,170). Unknown were the 3rd leading cause of customers interrupted, accounting for 2% of total customers interrupted (105 of 6,170).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Pottersville 42451 in 2023, accounting for 79% of total customer-hours interrupted (14,820 of 18,709). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 18% of total customer-hours interrupted (3,448 of 18,709). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 2% of total customer-hours interrupted (332 of 18,709).
- Of the 23 interruptions on this circuit, 3 affected 10 customers or less, with 1 being a single customer outage.

Actions Taken:

- There are five 3-phase reclosers on the Pottersville 42451. Two were originally installed in the mid-1990's and upgraded to loop scheme reclosers in 2010. One of the reclosers was installed in early 2011. The fourth and fifth 3-phase reclosers are both open tie reclosers discussed below. Recloser R88888 was replaced in 2023 after a device failure.
- The Pottersville 42451 has a 3-phase feeder tie with the Schroon Lake 42951 which has been automated with loop scheme reclosers to automatically restore service to approximately 162 of the 1,144 customers (14%) in the event of a future interruption at or near the substation.
- The Pottersville 42451 also has a 3-phase feeder tie with the Chestertown 04252 which has been automated with loop scheme reclosers to automatically restore service to approximately 791 of the 1,144 customers (69%) in the event of a future interruption at or near the substation.
- A maintenance foot patrol was performed on the Pottersville 42451 in 2021 and all identified maintenance has been completed.

- Tree trimming and a hazard tree review, which removed 504 hazard trees and another 85 Ash trees infested with the Emerald Ash Borer, was completed on the Pottersville 42451 in FY2020.
- A project to replace a section of underground cable on Old Mill Lane which had experienced multiple failures was completed in May of 2023.

Action Plan:

- A hazard tree review is scheduled to be performed on the Pottersville 42451 in FY2027.
- A small capital improvement project has been designed to create a single-phase feeder tie between the Pottersville 42451 and the Riparius 29395, along U.S. Highway 9. Construction will begin after all necessary easements have been obtained.

7. CHESTERTOWN 04251 – 13.2 kV

Profile: 1,441 Customers, 60.3 Circuit Miles
 Indices: CAIDI = 4.05, SAIFI = 3.53

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	18	69.23%	4,643	91.36%	19,578	95.09%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	1	3.85%	11	0.22%	80	0.39%
6	ACCIDENTS	2	7.69%	33	0.65%	87	0.42%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	2	7.69%	290	5.71%	691	3.36%
10	UNKNOWN	3	11.54%	105	2.07%	152	0.74%
Totals		26	100.00%	5,082	100.00%	20,588	100.00%

Problem Analysis:

- There were 26 interruptions on the Chestertown 04251 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 26 events occurred at the distribution level with the largest distribution interruption affecting 1,440 customers (28%) and accounting for 10,785 customer-hours of interruption (52%).
- The distribution circuit breaker for the Chestertown 04251 experienced two momentary operations in 2023.
- The distribution circuit breaker for the Chestertown 04251 experienced two sustained operations (lockouts) in 2023. These interruptions accounted for 57% of the total amount of customers interrupted (2,884 out of 5,082) and 78% of the total amount of the customer-hours interrupted (16,000 out of 20,588).
 - The first lockout occurred on July 05, 2023 due to several trees falling directly outside Chestertown substation causing a lockout on both the Chestertown 04251 and 04252 (PSC cause code 02). This lockout accounted for 28% of the total customers interrupted (1,444 of 5,082), and 25% of the total customer-hours interrupted (5,215 of 20,588).
 - The second lockout occurred on November 27, 2023, caused by a tree limb on the primary between poles 152 and 153 Trip Lake Road (PSC cause code 02). This lockout accounted for 28% of the total customers interrupted (1,440 of 5,082), and 52% of the total customer-hours interrupted (10,786 of 20,588).
- There was one 3-phase recloser lockout on the Chestertown 04251 which occurred on July 18th, 2023 when recloser R88818 on pole 252 US Highway 9 locked out due to a limb on the primary near pole 231. This event accounted for 10% of the total customers interrupted (509 out of 5,082) and 3% of the total customer-hours interrupted (542 of 20,588).

- The two substation breaker lockouts combined with the one 3-phase recloser lockout accounted for only three of the interruptions on the Chestertown 04251 in 2023 (12%) but affected 3,393 customers (67%) and accounted for 16,541 customer-hours of interruption (80%).
- When considering distribution interruptions only, the Chestertown 04251 had a SAIFI of 3.53 and a CAIDI of 4.05.
- Trees were the leading cause of interruptions on the Chestertown 04251 in 2023, accounting for 69% of total interruptions (18 of 26). Unknown were the 2nd leading cause of interruptions, accounting for 12% of total interruptions (3 of 26). Accidents were the 3rd leading cause of interruptions, accounting for 8% of total interruptions (2 of 26).
- Trees were the leading cause of customers interrupted (CI) on the Chestertown 04251 in 2023, accounting for 91% of total customers interrupted (4,643 of 5,082). Lightning were the 2nd leading cause of customers interrupted, accounting for 6% of total customers interrupted (290 of 5,082). Unknown were the 3rd leading cause of customers interrupted, accounting for 2% of total customers interrupted (105 of 5,082).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Chestertown 04251 in 2023, accounting for 95% of total customer-hours interrupted (19,578 of 20,588). Lightning were the 2nd leading cause of customer-hours interrupted, accounting for 3% of total customer-hours interrupted (691 of 20,588). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 1% of total customer-hours interrupted (152 of 20,588).
- Of the 26 interruptions on this circuit, 7 affected 10 customers or less, with 2 being single customer outages.

Actions Taken:

- There are two 3-phase reclosers on the Chestertown 04251. These reclosers have helped to significantly reduce the customer interruptions and customer-hours interrupted over the past year on the Chestertown 04251.
- Two single-phase TripSaver reclosers were installed on the Chestertown 04251 in 2020.
- A 3-phase bank of voltage regulators was installed in 2015 on pole 150½ U.S Highway 9 to provided better voltage performance on the south half of the feeder.
- A maintenance foot patrol was completed on the Chestertown 04251 in 2021 and all maintenance has been completed.
- Tree trimming and a hazard tree review was completed in 2021 on the Chestertown 04251 including the removal of 272 hazard trees.

Action Plan:

- The next tree trimming cycle for the Chestertown 04251 is expected to be completed in FY28.
- Investigate the practicality of constructing a 3-phase, 13.2 kV feeder tie between the Chestertown 04251 and the Warrensburg 32152 which could be automated with loop scheme reclosers.
- A capital project to rebuild County Highway 8 to 3-phase, 13.2 kV for about 3,600 feet from County Highway 65 to State Highway 8 is budgeted for FY2025.
- A capital project to rebuild U.S. Highway 9 to 3-phase, 13.2 kV for about 1.1 miles from County Highway 8 to Pinenotch Road is budgeted for FY2026.

8. QUEENSBURY 29554 – 13.2 kV

Profile: 1,901 Customers, 40.3 Circuit Miles
Indices: CAIDI = 1.81, SAIFI = 5.21

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	14	51.85%	7,824	79.05%	14,803	82.76%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	6	22.22%	1,513	15.29%	2,444	13.67%
6	ACCIDENTS	5	18.52%	558	5.64%	630	3.52%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	2	7.41%	3	0.03%	9	0.05%
Totals		27	100.00%	9,898	100.00%	17,886	100.00%

Problem Analysis:

- There were 27 interruptions on the Queensbury 29554 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 27 events occurred at the distribution level.
- The distribution circuit breaker for the Queensbury 29554 experienced six momentary operations in 2023.
- The distribution circuit breaker for the Queensbury 29554 experienced five sustained operations (lockouts) in 2023. Four of these interruptions were caused by trees (PSC cause code 02) while the fifth interruption was equipment related (PSC cause code 05). These interruptions accounted for 91% of the total amount of customers interrupted (9,054 out of 9,898) and 92% of the total amount of customer-hours interrupted (16,493 out of 17,886).
 - The first lockout occurred on March 04, 2023 when a tree fell right outside the substation. This lockout accounted for 19% of the total customers interrupted (1,891 of 9,898), and 51% of the total customer-hours interrupted (9,143 of 17,886).
 - The second lockout occurred on March 19, 2023 when a tree fell at pole 45 on Blind Rock Road. This lockout accounted for 19% of the total customers interrupted (1,891 of 9,898), and 11% of the total customer-hours interrupted (2,042 of 17,886).
 - The third lockout occurred on July 06, 2023 when a tree limb landed across all three phases at pole 97 on Bay Road. This lockout accounted for 19% of the total customers interrupted (1,902 of 9,898), and 7% of the total customer-hours interrupted (1,174 of 17,886).
 - The fourth lockout occurred on August 31, 2023 when a tree fell at pole 43 on Blind Rock Road. This lockout accounted for 19% of the total customers interrupted (1,910 of 9,898), and 12% of the total customer-hours interrupted (2,067 of 17,886).

- The fifth lockout occurred on October 07, 2023 when a phase came off a pin on Bay Road. This lockout accounted for 15% of the total customers interrupted (1,460 of 9,898), and 12% of the total customer-hours interrupted (2,066 of 17,886).
- Trees were the leading cause of interruptions on the Queensbury 29554 in 2023, accounting for 52% of total interruptions (14 of 27). Equipment Failures were the 2nd leading cause of interruptions, accounting for 22% of total interruptions (6 of 27). Accidents were the 3rd leading cause of interruptions, accounting for 19% of total interruptions (5 of 27).
- Trees were the leading cause of customers interrupted (CI) on the Queensbury 29554 in 2023, accounting for 79% of total customers interrupted (7,824 of 9,898). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 15% of total customers interrupted (1,513 of 9,898). Accidents were the 3rd leading cause of customers interrupted, accounting for 6% of total customers interrupted (558 of 9,898).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Queensbury 29554 in 2023, accounting for 83% of total customer-hours interrupted (14,803 of 17,886). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 14% of total customer-hours interrupted (2,444 of 17,886). Accidents were the 3rd leading cause of customer-hours interrupted, accounting for 4% of total customer-hours interrupted (630 of 17,886).
- Of the 27 interruptions on this circuit, 8 affected 10 customers or less, with 3 being single customer outages.

Actions Taken:

- There are two 3-phase distribution reclosers on the Queensbury 29554. One was installed in 2008 and the second in 2018.
- The complete rebuild of the distribution side of the Queensbury substation was completed in 2016 at a cost of \$7.8M and all associated feeder work was completed in 2018 at an additional cost of \$7.2M.
- A capital project was completed in 2018 to construct about 560 feet of new distribution along Dream Lake Road to allow for the removal of 1,795 feet of inaccessible, rear lot distribution.
- A maintenance foot patrol of the Queensbury 29554 was completed in 2019 and all maintenance has been completed.
- Tree trimming and a hazard tree review was completed on the Queensbury 29554 in FY2020.

Action Plan:

- A maintenance foot patrol of the Queensbury 29554 is scheduled for 2024.
- Tree trimming and a hazard tree review of the Queensbury 29554 is scheduled for FY2025.

9. SCOFIELD 45053 – 13.2 kV

Profile: 1,466 Customers, 89.3 Circuit Miles
 Indices: CAIDI = 5.19, SAIFI = 2.88

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	15	55.56%	2,591	61.40%	16,106	73.56%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	3	11.11%	1,466	34.74%	5,196	23.73%
6	ACCIDENTS	1	3.70%	137	3.25%	490	2.24%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	1	3.70%	1	0.02%	5	0.02%
10	UNKNOWN	7	25.93%	25	0.59%	99	0.45%
Totals		27	100.00%	4,220	100.00%	21,896	100.00%

Problem Analysis:

- There were 27 interruptions on the Scofield 45053 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 27 events occurred at the distribution level.
- The distribution circuit breaker for the Scofield 45053 experienced 1 momentary operation in 2023.
- The distribution circuit breaker for the Scofield 45053 experienced 1 sustained operation (lockout) in 2023. This lockout occurred on April 23, 2023 due to an equipment failure when the primary came down near pole 16 on Hyland Drive (PSC cause code 05). This interruption accounted for 35% of the total amount of customers interrupted (1,464 out of 4,220) and 24% of the total amount of the customer-hours interrupted (5,182 out of 21,896).
- There were three 3-phase distribution recloser lockouts on the Scofield 45053 in 2023 all caused by trees. These interruptions accounted for 2,162 customers interrupted (51%) and 13,961 customer-hours of interruption (64%).
 - The first 3-phase distribution recloser lockout occurred on March 12th, 2023 when recloser R88932 on pole 31 Stony Creek Road locked open when a tree fell on the primary at pole 90 Stony Creek Road. This event accounted for 17% of the total customers interrupted (720 of 4,220), and 10% of the customer-hours interrupted (2,264 of 21,896).
 - The second 3-phase distribution recloser lockout occurred on May 15th, 2023 when recloser R88932 on pole 31 Stony Creek Road locked open when a tree fell taking down the primary between poles 79 and 81 on 90 Stony Creek Road. This event accounted for 17% of the total customers interrupted (720 of 4,220), and 18% of the customer-hours interrupted (4,040 of 21,896).

- The third 3-phase distribution recloser lockout occurred on November 27th, 2023 when recloser R88932 on pole 31 Stony Creek Road locked open when trees fell in multiple locations on Stony Creek Road due to a minor storm. This event accounted for 17% of the total customers interrupted (720 of 4,220), and 35% of the customer-hours interrupted (7,657 of 21,896)
- The one feeder lockout when combined with the three 3-phase line recloser lockouts accounted for only four of the 27 interruptions on the Scofield 45053 in 2023 (15%) but they affected 3,126 customers (86%) and accounted for 19,143 customer-hours of interruption (87%).
- Trees were the leading cause of interruptions on the Scofield 45053 in 2023, accounting for 56% of total interruptions (15 of 27). Unknown were the 2nd leading cause of interruptions, accounting for 26% of total interruptions (7 of 27). Equipment Failures were the 3rd leading cause of interruptions, accounting for 11% of total interruptions (3 of 27).
- Trees were the leading cause of customers interrupted (CI) on the Scofield 45053 in 2023, accounting for 61% of total customers interrupted (2,591 of 4,220). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 35% of total customers interrupted (1,466 of 4,220). Accidents were the 3rd leading cause of customers interrupted, accounting for 3% of total customers interrupted (137 of 4,220).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Scofield 45053 in 2023, accounting for 74% of total customer-hours interrupted (16,106 of 21,896). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 24% of total customer-hours interrupted (5,196 of 21,896). Accidents were the 3rd leading cause of customer-hours interrupted, accounting for 2% of total customer-hours interrupted (490 of 21,896).
- Of the 27 interruptions on this circuit, 15 affected 10 customers or less, with 7 being single customer outages.

Actions Taken:

- There are three 3-phase reclosers on the Scofield 45053. Two of the 3-phase reclosers were originally installed in 1997. The third 3-phase recloser is an open tie recloser which is part of the Corinth 51/Scofield 53 loop scheme that was installed in 2011.
- Ten TripSaver, cut-out mounted, single-phase reclosers were installed on the Scofield 45053 in 2020 and 2021.
- Tree trimming and a hazard tree review were completed on the Scofield 45053 in FY2019.
- A maintenance foot patrol was performed on the Scofield 45053 in 2019 and all identified maintenance has been completed.
- A capital improvement project to rebuild and convert Hadley and Harrisburg Lake Roads to 7.62/13.2 kV was completed in 2010 at a total cost of over \$1,400,000.
- A capital improvement project to construct a 3-phase feeder tie between the Scofield 45053 and the Corinth 28551 was completed in early 2011 at a cost in excess of \$1,100,000. This project included the upgrade of one of the existing reclosers on the Scofield Road 45053 and the installation of an open tie recloser to allow this feeder tie to be automated.
- A project to better balance the loads on the Stony Creek and Hadley Road section of the Scofield 53 and to address elevated voltage and interference on the telephone system was completed in 2019 at a cost of \$160,282.

Action Plan:

- A maintenance foot patrol of the Scofield 53 is scheduled for 2024.
- Tree trimming and a hazard tree review is scheduled to be performed on the Scofield 53 in FY2024.
- Rebuild Harrisburg Road at Glass Creek Road to remove rear lot distribution through wetlands.
- A Minor Storm Hardening project which will rebuild approximately 5,500 feet of rear lot 4.8 kV single-phase distribution near Harrisburg Road with new 7.62 kV single-phase distribution along the road has been designed and will be constructed as soon as all necessary easements can be obtained.

10. GILMANTOWN 15451 – 13.2 kV

Profile: 2,068 Customers, 79.6 Circuit Miles

Indices: CAIDI = 2.40, SAIFI = 3.23

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	14	43.75%	3,608	53.96%	9,667	60.35%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	7	21.88%	447	6.68%	2,154	13.45%
6	ACCIDENTS	3	9.38%	377	5.64%	1,218	7.60%
7	PREARRANGED	1	3.13%	2,061	30.82%	2,325	14.52%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	1	3.13%	15	0.22%	27	0.17%
10	UNKNOWN	6	18.75%	179	2.68%	626	3.91%
Totals		32	100.00%	6,687	100.00%	16,017	100.00%

Problem Analysis:

- There were 32 interruptions on the Gilmantown 15451 in 2023.
- There were no transmission interruptions.
- There was 1 substation interruption on the Gilmantown 15451 in 2023. This Substation interruption was for planned maintenance scheduled on March 7, 2023 to allow the replacement of switches at the Gilmantown substation (PSC cause code 07). This event accounted for 31% of the total customers interrupted (2,061 of 6,687), and 15% of the total customer-hours interrupted (2,325 of 16,017).
- The remaining 31 events occurred at the distribution level.
- The distribution circuit breaker for the Gilmantown 15451 experienced 0 momentary operations in 2023.
- The distribution circuit breaker for the Gilmantown 15451 experienced 0 sustained operations (lockouts) in 2023.
- There were six 3-phase distribution recloser lockouts on the Gilmantown 15451 in 2023 five of which were caused by trees while the sixth was equipment related. These interruptions accounted for 3,679 customers interrupted (55%) and 10,736 customer-hours of interruption (67%).
 - The first 3-phase distribution recloser lockout occurred on February 17th, 2023 when recloser R95039 on pole 147 County Highway 11 locked open when a tree limb fell on the primary at pole 33 South Shore Road. This event accounted for 25% of the total customers interrupted (1,638 of 6,687), and 24% of the customer-hours interrupted (3,900 of 16,017).

- The second 3-phase distribution recloser lockout occurred on May 3rd, 2023 when recloser R5902 on pole 256 State Highway 8 locked open when the crossarm on pole 258 State Highway 8 broke bringing down the primary. This event accounted for 5% of the total customers interrupted (365 of 6,687), and 12% of the customer-hours interrupted (1,942 of 16,017).
- The third 3-phase distribution recloser lockout occurred on May 4th, 2023 when recloser R5901 on pole 204½ State Highway 8 locked open due to a tree at an undisclosed location. This event accounted for 11% of the total customers interrupted (754 of 6,687), and 24% of the customer-hours interrupted (3,831 of 16,017).
- The fourth 3-phase distribution recloser lockout occurred on June 9th, 2023 when recloser R5902 on pole 256 State Highway 8 was opened to remove a tree limb at pole 298 State Highway 8. This event accounted for 5% of the total customers interrupted (363 of 6,687), and 0% of the customer-hours interrupted (70 of 16,017).
- The fifth 3-phase distribution recloser lockout occurred on November 9th, 2023 when recloser R95039 on pole 147 County Highway 11 was opened to remove a tree from the primary at pole 31 County Highway 11. This event accounted for 3% of the total customers interrupted (198 of 6,687), and 0% of the customer-hours interrupted (28 of 16,017).
- The sixth 3-phase distribution recloser lockout occurred on December 31st, 2023 when recloser R5902 on pole 256 State Highway 8 locked open when a tree limb took down the primary between poles 272 and 273½ State Highway 8. This event accounted for 5% of the total customers interrupted (361 of 6,687), and 6% of the customer-hours interrupted (966 of 16,017).
- The one substation related interruption when combined with the six 3-phase line recloser lockouts accounted for only seven of the 32 interruptions on the Gilmantown 15451 in 2023 (22%) but they affected 5,740 customers (86%) and accounted for 13,061 customer-hours of interruption (82%).
- Trees were the leading cause of interruptions on the Gilmantown 15451 in 2023, accounting for 44% of total interruptions (14 of 32). Equipment Failures were the 2nd leading cause of interruptions, accounting for 22% of total interruptions (7 of 32). Unknown were the 3rd leading cause of interruptions, accounting for 19% of total interruptions (6 of 32).
- Trees were the leading cause of customers interrupted (CI) on the Gilmantown 15451 in 2023, accounting for 54% of total customers interrupted (3,608 of 6,687). Prearranged were the 2nd leading cause of customers interrupted, accounting for 31% of total customers interrupted (2,061 of 6,687). Equipment Failures were the 3rd leading cause of customers interrupted, accounting for 7% of total customers interrupted (447 of 6,687).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Gilmantown 15451 in 2023, accounting for 60% of total customer-hours interrupted (9,667 of 16,017). Prearranged were the 2nd leading cause of customer-hours interrupted, accounting for 15% of total customer-hours interrupted (2,325 of 16,017). Equipment Failures were the 3rd leading cause of customer-hours interrupted, accounting for 13% of total customer-hours interrupted (2,154 of 16,017).
- Of the 32 interruptions on this circuit, 14 affected 10 customers or less, with four being single customer outages.

Actions Taken:

- Following a detailed investigation into the cause of the multiple outages on the 23 kV sub-transmission lines that feed the Gilmantown, Wells, and Charley Lake substations, a large capital improvement project was completed in October 2015 to replace 198 of the horizontal post insulators on 66 light angle structures on the Northville-Wells #1 and the Wells-Gilmantown #2, 23 kV sub-transmission lines. A second project to replace all of the remaining 1995 era Lapp insulators on the Northville-Wells #1 and the Wells-Gilmantown #2, 23kV transmission lines was completed in February 2020.
- There are seven 3-phase reclosers on the Gilmantown 15451. The 3-phase reclosers on pole 147 County Highway 11 and pole 204 State Highway 8 were replaced in 2017 with radial G&W reclosers with integrated potential transformers and Schweitzer controls to provide for remote control of the reclosers and remote access to recloser data. The 3-phase recloser, R95038 on pole 150 ½ South Shore Road was replaced with a new 6IVS recloser in 2023 after the original recloser failed.
- A project was completed in 2023 to replace the overloaded 500 kVA ratio transformer on pole 253½ State Highway 8 with a 750 kVA ratio transformer on pole 257 at a cost of \$51,799.
- A 23 kV sectionalizer was placed in service on the Wells-Gilmantown #2, 23kV sub-transmission line just outside of the Wells Substation.
- A project was completed in 2019 to install TripSavers in six locations across the Gilmantown 15451 where the ability to reclose due to temporary faults has been found necessary, but the need for a recloser is not warranted.
- A maintenance foot patrol was performed on the Gilmantown 15451 in 2023 and all level 1 maintenance has been completed.
- Tree trimming and a hazard tree review was completed on the Gilmantown 15451 in FY2024.

Action Plan:

- Complete all identified level 2 and 3 maintenance on the Gilmantown 15451
- Existing recloser R5902 on pole 256 State Highway 8 originally installed in 1995 will be replaced with a new 6IVS 3-phase recloser in FY2025.
- Existing recloser R5903 on pole 2½ County Highway 24 originally installed in 1995 will be replaced with a new 6IVS 3-phase recloser in FY2025.
- A project to replace the overloaded 500 kVA ratio transformer on County Highway 24 with a new 1,000 kVA ratio transformer is scheduled for FY2024.
- A project to rebuild/convert the northern side of Lake Pleasant from 4.8 kV to 13.2 kV is budgeted for FY2026. This will allow for switching between the north and south side of the lake under contingency.
- A project to install battery storage to serve the Gilmantown 15451 feeder when the radial 23 kV sub-Transmission lines which supply Gilmantown are unavailable is in the development stages with a projected in-service date in FY2029.

11. CROWN POINT 24951 – 13.2 kV

Profile: 1,117 Customers, 72.8 Circuit Miles
 Indices: CAIDI = 3.16, SAIFI = 3.70

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	10	43.48%	281	6.80%	869	6.65%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	2	8.70%	1,114	26.97%	3,600	27.57%
6	ACCIDENTS	5	21.74%	221	5.35%	855	6.55%
7	PREARRANGED	2	8.70%	1,356	32.83%	7,350	56.29%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	1	4.35%	37	0.90%	111	0.85%
10	UNKNOWN	3	13.04%	1,121	27.14%	272	2.08%
Totals		23	100.00%	4,130	100.00%	13,057	100.00%

Problem Analysis:

- There were 23 interruptions on the Crown Point 24951 in 2023.
- There were 3 transmission interruptions which affected the Crown Point 24951 in 2023, one of which was an unknown cause, and two of which were caused by outages for emergency maintenance. These interruptions accounted for 3,341 customers interrupted (81%) and 11,019 customer-hours of interruption (84%)
 - The first transmission interruption occurred on August 15, 2023, the cause of which was unknown (PSC cause code 10). This lockout accounted for 27% of the total customers interrupted (1,118 of 4,130), and 2% of the total customer-hours interrupted (261 of 13,057).
 - The second transmission interruption was an emergency outage taken on November 16, 2023 to repair a badly damaged transmission structure identified during the maintenance on the Ticonderoga-Whitehall #3 line (PSC cause code 05). This lockout accounted for 27% of the total customers interrupted (1,113 of 4,130), and 28% of the total customer-hours interrupted (3,599 of 13,057).
 - The third transmission interruption was an emergency outage on December 09, 2023 taken to replace a failing 115 kV structure (PSC cause code 07). This lockout accounted for 27% of the total customers interrupted (1,110 of 4,130), and 55% of the total customer-hours interrupted (7,160 of 13,057).
- There were no substation interruptions.
- The remaining 20 events occurred at the distribution level with the largest distribution interruption affecting 246 customers (6%) and accounting for 191 customer-hours of interruption (2%).

- The distribution circuit breaker for the Crown Point 24951 experienced 0 momentary operations in 2023.
- The distribution circuit breaker for the Crown Point 24951 experienced 0 sustained operations (lockouts) in 2023.
- There was one 3-phase distribution recloser lockouts on the Crown Point 24951 in 2023, which was caused by animals. This interruption occurred on December 3rd, 2023 when recloser R88858 on pole 2 Station Street locked open due to an osprey nest on the recloser pole. This event accounted for 2% of the total customers interrupted (72 of 4,130) and 1% of total customer-hours interrupted (86 of 11,019).
- The three transmission events when combined with the one 3-phase line recloser lockout accounted for only four of the interruptions on the Crown Point 24951 in 2023 (17%) but affected 3,413 customers (83%) and accounted for 11,104 customer-hours of interruption (85%).
- When considering distribution interruptions only, the Crown Point 24951 had a SAIFI of 0.71 and a CAIDI of 2.58.
- Trees were the leading cause of interruptions on the Crown Point 24951 in 2023, accounting for 43% of total interruptions (10 of 23). Accidents were the 2nd leading cause of interruptions, accounting for 22% of total interruptions (5 of 23). Unknown were the 3rd leading cause of interruptions, accounting for 13% of total interruptions (3 of 23).
- Prearranged were the leading cause of customers interrupted (CI) on the Crown Point 24951 in 2023, accounting for 33% of total customers interrupted (1,356 of 4,130). Unknown were the 2nd leading cause of customers interrupted, accounting for 27% of total customers interrupted (1,121 of 4,130). Equipment Failures were the 3rd leading cause of customers interrupted, accounting for 27% of total customers interrupted (1,114 of 4,130).
- Prearranged were the leading cause of customer-hours interrupted (CHI) on the Crown Point 24951 in 2023, accounting for 56% of total customer-hours interrupted (7,350 of 13,057). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 28% of total customer-hours interrupted (3,600 of 13,057). Trees were the 3rd leading cause of customer-hours interrupted, accounting for 7% of total customer-hours interrupted (869 of 13,057).
- Of the 23 interruptions on this circuit, 7 affected 10 customers or less, with 5 being single customer outages.

Actions Taken:

- There are four 3-phase reclosers and one single-phase recloser on the Crown Point 24951. The single-phase recloser and one of the 3-phase reclosers were installed in 2007. The second 3-phase recloser was installed in 2008 and paired with the third 3-phase recloser, which is an open-tie recloser, installed in 2009 to create a loop scheme with the Hague Road 41851, which automatically restores service to 79 of the 1,112 customers on the Crown Point 24951 (7%) in the event of a transmission or substation outage. The fourth 3-phase recloser was installed in 2021 as part of converting parts of Creek Road and Pearl Street to 13.2 kV.
- A small project was completed in 2020 at a cost of about \$28,000 to install additional fuses and fault indicators on Breed Hill Road to better isolate faults in order to reduce outage times.

- A project was completed in 2018 at a cost of \$129,426 to address the overloaded 250 kVA ratio transformer on Lake Road by converting about 2,700 feet of Lake Road to 7.62 kV and installing a 333 kV, 7.62/4.8 kV ratio transformer.
- A capital project was completed in 2021 at a cost of about \$184,000 to convert about 2,500 feet of Creek Road and Pearl Street from 4.8 kV to 13.2 kV, moving one 3-phase recloser and installing a second 3-phase recloser.
- A capital improvement project was completed in early 2022 to construct about 1,500 feet of single-phase distribution along Creek Road to replace an equivalent amount of heavily treed cross-lot distribution serving Creek Road from Breed Hill Road.
- A maintenance foot patrol was performed on the Crown Point 24951 in 2020 and all maintenance has been completed.
- Tree trimming and a hazard tree review, which removed 827 hazard trees and another 365 Ash trees infested with the Emerald Ash Borer, was completed on the Crown Point 24951 in FY2018.
- A maintenance foot patrol of the Ticonderoga-Whitehall #3, 115 kV transmission line was completed in 2020 and all identified maintenance was completed in 2023 during the line rebuild project identified below.
- A multi-year capital project was completed in 2023 which replaced about 200 115 kV transmission structures on the Ticonderoga-Whitehall #3 and Ticonderoga-Republic #2, 115 kV transmission lines and reconducted sections of each line to replace conductors which were in poor condition, or which had multiple splices due to past conductor failures.
- Integrated Vegetation Management was completed on the Ticonderoga-Whitehall #3, 115 kV transmission line in FY2018.
- Integrated Vegetation Management was completed on the Ticonderoga-Republic #2, 115 kV transmission line in FY2020.
- A capital improvement project to rebuild and convert Pearl Street from 4.8 kV to 13.2 kV between Creek Road and Vineyard Road was constructed in FY2023. This project replaced multiple fuses which will better isolate faults and minimize the impact to customers for future tree events in this area.

Action Plan:

- A capital improvement project to rebuild and convert the balance of the 3-phase distribution on Creek Road from 4.8 kV to 13.2 kV is budgeted for FY2025.
- A capital improvement project to rebuild and convert the balance of the 3-phase distribution on State Highway 9N from 4.8 kV to 13.2 kV is budgeted for FY2026.

12. HAGUE ROAD 41852 – 13.2 kV

Profile: 1,881 Customers, 81.9 Circuit Miles
 Indices: CAIDI = 3.05, SAIFI = 3.72

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	7	35.00%	294	4.20%	868	4.07%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	2	10.00%	1,957	27.97%	6,500	30.51%
6	ACCIDENTS	3	15.00%	55	0.79%	275	1.29%
7	PREARRANGED	2	10.00%	1,896	27.10%	11,550	54.21%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	2	10.00%	684	9.78%	784	3.68%
10	UNKNOWN	4	20.00%	2,110	30.16%	1,328	6.23%
Totals		20	100.00%	6,996	100.00%	21,305	100.00%

Problem Analysis:

- There were 20 interruptions on the Hague Road 41852 in 2023.
- There were 3 transmission interruptions which affected the Hague Road 41852, one of which was an unknown cause, and two of which were caused by outages for emergency maintenance. These interruptions accounted for 5,649 customers interrupted (81%) and 18,068 customer-hours of interruption (85%).
 - The first transmission interruption occurred on August 15, 2023, the cause of which was unknown (PSC cause code 10). This lockout accounted for 27% of the total customers interrupted (1,884 of 6,996), and 2% of the total customer-hours interrupted (440 of 21,305).
 - The second transmission interruption was an emergency outage taken on November 16, 2023 to repair a badly damaged transmission structure identified during the maintenance on the Ticonderoga-Whitehall #3 line (PSC cause code 05). This lockout accounted for 27% of the total customers interrupted (1,884 of 6,996), and 29% of the total customer-hours interrupted (6,092 of 21,305).
 - The third transmission interruption was an emergency outage on December 09, 2023 taken to replace a failing 115 kV structure (PSC cause code 07). This lockout accounted for 27% of the total customers interrupted (1,881 of 6,996), and 54% of the total customer-hours interrupted (11,537 of 21,305).
- There were no substation interruptions.
- The remaining 17 events occurred at the distribution level with the largest distribution interruption affecting 683 customers (10%) and accounting for 782 customer-hours of interruption (4%).

- The distribution circuit breaker for the Hague Road 41852 experienced one momentary operation in 2023.
- The distribution circuit breaker for the Hague Road 41852 experienced 0 sustained operations (lockouts) in 2023.
- There was one 3-phase distribution recloser lockout on the Hague Road 41852 in 2023, which was caused by a lightning strike. The recloser lockout occurred July 9th, 2023 when recloser R8998 on pole 1 Burgoyne Road locked open due to lightning taking down the primary between poles 8 and 9 River Road. This event accounted for 10% of the customers interrupted (683 of 6,996) and 4% of customer-hours interrupted (782 of 21,305).
- The three transmission events when combined with the one 3-phase line recloser lockout accounted for four of the interruptions on the Hague Road 4185 in 2023 (20%) but affected 6,332 customers (91%) and accounted for 18,850 customer-hours of interruption (89%).
- When considering distribution interruptions only, the Hague Road 41852 had a SAIFI of 0.72 and a CAIDI of 2.40.
- Trees were the leading cause of interruptions on the Hague Road 41852 in 2023, accounting for 35% of total interruptions (7 of 20). Unknown were the 2nd leading cause of interruptions, accounting for 20% of total interruptions (4 of 20). Accidents were the 3rd leading cause of interruptions, accounting for 15% of total interruptions (3 of 20).
- Unknown were the leading cause of customers interrupted (CI) on the Hague Road 41852 in 2023, accounting for 30% of total customers interrupted (2,110 of 6,996). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 28% of total customers interrupted (1,957 of 6,996). Prearranged were the 3rd leading cause of customers interrupted, accounting for 27% of total customers interrupted (1,896 of 6,996).
- Prearranged were the leading cause of customer-hours interrupted (CHI) on the Hague Road 41852 in 2023, accounting for 54% of total customer-hours interrupted (11,550 of 21,305). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 31% of total customer-hours interrupted (6,500 of 21,305). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 6% of total customer-hours interrupted (1,328 of 21,305).
- Of the 20 interruptions on this circuit, 9 affected 10 customers or less, with 3 being single customer outages.

Actions Taken:

- There are five 3-phase reclosers on the Hague Road 41852. One of the 3-phase reclosers was installed in 1996 while the second and third were installed in 2015 and 2016. The fourth and fifth reclosers were installed in 2023 in support of a solar distributed generation interconnection.
- A maintenance foot patrol of the Ticonderoga-Whitehall #3, 115 kV transmission line was completed in 2020 and all identified maintenance was completed in 2023 during the line rebuild project identified below.
- A multi-year capital project was completed in 2023, which replaced about 200 115 kV transmission structures on the Ticonderoga-Whitehall #3 and Ticonderoga-Republic #2, 115 kV transmission lines and reconductored sections of each line to replace conductors which were in poor condition, or which had multiple splices due to past conductor failures.
- Integrated Vegetation Management was completed on the Ticonderoga-Whitehall #3, 115 kV transmission line in FY2018.

- Integrated Vegetation Management was completed on the Ticonderoga-Republic #2, 115 kV transmission line in FY2020.
- Tree trimming and a hazard tree review, which removed 384 hazard trees and another 34 Ash trees infested with the Emerald Ash Borer, was completed on the Hague Road 41852 in FY2024.
- A project to convert a large section of the Hague Road 41852 in downtown Ticonderoga along Montcalm Street from 4.8 kV to 13.2 kV was completed in 2023. This project also reconfigured portions of the Hague Road 41852 and installed new protective devices for increased reliability.

Action Plan:

- A capital improvement project to replace the submarine cable which traverses Lake George at Friends Point is budgeted for FY2027.
- A capital improvement project to rebuild and convert over 20,000 ft of existing 4.8 kV along State Route 22 south of Ticonderoga to 3-phase 13.2 kV. This project is budgeted for 2029.
- A capital improvement project to build a fourth feeder from the Hague Road substation, utilizing an existing circuit breaker position in the substation. The new feeder will absorb a portion of the existing Hague Road 41852 and 41853 circuits.

13. BUTLER 36251 – 13.2 kV

Profile: 2,109 Customers, 59.1 Circuit Miles
 Indices: CAIDI = 1.98, SAIFI = 3.64

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	6	24.00%	2,349	30.58%	7,527	49.53%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	9	36.00%	2,757	35.89%	3,258	21.44%
6	ACCIDENTS	3	12.00%	2,197	28.60%	3,640	23.95%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	7	28.00%	378	4.92%	771	5.07%
Totals		25	100.00%	7,681	100.00%	15,195	100.00%

Problem Analysis:

- There were 25 interruptions on the Butler 36251 in 2023.
- The Butler 36251 experienced one transmission interruption in 2023. This interruption occurred on April 16, 2023 the result of an equipment failure which brought a wire down on the Mohican - Butler #18, 115 kV transmission line (PSC cause code 05). This event accounted for 27% of the total customers interrupted (2,102 of 7,681), and 16% of the total customer-hours interrupted (2,487 of 15,195).
- There were no substation interruptions.
- The remaining 24 events occurred at the distribution level.
- The distribution circuit breaker for the Butler 36251 experienced two momentary operations in 2023.
- The distribution circuit breaker for the Butler 36251 experienced two sustained operations (lockouts) in 2023 one the result of trees and the other a motor vehicle accident. These interruptions accounted for 55% of the total amount of customers interrupted (4,224 out of 7,681) and 68% of the total amount of the customer-hours interrupted (10,365 out of 15,195).
 - The first lockout occurred on January 08, 2023 when a motor vehicle accident caused a broken pole on U.S. Highway 9 at pole 109½ (PSC cause code 06). This lockout accounted for 27% of the total customers interrupted (2,106 of 7,681), and 22% of the total customer-hours interrupted (3,341 of 15,195).
 - The second lockout occurred on November 27, 2023 when a tree fell on the primary at pole 128 on U.S. Highway 9 (PSC cause code 02). This lockout accounted for 28% of the total customers interrupted (2,118 of 7,681), and 46% of the total

customer-hours interrupted (7,024 of 15,195).

- The one transmission related interruption when combined with the two feeder breaker lockouts accounted for only three of the 25 interruptions on the Butler 36251 in 2023 (12%) but they affected 6,326 customers (82%) and accounted for 12,852 customer-hours of interruption (85%).
- Equipment Failures were the leading cause of interruptions on the Butler 36251 in 2023, accounting for 36% of total interruptions (9 of 25). Unknown were the 2nd leading cause of interruptions, accounting for 28% of total interruptions (7 of 25). Trees were the 3rd leading cause of interruptions, accounting for 24% of total interruptions (6 of 25).
- Equipment Failures were the leading cause of customers interrupted (CI) on the Butler 36251 in 2023, accounting for 36% of total customers interrupted (2,757 of 7,681). Trees were the 2nd leading cause of customers interrupted, accounting for 31% of total customers interrupted (2,349 of 7,681). Accidents were the 3rd leading cause of customers interrupted, accounting for 29% of total customers interrupted (2,197 of 7,681).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Butler 36251 in 2023, accounting for 50% of total customer-hours interrupted (7,527 of 15,195). Accidents were the 2nd leading cause of customer-hours interrupted, accounting for 24% of total customer-hours interrupted (3,640 of 15,195). Equipment Failures were the 3rd leading cause of customer-hours interrupted, accounting for 21% of total customer-hours interrupted (3,258 of 15,195).
- Of the 25 interruptions on this circuit, five affected 10 customers or less, with two being single customer outages.

Actions Taken:

- There are two 3-phase reclosers and four TripSaver, cut-out mounted single-phase reclosers on the Butler 36251. One 3-phase recloser was installed in 2006 while the other was installed in 2007. One TripSaver, cut-out mounted single phase recloser was installed in each of 2017 and 2019 while the other two were installed in 2021.
- A capital improvement project was completed in 2019 to construct a new feeder out of the Butler substation which transferred 47.2 miles of distribution and about 1,110 customers from the Butler 36251 feeder to the new Butler 36253 feeder while also transferring the 10.1 mile Fortsville Road tap, and the 204 customers it serves from the Wilton 32952 feeder to the Butler 36251. In the process, one of the 3-phase reclosers and the TripSaver, cut-out mounted single-phase recloser on the Butler 36251 was transferred to the Butler 36253 and a new 3-phase recloser was installed on the Butler 36251 on Fortsville Road.
- A project was completed in 2016 at a cost of \$65,265 which rebuilt and converted about ½ mile of 3-phase distribution on Mountain Road to 13.2 kV and installed a new, larger ratio transformer to reduce the load on the Mountain Road ratio transformer which was estimated to be loaded to 147% of nameplate.
- A project was completed in 2020 at a cost of \$59,717 to construct about 700 feet of new distribution on Old Bend Road to transfer the Paris Road tap from a cross lots tap off Butler Road to the new Old Bend Road tap.
- A maintenance foot patrol was completed on the Butler 36251 in 2020 and all identified maintenance has been completed.

- A project was completed in 2016 at a cost of \$241,478 to replace the failing underground cable on Oak View Drive.
- Tree trimming and a hazard tree review were completed on the Butler 36251 in FY2021.

Action Plan:

- A maintenance foot patrol of the Butler 36251 is scheduled for 2025.
- A mid-cycle hazard tree review to the first protective device will be performed on the Butler 36251 in FY2025.
- A capital improvement project to rebuild and convert from 4.8 kV to 13.2 kV about 2,600 feet of Mountain Road to relieve the 750 kVA ratio transformer on Mountain Road currently loaded in excess of 125% of nameplate and replace it with a ratio transformer on Old Saratoga Road is currently budgeted for FY2027.

14. PORT HENRY 38552 – 13.2 kV

Profile: 1,617 Customers, 70.6 Circuit Miles
 Indices: CAIDI = 2.82, SAIFI = 4.04

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	7	36.84%	47	0.72%	117	0.64%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	6	31.58%	2,479	37.96%	6,633	36.08%
6	ACCIDENTS	2	10.53%	32	0.49%	110	0.60%
7	PREARRANGED	1	5.26%	1,619	24.79%	10,092	54.89%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	3	15.79%	2,353	36.03%	1,433	7.79%
Totals		19	100.00%	6,530	100.00%	18,385	100.00%

Problem Analysis:

- There were 19 interruptions on the Port Henry 38552 in 2023.
- There were 3 transmission interruptions which affected the Port Henry 38552, one of which was an unknown cause, and two of which were caused by outages for emergency maintenance. These interruptions accounted for 5,649 customers interrupted (81%) and 18,068 customer-hours of interruption (85%).
 - The first transmission interruption occurred on August 15, 2023, the cause of which was unknown (PSC cause code 10). This lockout accounted for 25% of the total customers interrupted (1,613 of 6,530), and 2% of the total customer-hours interrupted (376 of 18,385).
 - The second transmission interruption was an emergency outage taken on November 16, 2023 to repair a badly damaged transmission structure identified during the maintenance on the Ticonderoga-Whitehall #3 line (PSC cause code 05). This lockout accounted for 25% of the total customers interrupted (1,617 of 6,530), and 28% of the total customer-hours interrupted (5,228 of 18,385).
 - The third transmission interruption was an emergency outage on December 09, 2023 taken to replace a failing 115 kV structure (PSC cause code 07). This lockout accounted for 25% of the total customers interrupted (1,619 of 6,530), and 55% of the total customer-hours interrupted (10,092 of 18,385).
- There were no substation interruptions.
- The remaining 16 events occurred at the distribution level with the largest distribution interruption affecting 738 customers (11%) and accounting for 1,052 customer-hours of interruption (6%).

- The distribution circuit breaker for the Port Henry 38552 experienced one momentary operation in 2023.
- The distribution circuit breaker for the Port Henry 38552 experienced 0 sustained operations (lockouts) in 2023.
- There were two 3-phase distribution recloser lockouts on the Port Henry 38552 in 2023, one of which was caused by equipment deterioration and one of which had an unknown cause. These interruptions accounted for 1,477 customers, interrupted (23%) and 2,065 customer-hours of interruption (11%).
 - The first 3-phase distribution recloser lockout occurred on January 6th, 2023 when recloser R89245 on pole 53 Plank Road locked out due to the primary coming off of the insulator on pole 127 on Plank Road. This event accounted for 11% of the total customers interrupted (739 of 6,530), and 6% of the customer-hours interrupted (1,013 of 18,385).
 - The second 3-phase distribution recloser lockout occurred on July 4th, 2023 when recloser R89245 on pole 53 Plank Road locked out for an unknown reason. This event accounted for 11% of the total customers interrupted (738 of 6,530), and 6% of the customer-hours interrupted (1,052 of 18,385).
- The three transmission events when combined with the two 3-phase line recloser lockouts accounted for five of the interruptions on the Port Henry 38552 in 2023 (26%) but affected 6,326 customers (97%) and accounted for 17,761 customer-hours of interruption (97%).
- When considering distribution interruptions only, the Port Henry 38552 had a SAIFI of 1.04 and a CAIDI of 1.60.
- Trees were the leading cause of interruptions on the Port Henry 38552 in 2023, accounting for 37% of total interruptions (7 of 19). Equipment Failures were the 2nd leading cause of interruptions, accounting for 32% of total interruptions (6 of 19). Unknown were the 3rd leading cause of interruptions, accounting for 16% of total interruptions (3 of 19).
- Equipment Failures were the leading cause of customers interrupted (CI) on the Port Henry 38552 in 2023, accounting for 38% of total customers interrupted (2,479 of 6,530). Unknown were the 2nd leading cause of customers interrupted, accounting for 36% of total customers interrupted (2,353 of 6,530). Prearranged were the 3rd leading cause of customers interrupted, accounting for 25% of total customers interrupted (1,619 of 6,530).
- Prearranged were the leading cause of customer-hours interrupted (CHI) on the Port Henry 38552 in 2023, accounting for 55% of total customer-hours interrupted (10,092 of 18,385). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 36% of total customer-hours interrupted (6,633 of 18,385). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 8% of total customer-hours interrupted (1,433 of 18,385).
- Of the 19 interruptions on this circuit, 10 affected 10 customers or less, with 1 being a single customer outage.

Actions Taken:

- There are four 3-phase reclosers and one single-phase recloser on the Port Henry 38552. All four 3-phase reclosers were installed in 2007 while the single-phase recloser was installed in 2006.

- Three TripSaver, cut-out mounted, single-phase reclosers were installed on the Port Henry 38552 in 2019 and 2020 and another two TripSavers were installed on Witherbee Road in 2022.
- A capital improvement project was completed in 2018 at a cost of \$621,556 to rebuild and convert Moriah and Edgemont Roads from 4.8 kV to 7.62 kV.
- A 3-phase tap into a former stone quarry off Switchback Road was removed in 2018 at a cost of \$12,554.
- A capital improvement project was completed in 2021 to rebuild and convert Dalton Hill Road from 4.8 kV to 7.62 kV to allow better coordination between protective devices.
- A maintenance foot patrol was performed on the Port Henry 38552 in 2021 and all identified maintenance has been completed.
- Tree trimming and a hazard tree review was completed on the Port Henry 38552 in 2022.
- A maintenance foot patrol of the Ticonderoga-Whitehall #3, 115 kV transmission line was completed in 2020 and all identified maintenance was completed during the line rebuild project identified in the multi-year transmission project listed below.
- A multi-year capital project was completed in 2023 to replace about 200 115 kV transmission structures on the Ticonderoga-Whitehall #3 and Ticonderoga-Republic #2, 115 kV transmission lines as well as reconductor sections of each line to replace conductors which were in poor condition, or which had multiple splices due to past conductor failures.
- A maintenance foot patrol of the Ticonderoga-Republic #2, 115 kV transmission line was completed in 2018 and all identified maintenance has been completed.
- Integrated Vegetation Management was completed on the Ticonderoga-Whitehall #3, 115 kV transmission line in FY2018.
- Integrated Vegetation Management was completed on the Ticonderoga-Republic #2, 115 kV transmission line in FY2020.
- A small capital improvement project was completed 2023 to rebuild and convert a section of the Federal Street tap to 7.62 kV to reduce the load on the Federal Street step-down ratio transformer which was loaded to an estimated 116% of nameplate.
- A capital improvement project was completed in 2023 to rebuild and convert Moriah, Harry Allen, and Breed Hill Roads from 4.8 kV to 7.62 kV to reduce the load on the Moriah Road step-down ratio transformer which is loaded to an estimated 151% of nameplate.

Action Plan:

- A capital improvement project is budgeted for FY2027 to rebuild and convert Broad Street in Port Henry, between Forge Hollow Road and the existing 3-phase tie with the 38551 along Broad Street. Another project will convert the 38551 side of the tie to 13.2 kV, this project will eliminate a section of 4.8 kV on the 38552 and make the tie a true 13.2 kV feeder tie.

15. EAST SPRINGFIELD 47751 – 13.2 kV

Profile: 1,023 Customers, 93.5 Circuit Miles
Indices: CAIDI = 3.77, SAIFI = 2.99

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	8	33.33%	507	16.55%	4,145	35.92%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	7	29.17%	1,433	46.78%	5,079	44.00%
6	ACCIDENTS	1	4.17%	2	0.07%	4	0.03%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	2	8.33%	5	0.16%	27	0.23%
10	UNKNOWN	6	25.00%	1,116	36.43%	2,288	19.82%
Totals		24	100.00%	3,063	100.00%	11,542	100.00%

Problem Analysis:

- There were 24 interruptions on the East Springfield 47751 in 2023.
- There was one transmission interruption on the East Springfield 47751 which occurred on September 14, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 34% of the total customers interrupted (1,030 of 3,063), and 43% of the total customer-hours interrupted (4,925 of 11,542).
- There were no substation interruptions.
- The remaining 23 events occurred at the distribution level.
- The distribution circuit breaker for the East Springfield 47751 experienced 0 momentary operations in 2023.
- The distribution circuit breaker for the East Springfield 47751 experienced one sustained operation (lockout) on May 30, 2023 for an unknown reason (PSC cause code 10). This interruption accounted for 33% of the total amount of customers interrupted (1,020 out of 3,063) and 18% of the total amount of the customer-hours interrupted (2,086 out of 11,542).
- The one transmission related interruption when combined with the one feeder breaker lockout accounted for only two of the 25 interruptions on the East Springfield 47751 in 2023 (8%) but they affected 2,050 customers (67%) and accounted for 7,011 customer-hours of interruption (61%).

- Trees were the leading cause of interruptions on the East Springfield 47751 in 2023, accounting for 33% of total interruptions (8 of 24). Equipment Failures were the 2nd leading cause of interruptions, accounting for 29% of total interruptions (7 of 24). Unknown were the 3rd leading cause of interruptions, accounting for 25% of total interruptions (6 of 24).
- Equipment Failures were the leading cause of customers interrupted (CI) on the East Springfield 47751 in 2023, accounting for 47% of total customers interrupted (1,433 of 3,063). Unknown were the 2nd leading cause of customers interrupted, accounting for 36% of total customers interrupted (1,116 of 3,063). Trees were the 3rd leading cause of customers interrupted, accounting for 17% of total customers interrupted (507 of 3,063).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the East Springfield 47751 in 2023, accounting for 44% of total customer-hours interrupted (5,079 of 11,542). Trees were the 2nd leading cause of customer-hours interrupted, accounting for 36% of total customer-hours interrupted (4,145 of 11,542). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 20% of total customer-hours interrupted (2,288 of 11,542).
- Of the 24 interruptions on this circuit, 13 affected 10 customers or less, with 8 being single customer outages.

Actions Taken:

- There are three 3-phase line reclosers on the East Springfield 47751. Two were installed in 2005 and the third upgraded in 2013.
- Tree trimming and a hazard tree review was completed on the East Springfield 47751 in FY2022.
- A maintenance foot patrol was performed on the East Springfield 47751 in 2020 and all identified maintenance has been completed.
- A project has been completed in 2023 to remove approximately 1500' of rear lot and improve fusing coordination on the East Springfield 47751 near County Highway 34A.

Action Plan:

- A capital improvement project is scheduled to build out a feeder tie between the East Springfield 47751 and the Sharon 36351. This will remove East Springfield from being islanded and allow for load to be transferred in contingencies.
- A maintenance foot patrol is scheduled to be completed on the East Springfield 47751 in 2025.
- A capital improvement project is scheduled to remove approximately 1600' of rear lot distribution on the East Springfield 47751 near Whiteman Road in 2024.

16. UNION STREET 37654 – 13.2 kV

Profile: 640 Customers, 49.5 Circuit Miles
Indices: CAIDI = 3.57, SAIFI = 4.87

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	6	33.33%	955	34.01%	5,843	58.27%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	0	0.00%	0	0.00%	0	0.00%
6	ACCIDENTS	3	16.67%	816	29.06%	2,913	29.05%
7	PREARRANGED	2	11.11%	706	25.14%	566	5.64%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	7	38.89%	331	11.79%	707	7.05%
Totals		18	100.00%	2,808	100.00%	10,028	100.00%

Problem Analysis:

- There were 18 interruptions on the Union Street 37654 in 2023.
- There was one transmission interruption on the Union Street 37654 in 2023 which occurred on July 10, 2023 due to a tree on the Cambridge-Hoosick #3, 34.5 kV line (PSC cause code 02). This lockout accounted for 20% of the total customers interrupted (575 of 2,808), and 30% of the total customer-hours interrupted (2,975 of 10,028).
- There were no substation interruptions.
- The remaining 17 events occurred at the distribution level.
- The distribution circuit breaker for the Union Street 37654 experienced one momentary operation in 2023.
- The distribution circuit breaker for the Union Street 37654 experienced one sustained operation (lockout) on December 07, 2023, when a motor vehicle hit pole 39 on Turnpike Road (PSC cause code 06). This interruption accounted for 21% of the total amount of customers interrupted (577 out of 2,808) and 21% of the total amount of customer-hours interrupted (2,081 out of 10,028).
- The Union Street 54 experienced one sustained 3-phase recloser operation on May 24, 2023, due to a prearranged conversion (PSC cause code 07). This interruption accounted for 19% of the total amount of customers interrupted (546 of 2,808) and 5% of the total amount of the customer-hours interrupted (523 of 10,028).
- The single transmission outage, combined with the single circuit breaker lockout, and the single 3-phase recloser lockout, accounted for 60% of the total customers interrupted (1,698 of 2,808), and 56% of the total customer-hours interrupted (5,579 of 10,028).

- Unknown were the leading cause of interruptions on the Union Street 37654 in 2023, accounting for 39% of total interruptions (7 of 18). Trees were the 2nd leading cause of interruptions, accounting for 33% of total interruptions (6 of 18). Accidents were the 3rd leading cause of interruptions, accounting for 17% of total interruptions (3 of 18).
- Trees were the leading cause of customers interrupted (CI) on the Union Street 37654 in 2023, accounting for 34% of total customers interrupted (955 of 2,808). Accidents were the 2nd leading cause of customers interrupted, accounting for 29% of total customers interrupted (816 of 2,808). Prearranged were the 3rd leading cause of customers interrupted, accounting for 25% of total customers interrupted (706 of 2,808).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Union Street 37654 in 2023, accounting for 58% of total customer-hours interrupted (5,843 of 10,028). Accidents were the 2nd leading cause of customer-hours interrupted, accounting for 29% of total customer-hours interrupted (2,913 of 10,028). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 7% of total customer-hours interrupted (707 of 10,028).
- Of the 18 interruptions on this circuit, 7 affected 10 customers or less, with 2 being a single customer outage.

Actions Taken:

- There are two 3-phase reclosers on the Union Street 37654. These reclosers have assisted with minimizing customers interrupted and customer hours interrupted since they were installed.
- A maintenance foot patrol was completed on the Union Street 37654 in 2020 and all identified maintenance has been completed.
- Tree trimming and a hazard tree review was completed on the Union Street 37654 in FY2021.
- A project to rebuild the 3-phase mainline from Turnpike Road to Brownell Corners Road as necessary to convert to 13.2 kV, was completed in FY2024. In addition to converting one mile of overhead distribution this project installed two 3-phase reclosers on the Union Street 37654 at a total cost of \$830,711.
- Phase one of the Lincoln Hill Road rebuild project, which rebuilt about 2,400 feet of single-phase 4.8 kV overhead distribution, moving rear lot distribution to the road, was completed in FY2024 at a total cost of \$154,397.

Action Plan:

- A capital improvement project is scheduled to convert and reconductor approximately 1.1 miles of overhead distribution from Brownell Corners Road to State Highway 22. This project will also create a 3-phase, 13.2 kV feeder tie between the Union Street 37654 and Union Street 37653 feeders on State Highway 22.
- Phase two of the Lincoln Hill Road project is scheduled to rebuild approximately 4,900 feet of rear lot, single-phase 4.8 kV overhead distribution with 1/0 AL conductor.
- A maintenance foot patrol is scheduled to be completed on the Union Street 37654 for 2025.

17. BURGOYNE 33751 – 13.2 kV

Profile: 1,833 Customers, 136.3 Circuit Miles
Indices: CAIDI = 2.08, SAIFI = 2.52

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	18	40.00%	847	18.37%	1,862	19.42%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	4	8.89%	123	2.67%	476	4.96%
6	ACCIDENTS	8	17.78%	3,266	70.83%	6,411	66.88%
7	PREARRANGED	1	2.22%	52	1.13%	48	0.50%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	1	2.22%	1	0.02%	12	0.12%
10	UNKNOWN	13	28.89%	322	6.98%	778	8.11%
Totals		45	100.00%	4,611	100.00%	9,586	100.00%

Problem Analysis:

- There were 45 interruptions on the Burgoyne 33751 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 45 events occurred at the distribution level.
- The distribution circuit breaker for the Burgoyne 33751 experienced one momentary operation in 2023.
- The distribution circuit breaker for the Burgoyne 33751 experienced two sustained operations (lockouts) in 2023. These interruptions accounted for 47% of the total amount of customers interrupted (2,168 out of 4,611) and 35% of the total amount of customer-hours interrupted (3,336 out of 9,586).
 - The first lockout occurred on February 23, 2023 when a motor vehicle accident broke a pole and damaged a bank of three voltage regulators (PSC cause code 06). This lockout accounted for 40% of the total customers interrupted (1,832 of 4,611), and 28% of the total customer-hours interrupted (2,711 of 9,586).
 - The second lockout occurred on March 4, 2023 when a tree branch fell across all three phases at pole 53 on State Highway 196 (PSC cause code 02). This lockout accounted for 7% of the total customers interrupted (336 of 4,611), and 7% of the total customer-hours interrupted (625 of 9,586).
- There was one 3-phase distribution recloser lockout on the Burgoyne 33751 in 2023 which occurred on November 15th when a motor vehicle accident caused recloser R89987 on pole 2 Brennan Road to lockout interrupting 396 customers (9%) and accounting for 2,894 customer-hours of interruption (30%).

- The two feeder lockouts when combined with the 3-phase line recloser lockout accounted for only three of the 45 interruptions on the Burgoyne 33751 in 2023 (7%) but they affected 2,564 customers (56%) and accounted for 6,230 customer-hours of interruption (65%).
- Trees were the leading cause of interruptions on the Burgoyne 33751 in 2023, accounting for 40% of total interruptions (18 of 45). Unknown were the 2nd leading cause of interruptions, accounting for 29% of total interruptions (13 of 45). Accidents were the 3rd leading cause of interruptions, accounting for 18% of total interruptions (8 of 45).
- Accidents were the leading cause of customers interrupted (CI) on the Burgoyne 33751 in 2023, accounting for 71% of total customers interrupted (3,266 of 4,611). Trees were the 2nd leading cause of customers interrupted, accounting for 18% of total customers interrupted (847 of 4,611). Unknown were the 3rd leading cause of customers interrupted, accounting for 7% of total customers interrupted (322 of 4,611).
- Accidents were the leading cause of customer-hours interrupted (CHI) on the Burgoyne 33751 in 2023, accounting for 67% of total customer-hours interrupted (6,411 of 9,586). Trees were the 2nd leading cause of customer-hours interrupted, accounting for 19% of total customer-hours interrupted (1,862 of 9,586). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 8% of total customer-hours interrupted (778 of 9,586).
- Of the 45 interruptions on this circuit, 17 affected 10 customers or less, 11 of which affected only one or two customers.

Actions Taken:

- There are six 3-phase reclosers on the Burgoyne 33751, two of which were originally installed in 1997, one of which was replaced in 2018. A third recloser was installed in 2020 on Brennan Road. The fourth recloser was installed in 2021 on Durkeetown Road as part of the Durkeetown Road rebuild project. A project was completed in 2023 to install a new 3-phase line recloser on County Highway 42 to split in half the zone of protection previously covered by the station breaker. The sixth 3-phase line recloser was placed in service in early 2024 on State Highway 40 south of Brennan Road as part of the State Highway 40 rebuild project.
- There are four TripSaver, cut-out mounted single-phase reclosers installed on the Burgoyne 33751, three of which were installed in 2019 with the fourth being installed in 2021
- The 115/13.2 kV Burgoyne substation transformer which was beginning to accumulate damaging gases was replaced in 2017 at a cost in excess of \$1.7M and an animal fence was installed around the substation equipment in 2019.
- A project was completed in 2018 at a cost of \$163,954 to construct 4.8 kV distribution on County Highway 46 and North Ridge Road near West Road to allow removal of heavily treed, inaccessible, rear lot 4.8 kV distribution.
- A project was completed in 2018 at a cost of \$70,216 to construct about 2,600 feet of new 7.62 kV distribution on County Highway 41 east of Hartman Road to allow removal of about 4,910 feet of heavily treed, inaccessible, rear lot 7.62 kV distribution.
- A project was completed in 2018 at a cost of \$45,923 to close a 625 foot single-phase distribution gap on West Valley Road to allow the 9 mile long West Road single-phase tap to be split into 2 smaller single-phase taps and to reduce the load on the overloaded 7.62/4.8 kV ratio transformer serving the West Road tap.

- A project was completed in 2019 at a cost of \$202,068 to rebuild 7,400 feet of State Highway 197 between poles 100 and 137 as necessary to convert to 13.2 kV and create a three-phase feeder tie with the Butler 36253.
- A project was completed in 2020 at a cost of \$102,462 to construct 1,400 feet of single-phase distribution on Safford Road to allow the transfer of 1.7 miles of single-phase distribution with 64 customers from the Burgoyne 33751 to the Burgoyne 33752 feeder, to address the overloaded Coach Road ratio transformer.
- A small capital improvement project was completed in 2020 at a cost of \$121,615 to extend 3-phase on State Highway 40 approximately three sections beyond McEachron Hill Road to allow the balance of State Highway 40 and McEachron Hill Road to be served from separate 7.62/4.8 kV ratio transformers.
- A capital improvement project was completed in 2021 at a cost of \$361,398 to rebuild approximately 1 mile of Durkeetown Road between State Highway 197 and County Highway 46 to 3-phase, 13.2 kV in order to provide better load balance on the entire feeder and better voltage downstream of Durkeetown Road.
- A capital improvement project was completed in 2022 at a cost of \$247,171 to construct 1,500 feet of new 7.62 kV distribution on Summit Lake Road to allow the removal of 3,000 feet of cross lot distribution from Dutchtown Road while also reducing the load on the overloaded Dutchtown Road ratio transformer.
- A project was completed in early 2024 to rebuild about 1.4 miles of 4.8 kV, 3-phase on State Highway 40 south of Brennan Road as necessary to convert to 13.2.
- A maintenance foot patrol was completed on the Burgoyne 33751 in 2021 and all level 1 and 2 maintenance has been completed.
- Tree trimming and a hazard tree review, which removed 187 hazard trees and another 64 Ash trees infested with the Emerald Ash Borer, was completed on the Burgoyne 33751 in FY2019.

Action Plan:

- Complete all identified level 3 maintenance on the Burgoyne 33751.
- A hazard tree review is scheduled to be performed on the Burgoyne 33751 in FY2025.
- A project is currently under construction to replace the 3-phase voltage regulator bank on County Highway 44.
- A project is in design for FY2025 construction to convert Bean Hill Road and install two new ratio transformers to split the large West Road tap into smaller pieces to improve reliability while also reducing the load on the overloaded West Road ratio transformer.
- A project is currently in Design for FY2025 construction to construct about 1,400 feet of new single-phase, 7.62 kV distribution on Lick Springs Road near State Highway 40 to allow the removal of a similar amount of rear lot distribution.

18. OTTEN 41213 – 4.8 kV

Profile: 555 Customers 36.5 Circuit Miles
Indices: CAIDI = 3.90, SAIFI = 4.59

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	8	50.00%	844	33.11%	4,452	44.82%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	3	18.75%	559	21.93%	1,836	18.49%
6	ACCIDENTS	0	0.00%	0	0.00%	0	0.00%
7	PREARRANGED	1	6.25%	553	21.69%	3,447	34.70%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	4	25.00%	593	23.26%	197	1.99%
Totals		16	100.00%	2,549	100.00%	9,933	100.00%

Problem Analysis:

- There were 16 interruptions on the Otten 41213 in 2023.
- There were 3 transmission interruptions which affected to the Otten 41213 in 2023, one of which had an unknown cause and two of which were caused by outages for emergency maintenance. These interruptions accounted for 1,672 customers interrupted (66%) and 5,373 customer-hours of interruption (54%).
 - The first transmission interruption occurred on August 15, 2023, the cause of which was unknown (PSC cause code 10). This lockout accounted for 22% of the total customers interrupted (564 of 2,549), and 1% of the total customer-hours interrupted (132 of 9,933).
 - The second transmission interruption was an emergency outage taken on November 16, 2023 to repair a badly damaged transmission structure identified during the maintenance on the Ticonderoga-Whitehall #3 line (PSC cause code 05). This lockout accounted for 22% of the total customers interrupted (555 of 2,549), and 18% of the total customer-hours interrupted (1,795 of 9,933).
 - The third transmission interruption was an emergency outage on December 09, 2023 taken to replace a failing 115 kV structure (PSC cause code 07). This lockout accounted for 22% of the total customers interrupted (553 of 2,549), and 35% of the total customer-hours interrupted (3,447 of 9,933).
- There were no substation interruptions.
- The remaining 13 events occurred at the distribution level, with the largest distribution interruption affecting 192 customers (8%) and accounting for 1,615 customer-hours of interruption (16%).

- The distribution circuit breaker for the Otten 41213 experienced 0 momentary operations in 2023.
- The distribution circuit breaker for the Otten 41213 experienced 0 sustained operations (lockouts) in 2023.
- There were no 3-phase distribution recloser lockouts on the Otten 41213.
- The three transmission events accounted for only three of the interruptions on the Otten 41213 in 2023 (19%), but affected 1,672 customers (66%) and accounted for 5,373 customer-hours of interruption (54%).
- When considering the distribution interruptions only, the Otten 41213 had a SAIFI of 1.58 and a CAIDI of 5.2.
- Trees were the leading cause of interruptions on the Otten 41213 in 2023, accounting for 50% of total interruptions (8 of 16). Unknown were the 2nd leading cause of interruptions, accounting for 25% of total interruptions (4 of 16). Equipment Failures were the 3rd leading cause of interruptions, accounting for 19% of total interruptions (3 of 16).
- Trees were the leading cause of customers interrupted (CI) on the Otten 41213 in 2023, accounting for 33% of total customers interrupted (844 of 2,549). Unknown were the 2nd leading cause of customers interrupted, accounting for 23% of total customers interrupted (593 of 2,549). Equipment Failures were the 3rd leading cause of customers interrupted, accounting for 22% of total customers interrupted (559 of 2,549).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Otten 41213 in 2023, accounting for 45% of total customer-hours interrupted (4,452 of 9,933). Prearranged were the 2nd leading cause of customer-hours interrupted, accounting for 35% of total customer-hours interrupted (3,447 of 9,933). Equipment Failures were the 3rd leading cause of customer-hours interrupted, accounting for 18% of total customer-hours interrupted (1,836 of 9,933).
- Of the 16 interruptions on this circuit, 5 affected 10 customers or less, with 2 being single customer outages.

Action Taken:

- A maintenance foot patrol of the Otten 41213 was performed in 2018 and all identified maintenance has been completed.
- Tree trimming and a hazard tree review, which removed 169 hazard trees and another 18 Ash trees infested with the Emerald Ash Borer, was completed on the Otten 41213 was completed in FY2024.
- A project was completed on the Otten 41213 in October of 2011 to construct distribution on Cat Den Road to allow the removal of the old cross lot feed at a cost of \$215,000.
- A maintenance foot patrol of the Ticonderoga-Whitehall #3, 115 kV transmission line was completed in 2020 and all identified maintenance was completed in 2023 during the line rebuild project identified below.
- A multi-year capital project was completed in 2023 which replaced about 200 115 kV transmission structures on the Ticonderoga-Whitehall #3 and Ticonderoga-Republic #2, 115 kV transmission lines and recondutored sections of each line to replace conductors which were in poor condition or which had multiple splices due to past conductor failures.
- Integrated Vegetation Management was completed on the Ticonderoga-Whitehall #3, 115 kV transmission line in FY2018.

- Integrated Vegetation Management was completed on the Ticonderoga-Republic #2, 115 kV transmission line in FY2020.

Action Plan:

- A capital improvement project is being investigated to extend 3-phase distribution from State Route 22 along County Route 6 to the Village of Huletts Landing, a distance of approximately 23,000 ft. This will aid in serving increased load in the village and address voltage concerns, while also relocating rear lot distribution along County Route 6, and potentially retiring a legacy feed into the village, which runs along a now abandoned section of North Road.
- Investigate opportunities to relocate rear lot distribution or use of Hendrix conductor to make the feeder more resilient to tree related interruptions.

19. EJ WEST 03851 – 13.2 kV

Profile: 1,467 Customers, 74.2 Circuit Miles
Indices: CAIDI = 3.87, SAIFI = 2.27

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	12	46.15%	1,716	51.59%	5,507	42.77%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	7	26.92%	1,281	38.51%	5,648	43.86%
6	ACCIDENTS	1	3.85%	1	0.03%	5	0.04%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	1	3.85%	1	0.03%	5	0.04%
10	UNKNOWN	5	19.23%	327	9.83%	1,712	13.29%
Totals		26	100.00%	3,326	100.00%	12,877	100.00%

Problem Analysis:

- There were 26 interruptions on the EJ West 03851 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 26 events occurred at the distribution level.
- The distribution circuit breaker for the EJ West 03851 experienced 0 momentary operations in 2023.
- The distribution circuit breaker for the EJ West 03851 experienced 0 sustained operations (lockouts) in 2023.
- There were six 3-phase distribution recloser lockouts on the EJ West 03851 in 2023 three of which were caused by trees while two were caused by equipment failures and the sixth was from an unknown cause. These interruptions accounted for 2,317 customers interrupted (70%) and 10,066 customer-hours of interruption (78%).
 - The first 3-phase distribution recloser lockout occurred on February 5th, 2023 when recloser R95294 on pole 140 North Shore Road locked open when a tree limb fell at pole 20 North Shore Road. This event accounted for 8% of the total customers interrupted (273 of 3,326), and 14% of the customer-hours interrupted (1,765 of 12,877).
 - The second 3-phase distribution recloser lockout occurred on March 4th, 2023 when recloser R5945 on pole 20 North Shore Road locked open when a tree fell across the primary at pole 113 North Shore Road. This event accounted for 21% of the total customers interrupted (701 of 3,326), and 18% of the customer-hours interrupted (2,372 of 12,877).

- The third 3-phase distribution recloser lockout occurred on July 19th, 2023 when recloser R95303 on pole 8 County Highway 8 locked open when a phase conductor came off a pole top pin and rubbed against a guy wire. This event accounted for 15% of the total customers interrupted (491 of 3,326), and 22% of the customer-hours interrupted (2,776 of 12,877).
- The fourth 3-phase distribution recloser lockout occurred on August 19th, 2023 when recloser R95294 on pole 140 North Shore Road was opened to remove a tree from the primary at pole 63 North Shore Road. This event accounted for 8% of the total customers interrupted (282 of 3,326), and 14% of the customer-hours interrupted (1,765 of 12,877).
- The fifth and sixth 3-phase distribution recloser lockouts occurred on October 7th, 2023 when recloser R95294 on pole 140 North Shore Road locked open twice. The first lockout was classified as an unknown after the feeder was patrolled twice and no cause was found. However, shortly after the recloser was closed back in an insulator failed causing a second lockout. These events, which were technically caused by the same failed insulator, accounted for 17% of the total customers interrupted (570 of 3,326), and 23% of the customer-hours interrupted (3,008 of 12,877).
- Trees were the leading cause of interruptions on the EJ West 03851 in 2023, accounting for 46% of total interruptions (12 of 26). Equipment Failures were the 2nd leading cause of interruptions, accounting for 27% of total interruptions (7 of 26). Unknown were the 3rd leading cause of interruptions, accounting for 19% of total interruptions (5 of 26).
- Trees were the leading cause of customers interrupted (CI) on the EJ West 03851 in 2023, accounting for 52% of total customers interrupted (1,716 of 3,326). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 39% of total customers interrupted (1,281 of 3,326). Unknown were the 3rd leading cause of customers interrupted, accounting for 10% of total customers interrupted (327 of 3,326).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the EJ West 03851 in 2023, accounting for 44% of total customer-hours interrupted (5,648 of 12,877). Trees were the 2nd leading cause of customer-hours interrupted, accounting for 43% of total customer-hours interrupted (5,507 of 12,877). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 13% of total customer-hours interrupted (1,712 of 12,877).
- Of the 26 interruptions on this circuit, 13 affected 10 customers or less, with 7 being single customer outages.

Actions Taken:

- There are five 3-phase reclosers and three single-phase reclosers on the EJ West 03851. Two of the 3-phase reclosers are loop scheme sectionalizing reclosers and two others are open tie reclosers for the automated ties to the Northville 33252 and the Scofield Road 45053. The fifth 3-phase recloser is a radial recloser. These reclosers have proven to be beneficial to the reliability of the feeder since six of the mainline interruptions in 2023 were isolated by a recloser instead of affecting the entire feeder.

- A multi-year project to rebuild and convert the EJ West 03851, 3-phase mainline, to 13.2 kV and to create a 3-phase distribution tie with the Northville 33252 was completed in 2014 at a total cost of over \$2.4M. This project allowed the creation of a loop scheme between the EJ West 03851 and the Northville 33252 to automatically transfer 750 customers from the EJ West 03851 to the Northville 33252 should the station breaker lock-out or the 115 kV transmission system experience an interruption.
- A load transfer scheme was constructed in 2013 between the EJ West 03851 and the Scofield Road 45053 to automatically transfer 314 customers from the EJ West 03851 to the Scofield Road 45053 should the station breaker lock out or the 115 kV system transmission system experience an interruption.
- A single-phase feeder tie was constructed between the EJ West 03851 and the Corinth 38551 in 2021 which transferred about 2.5 miles of single-phase distribution and 27 customers from the EJ West 03851 to the Corinth 28551.
- Three of the original six single-phase reclosers on the EJ west 03851 have been replaced with TripSaver, cut-out mounted single-phase reclosers; two in 2017 and a third in 2021.
- A small capital project was completed in 2023 at a cost of \$102,038 to replace four sets of porcelain switches near the EJ West substation and to do extensive additional tree removal on the rear-lot feeder getaway.
- A maintenance foot patrol of the EJ West 03851 was completed in 2023 and all identified level 1 maintenance has been completed.
- Tree trimming and a hazard tree review, which removed 62 hazard trees and another 22 very tall White Pines, was completed on the EJ West 03851 in FY2024.

Action Plan:

- Complete all identified level 2 and 3 maintenance on the EJ West 03851.
- A small capital project has been designed and will be constructed during FY2025 to replace two sets of porcelain switches and do extensive tree trimming on Kathan Road.
- A small capital project has been designed and will be constructed during FY2025 to replace four sets of porcelain switches and do extensive tree trimming on Stewart's Bridge Road.

20. WILTON 32951 – 13.2 kV

Profile: 1,601 Customers, 77.2 Circuit Miles
Indices: CAIDI = 1.90, SAIFI = 2.75

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	8	26.67%	442	10.02%	859	10.23%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	8	26.67%	76	1.72%	282	3.36%
6	ACCIDENTS	0	0.00%	0	0.00%	0	0.00%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	1	3.33%	907	20.57%	1,675	19.95%
10	UNKNOWN	13	43.33%	2,985	67.69%	5,579	66.46%
Totals		30	100.00%	4,410	100.00%	8,394	100.00%

Problem Analysis:

- There were 30 interruptions on the Wilton 32951 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 30 events occurred at the distribution level.
- The distribution circuit breaker for the Wilton 32951 experienced four momentary operations in 2023.
- The distribution circuit breaker for the Wilton 32951 experienced 0 sustained operations (lockouts) in 2023.
- There were four 3-phase distribution recloser lockouts on the Wilton 32951 in 2023 three of which were from unknown causes while the fourth was caused by lightning. These interruptions accounted for 3,625 customers interrupted (82%) and 6,300 customer-hours of interruption (75%).
 - The first 3-phase distribution recloser lockout occurred on June 6th, 2023 when recloser R88029 on pole 1 Duncan Road locked open and after patrolling, no cause was found. This event accounted for 20% of the total customers interrupted (902 of 4,410), and 10% of the customer-hours interrupted (868 of 8,394).
 - The second 3-phase distribution recloser lockout occurred on August 4th, 2023 when recloser R88029 on pole 1 Duncan Road locked open due to a lightning strike at pole 7 on Lindsay Road. This event accounted for 21% of the total customers interrupted (907 of 4,410), and 20% of the customer-hours interrupted (1,675 of 8,394).

- The third 3-phase distribution recloser lockout occurred on September 18th, 2023 when recloser R88029 on pole 1 Duncan Road locked open and after patrolling, no cause was found. This event accounted for 21% of the total customers interrupted (908 of 4,410), and 10% of the customer-hours interrupted (1,639 of 8,394).
- The fourth 3-phase distribution recloser lockout occurred on November 27th, 2023 when recloser R88029 on pole 1 Duncan Road locked open and after patrolling, no cause was found, however, there was a high wind event occurring on that date. This event accounted for 21% of the total customers interrupted (908 of 4,410), and 25% of the customer-hours interrupted (2,119 of 8,394).
- Unknown were the leading cause of interruptions on the Wilton 32951 in 2023, accounting for 43% of total interruptions (13 of 30). Trees were the 2nd leading cause of interruptions, accounting for 27% of total interruptions (8 of 30). Equipment Failures were the 3rd leading cause of interruptions, accounting for 27% of total interruptions (8 of 30).
- Unknown were the leading cause of customers interrupted (CI) on the Wilton 32951 in 2023, accounting for 68% of total customers interrupted (2,985 of 4,410). Lightning were the 2nd leading cause of customers interrupted, accounting for 21% of total customers interrupted (907 of 4,410). Trees were the 3rd leading cause of customers interrupted, accounting for 10% of total customers interrupted (442 of 4,410).
- Unknown were the leading cause of customer-hours interrupted (CHI) on the Wilton 32951 in 2023, accounting for 66% of total customer-hours interrupted (5,579 of 8,394). Lightning were the 2nd leading cause of customer-hours interrupted, accounting for 20% of total customer-hours interrupted (1,675 of 8,394). Trees were the 3rd leading cause of customer-hours interrupted, accounting for 10% of total customer-hours interrupted (859 of 8,394).
- Of the 30 interruptions on this circuit, 24 affected 10 customers or less, with 12 being single customer outages.

Actions Taken:

- There is one 3-phase recloser and four cutout-mounted reclosers on the Wilton 32951. The 3-phase recloser, R88029 on pole 1 Duncan Road, was determined to be mis-operating and was replaced with a new 6IVS recloser in FY2024.
- The 10/12.5 MVA, 34.5/13.2 kV substation transformer in the Wilton substation failed in early 2015 and was replaced with a new 12/16/20 MVA, 34.5/13.2 kV substation transformer. Additionally, a 34.5 kV line recloser was installed on the source side of the new station transformer to replace the fuses which were used to protect the old transformer. The new substation transformer and recloser were placed in service in December of 2015.
- EMS was installed in the Wilton substation in 2019.
- A TripSaver, cut-out mounted single phase recloser was installed on Gordon Lane in 2021.
- Tree trimming and a hazard tree review, which removed 243 hazard trees and another 118 ash trees infested with the Emerald Ash Borer, was completed on the Wilton 32951 in FY2022.
- A maintenance foot patrol was completed on the Wilton 32951 in 2020 and all identified maintenance has been completed.

- A capital improvement project was completed in 2021 to install an automation scheme on the sub-transmission lines that serve Wilton. This scheme will enable automatic fault detection, sectionalizing, and restoration of the Wilton substation following interruptions on the sub-transmission lines.

Action Plan:

- A project is scheduled on the Wilton 32951 in FY2025 to rebuild approximately 0.3 miles of 3-phase mainline currently located rear lot, adjacent to Ballard Road along the edge of the road to accommodate easier access and improve reliability.
- A capital improvement project is budgeted for FY2026 to rebuild approximately 1.7 miles of the Wilton 32952 on State Highway 32 from single-phase 4.8 kV to 3-phase, 13.2 kV to relieve an overloaded single-phase ratio transformer and create a feeder tie to the Wilton 32951 at the far east end of both feeders.
- A project is budgeted for construction in FY2026 to rebuild approximately 1.1 miles of the Wilton 32951 on State Highway 50 to 3-phase, 13.2 kV to create a 3-phase feeder tie with the Wilton 32952.

3. ACTION PLAN SUMMARIES

a. SUMMARY OF ACTION PLANS FOR 2023 WORST PERFORMING CIRCUITS

Station	Feeder	Year	Action Plan	Est. Completion Date	Comments
Hague Road	41853	2023	Complete all level 2 maintenance.	8/2025	
Hague Road	41853	2023	Complete all level 3 maintenance.	8/2026	
Hague Road	41853	2023	Investigate R7534 lockouts.	3/2025	
Hague Road	41853	2023	Rebuild and Convert Alexandria Avenue.	3/2026	Project C081836
Hague Road	41853	2023	Investigate tree trimming cycle.	3/2025	
Hague Road	41853	2023	Construct fourth Hague Road feeder.	3/2027	
Port Henry	38551	2023	Complete all level 3 maintenance.	4/2025	
Port Henry	38551	2023	Convert Hamlet of Port Henry.	3/2026	Project C081529, WR# 30601236
Port Henry	38551	2022	Convert Broad Street to 13.2 kV.	3/2027	Project C081530
Chestertown	04252	2023	Complete all level 3 maintenance.	3/2025	
Chestertown	04252	2023	Complete patrol of Warrensburg-Chestertown #6.	3/2025	
Chestertown	04252	2023	County Highway 31 line extension.	9/2024	Project C089694, WR #30538254
Chestertown	04252	2023	Hayesburg Road rebuild and conversion.	3/2027	Project C081460
Schroon Lake	42951	2023	Install fault indicators on Chestertown-Schroon #3.	3/2025	
Schroon Lake	42951	2023	Relocate feeder mainline from Miller Road.	3/2026	Project C093776
St Johnsville	33551	2023	Complete all level 2 maintenance.	3/2024	
St Johnsville	33551	2023	Complete all level 3 maintenance.	3/2025	
St Johnsville	33551	2023	Tree trimming and hazard tree review.	3/2025	
St Johnsville	33551	2023	Construct State Highway 5S feeder tie to Salisbury 67853.	3/2025	Projects C091830 & C093981
Pottersville	42451	2023	Complete hazard tree review.	3/2027	
Pottersville	42451	2023	Construct single phase tie to Riparius.	3/2027	WR #13868440
Chestertown	04251	2023	Investigate tie to Warrensburg 32152.	3/2025	
Chestertown	04251	2023	Rebuild County Highway 8.	3/2025	Project C081454, WR# 30362261
Chestertown	04251	2023	Rebuild and Convert U.S. Highway 9	3/2026	Project C081455, WR# 30563168
Queensbury	29554	2023	Maintenance foot patrol.	3/2025	
Queensbury	29554	2023	Tree trimming and hazard tree review.	3/2025	
Scofield	45053	2023	Maintenance foot patrol.	3/2024	
Scofield	45053	2023	Tree trimming and hazard tree review.	3/2025	
Scofield	45053	2023	Harrisburg Road rebuild at Glass Creek Road.	4/2025	WR#30757165
Scofield	45053	2023	Harrisburg Road minor storm hardening.	4/2026	Project C057289, WR# 26513744
Gilmantown	15451	2023	Complete level 2 maintenance.	9/2025	
Gilmantown	15451	2023	Complete level 3 maintenance.	9/2026	
Gilmantown	15451	2023	Replace recloser R5902 on pole 256 State Hwy. 8.	3/2025	WR# 30939545
Gilmantown	15451	2023	Replace recloser R5903 on pole 2½ County Hwy. 24.	3/2025	WR #30940496
Gilmantown	15451	2023	Replace County Highway 24 ratio transformer.	3/2025	WR #30940472
Gilmantown	15451	2023	Rebuild & convert the north side of Lake Pleasant.	4/2026	Project C082694, WR# 29795772
Gilmantown	15451	2023	Gilmantown battery storage.	3/2028	Project C084937
Crown Point	24951	2023	Rebuild and convert Creek Road.	3/2025	Project C081827, WR #30361622
Crown Point	24951	2023	Rebuild and convert State Highway 9N.	3/2026	Project C081834
Hague Road	41852	2023	Lake George submarine cable replacement.	3/2027	Project C050522
Hague Road	41852	2023	State Route 22 rebuild and conversion.	3/2029	Project C050717, WR #16263343
Hague Road	41852	2023	Construct fourth Hague Road feeder.	3/2027	
Butler	36251	2023	Maintenance foot patrol.	3/2025	
Butler	36251	2023	Perform mid-cycle hazard tree review.	3/2025	
Butler	36251	2023	Rebuild and convert Mountain Road.	3/2027	C092242

Station	Feeder	Year	Action Plan	Est. Completion Date	Comments
Port Henry	38552	2023	Rebuild and convert Broad Street.	3/2027	C081530
East Springfield	47751	2023	Extend 3-phase 13.2 kV ~29,500' to build feeder tie between East Springfield 47751 and Sharon 36351.	3/2029	
East Springfield	47751	2023	Maintenance foot patrol	3/2026	
East Springfield	47751	2023	Remove ~1,600' of rear-lot on Whiteman Road.	3/2025	
Union Street	37654	2023	Brownell Corners Road conversion and rebuild	3/2026	
Union Street	37654	2023	Lincoln Hill Road rebuild Phase 2.	3/2028	
Union Street	37654	2023	Maintenance foot patrol	3/2025	
Burgoyne	33751	2023	Complete level 3 maintenance.	11/2024	
Burgoyne	33751	2023	Tree trimming and a hazard tree review.	3/2025	
Burgoyne	33751	2023	Replace voltage regulator on County Hwy. 44.	9/2024	WR #30461628
Burgoyne	33751	2023	Bean Hill Road rebuild/conversion.	3/2025	WR #30393188
Burgoyne	33751	2023	Construct new single-phase 7.62 kV on Lick Springs Rd.	3/2026	WR #26387081
Otten	41213	2023	Investigate 3-Phase extension on County Route 6.	3/2025	
Otten	41213	2023	Investigate options to reduce tree events.	3/2025	
EJ West	03851	2023	Complete level 2 maintenance.	8/2025	
EJ West	03851	2023	Complete level 3 maintenance.	8/2026	
EJ West	03851	2023	Replace switches and do tree trimming on Kathan Road.	3/2025	WR #30705437
EJ West	03851	2023	Switch replacement & tree trimming on Stewarts Bridge Road.	3/2025	Project C082234, WR #30750723
Wilton	32951	2023	Rebuild 0.3 miles of Ballard Road.	3/2025	Project C090565, WR #30585701
Wilton	32951	2023	Rebuild & convert State Highway 32.	3/2026	Project C019570, WR #30483647
Wilton	32951	2023	Rebuild & convert State Highway 50.	3/2026	Project C089187

b. STATUS OF ACTION PLANS FOR 2022 WORST PERFORMING CIRCUITS

Station	Feeder	Year	Action Plan	Est. Completion Date	Comments
Port Henry	38551	2022	Complete level 3 maintenance.	4/2025	On schedule.
Port Henry	38551	2022	Hazard tree review.	4/2024	Complete.
Port Henry	38551	2022	Convert Port Henry to 13.2 kV.	4/2025	On schedule.
Port Henry	38551	2022	Convert Broad Street to 13.2 kV.	4/2026	On schedule.
Port Henry	38551	2022	Ti-Whitehall #3 and Ti-Republic #2, 115 kV rebuild.	4/2024	Complete.
Schroon Lake	42951	2022	Complete level 3 maintenance.	4/2024	On schedule.
Schroon Lake	42951	2022	Hazard tree review to first protective device.	4/2024	On schedule.
Schroon Lake	42951	2022	Fuse CSP's.	4/2024	Completed 4/4/2023.
Schroon Lake	42951	2022	Voltage improvement & load balancing.	4/2024	Completed 5/15/2023.
Schroon Lake	42951	2022	Replace & add voltage regulators on U.S. Hwy. 9.	4/2024	Under construction.
Schroon Lake	42951	2022	Install fault indicators on Chestertown-Schroon #3, 34.5 kV line.	4/2024	
Gloversville	07253	2022	Construct Gloversville 53 – Stoner 51 feeder tie.	4/2025	On schedule.
Battenkill	34257	2022	Hazard tree review.	4/2026	On schedule.
Battenkill	34257	2022	Relocate rear lot distribution on Irwin Rd.	4/2024	Status 50 awaiting construction.
Battenkill	34257	2022	County Hwy. 52 Storm Hardening.	4/2024	Under construction.
Battenkill	34257	2022	Install cutout-mounted recloser(s)	4/2024	Status 40
Battenkill	34257	2022	Install sectionalizing switch(es)	4/2024	Status 20
Port Henry	38552	2022	Complete level 3 maintenance.	8/2024	On schedule.
Port Henry	38552	2022	Federal St. ratio relief.	9/2023	Completed 8/22/2023.
Port Henry	38552	2022	Convert Moriah, Harry Allen & Breed Hill Rds.	4/2024	Completed 6/23/2023.
Port Henry	38552	2022	Ti-Whitehall #3 and Ti-Republic #2, 115 kV rebuild.	4/2024	Complete.
Scofield	45053	2022	Hazard tree review	4/2025	On schedule.
Scofield	45053	2022	Harrisburg Road rebuild at Glass Creek Rd.	4/2025	In Design.
Pottersville	42451	2022	Complete level 3 maintenance.	8/2024	On schedule.
Pottersville	42451	2022	Hazard tree review	4/2025	On schedule.
Pottersville	42451	2022	Pottersville/Riparius single-phase tie	4/2025	On schedule.
Pottersville	42451	2022	Old Mill Lane cable replacement.	6/2023	Completed 5/12/2023.
Hague Road	41853	2022	Complete level 3 maintenance.	4/2024	On schedule.
Hague Road	41853	2022	Maintenance foot patrol.	12/2023	Completed 8/4/2023.
Hague Road	41853	2022	Hazard tree review.	12/2023	To be completed by 3/31/24
Hague Road	41853	2022	Rebuild & convert Alexandria Avenue.	4/2026	On schedule.
Hague Road	41853	2022	Ti-Whitehall #3 and Ti-Republic #2, 115 kV rebuild.	4/2024	Complete.
East Springfield	47751	2022	Complete level 3 maintenance.	4/2024	On schedule.
East Springfield	47751	2022	Whiteman Rd. rear lot removal.	12/2023	WR30659876, under construction.
East Springfield	47751	2022	Fuse coordination.	4/2024	Complete.
East Springfield	47751	2022	Monitor FY2022 vegetation work.	4/2024	Complete.
Wilton	32951	2022	Complete level 3 maintenance.	4/2024	On schedule.
Wilton	32951	2022	Relocate rear lot distribution along Ballard Rd.	4/2024	Awaiting DOT permit.
Wilton	32951	2022	Rebuild State Hwy 32 to create a tie with Wilton 52.	4/2024	Delayed until FY25.
Wilton	32951	2022	Rebuild State Hwy 50 to create a tie with Wilton 52.	4/2026	On schedule.
Wilton	32951	2022	Fuse coordination.	4/2024	Status 50
Wilton	32951	2022	Install cutout-mounted recloser(s)	4/2024	Status 50
Wilton	32951	2022	Install sectionalizing switch(es)	4/2024	Status 20
Ashley	33151	2022	Complete level 2 maintenance.	8/2023	On schedule.

Station	Feeder	Year	Action Plan	Est. Completion Date	Comments
Ashley	33151	2022	Complete level 3 maintenance.	8/2025	On schedule.
Ashley	33151	2022	Tree trimming and hazard tree review.	4/2024	On schedule.
Ashley	33151	2022	State Hwy. 149 single-phase distribution relocation.	4/2024	Design complete. Awaiting Engineering approval.
Ashley	33151	2022	Eldridge Rd. single-phase distribution construction.	4/2025	Design complete. In ROW.
Ashley	33151	2022	Cedar 51 to Ashley 51 feeder tie on State Hwy 149.	4/2025	On schedule.
Burgoyne	33751	2022	Complete level 2 maintenance.	6/2023	On schedule.
Burgoyne	33751	2022	Complete level 3 maintenance.	11/2024	On schedule.
Burgoyne	33751	2022	Hazard tree review.	4/2024	On schedule.
Burgoyne	33751	2022	Install recloser on County Hwy. 42.	4/2023	Completed 5/10/2023.
Burgoyne	33751	2022	State Hwy. 40 rebuild & conversion.	9/2023	Complete.
Burgoyne	33751	2022	County Hwy. 42 regulator replacement.	6/2023	Under construction.
Burgoyne	33751	2022	Convert Bean Hill Rd. to split West Rd. tap.	4/2024	On schedule.
Burgoyne	33751	2022	Rebuilt & convert Lick Springs Rd.	4/2025	On schedule.
Brook Road	36952	2022	Complete level 2 maintenance.	4/2024	Complete.
Brook Road	36952	2022	Complete level 3 maintenance.	4/2024	On schedule.
Brook Road	36952	2022	Tree trimming and hazard tree review.	12/2023	Complete.
Brook Road	36952	2022	Fuse coordination.	4/2024	Status 50
Brook Road	36952	2022	Install three-phase recloser(s)	4/2024	Status 50
Brook Road	36952	2022	Rebuild Greenfield Ave. to create a tie with Ballston 53.	4/2029	On schedule.
Union Street	37653	2022	Complete level 3 maintenance.	4/2024	Complete.
Union Street	37653	2022	Tree trimming and hazard tree review.	12/2023	Complete.
Union Street	37653	2022	Relocate rear lot distribution to Mc Millan Rd.	4/2025	On schedule.
Union Street	37653	2022	Fuse coordination.	4/2024	Status 20
Union Street	37653	2022	Install three-phase recloser(s)	4/2024	Status 20
Gilmantown	15451	2022	Complete level 3 maintenance.	4/2024	On schedule.
Gilmantown	15451	2022	Hazard tree review to the first protective device.	4/2024	On schedule.
Gilmantown	15451	2022	Replace State Hwy. 8, pole 253 1/2 ratio transformer.	6/2023	Completed 6/30/2023.
Gilmantown	15451	2022	Replace State Hwy. 8, pole 256 recloser.	4/2024	On schedule.
Gilmantown	15451	2022	Replace County Hwy. 24 ratio and recloser.	4/2024	On schedule.
Gilmantown	15451	2022	Rebuild & convert the north side of Lake Pleasant.	4/2026	On schedule.
Gilmantown	15451	2022	Gilmantown battery storage.	12/2028	On schedule.
Indian Lake	31076	2022	Complete level 3 maintenance.	10/2023	Complete.
Indian Lake	31076	2022	Hazard tree review.	4/2025	On schedule.
Indian Lake	31076	2022	Fuse CSP's on State Hwy. 28.	9/2023	Awaiting local permit.
Chestertown	04251	2022	Complete level 3 maintenance.	9/2024	On schedule.
Chestertown	04251	2022	Hazard tree review to the first protective device.	4/2024	On schedule.
Chestertown	04251	2022	Investigate building three-phase tie to Warrensburg 52.	4/2024	On schedule.
Chestertown	04251	2022	Rebuild County Hwy. 8.	4/2024	Delayed to FY25.
Chestertown	04251	2022	U.S. Hwy. 9 rebuild/conversion.	4/2025	On schedule.
Sharon	36351	2022	Complete level 3 maintenance.	4/2024	On schedule.
Sharon	36351	2022	Route 20 4.8 kV conversion.	4/2025	On schedule.
Sharon	36351	2022	Hoose Rd. rear lot removal.	4/2026	On schedule.
Hudson Falls	08851	2022	Complete level 3 maintenance.	2/2025	On schedule.
Hudson Falls	08851	2022	Install recloser on Gibson St.	12/2023	Completed 10/13/2023.

Station	Feeder	Year	Action Plan	Est. Completion Date	Comments
Hudson Falls	08851	2022	Williams St. gap closing and load transfer.	4/2024	Under construction.
Hudson Falls	08851	2022	Denis St. gap closing and load transfer.	4/2024	On schedule.
Weibel Avenue	41551	2022	Tree trimming and a hazard tree review.	12/2023	Complete.
Weibel Avenue	41551	2022	State Highway 29 overloaded ratio transformer relief.	4/2024	Status 60
Weibel Avenue	41551	2022	Fuse coordination.	4/2024	Status 50
Weibel Avenue	41551	2022	Install sectionalizing switch(es).	4/2024	Status 20 Status 50
Weibel Avenue	41551	2022	Burgoyne Rd. rear lot distribution removal.	4/2024	Status 20
Weibel Avenue	41551	2022	State Highway 29 gap closing.	4/2024	Status 20

I. NORTHERN REGION

1. OPERATING REGIONAL PERFORMANCE

a. HISTORIC CAIDI AND SAIFI INDICES

IDS Info:

	2023	2022	2021	2020	2019	2018
CAIDI (Threshold 2.111)	1.92	1.49	1.81	2.07	2.00	1.84
SAIFI (Threshold 1.412)	1.08	1.61	1.29	1.28	1.15	1.34
SAIDI	2.06	2.41	2.34	2.65	2.29	2.47
Interruptions	1,544	1,644	1,717	1,797	1,673	1,683
Customers Interrupted	149,646	224,254	179,190	176,759	157,296	182,717
Customers Hours Interrupted	286,629	334,798	323,604	365,060	314,044	336,850
Customers Served	138,940	138,947	138,437	137,722	137,014	136,426
Customers Per Interruption	96.92	136.41	104.36	98.36	94.02	108.57
Availability Index	99.9765	99.9725	99.9733	99.9698	99.9738	99.9718
Interruptions/1000 Customers	11.11	11.83	12.40	13.05	12.21	12.34

b. DISCUSSION OF REGIONAL PERFORMANCE

In 2023, the Northern Region met its CAIDI reliability target and met its SAIFI reliability target as set forth by the New York Public Service Commission (PSC). The final System Average Interruption Frequency Index (SAIFI) result was 1.08 interruptions, 24% below the PSC goal of 1.412 interruptions. As shown in the table above, the Customer Average Interruption Duration index (CAIDI) was 1.92 in 2023, 9% below the PSC's regional target of 2.111 hours.

The 2023 CAIDI result was 29% above the 2022 result of 1.49 hours, and 5% above the previous 5-year average of 1.82 hours. The 2023 SAIFI was 33% below the 2022 result of 1.61 interruptions, and 19% below the previous 5-year average of 1.34 interruptions.

In 2023, excluding major storms, the Northern Region experienced 18 transmission interruptions. These interruptions accounted for 1% of the region's total interruptions (18 of 1,544), 24% of the region's total customers interrupted (CI), (35,598 of 149,646), and 17% (49,110 of 286,627) of the region's total customer-hours interrupted (CHI). Overall, transmission interruptions had a CAIDI of 1.38 hours, and a SAIFI of 0.26 interruptions.

The number of transmission-related interruptions increased from 15 in 2022 to 18 in 2023 (an increase of 20%). The number of customers interrupted decreased from 52,823 in 2022, to 35,598 in 2023 (a decrease of 33%), while the customer-hours interrupted increased from 28,469 in 2022, to 49,110 in 2023 (an increase of 73%).

In 2023, excluding major storms, the Northern Region experienced 8 substation interruptions. These interruptions accounted for 1% of the region's total interruptions (8 of 1,544), 8% of the region's total customers interrupted, (12,649 of 149,646), and 13% (38,433 of 286,627) of the region's total customer-hours interrupted. Overall, substation interruptions had a CAIDI of 3.04 hours, and a SAIFI of 0.09 interruptions.

The number of substation-related interruptions decreased from 12 to 8 from 2022 to 2023 (a decrease of 33%). The number of customers interrupted decreased from 30,552 in 2022, to 12,649 in 2023 (a decrease of 59%), while the customer-hours interrupted decreased from 70,437 in 2022, to 38,433 in 2023 (a decrease of 45%).

In 2023, excluding major storms, the Northern Region experienced 1,518 distribution interruptions. These interruptions accounted for 98% of the region's total interruptions (1,518 of 1,544), 68% of the region's total customers interrupted, (101,399 of 149,646), and 69% (199,084 of 286,627) of the region's total customer-hours interrupted. Overall, distribution interruptions had a CAIDI of 1.96 hours, and a SAIFI of 0.73 interruptions.

The number of distribution-related interruptions decreased from 1,617 to 1,518 from 2022 to 2023 (a decrease of 6%). The number of customers interrupted decreased from 140,879 in 2022, to 101,399 in 2023 (a decrease of 28%), while the customer-hours interrupted decreased from 235,892 in 2022, to 199,084 in 2023 (a decrease of 16%).

c. MONTHLY CAIDI AND SAIFI GRAPHS

The graphs on the following page show the monthly CAIDI and Year-to-Date SAIFI for the Northern Region for 2023 (Excluding Major Storms).

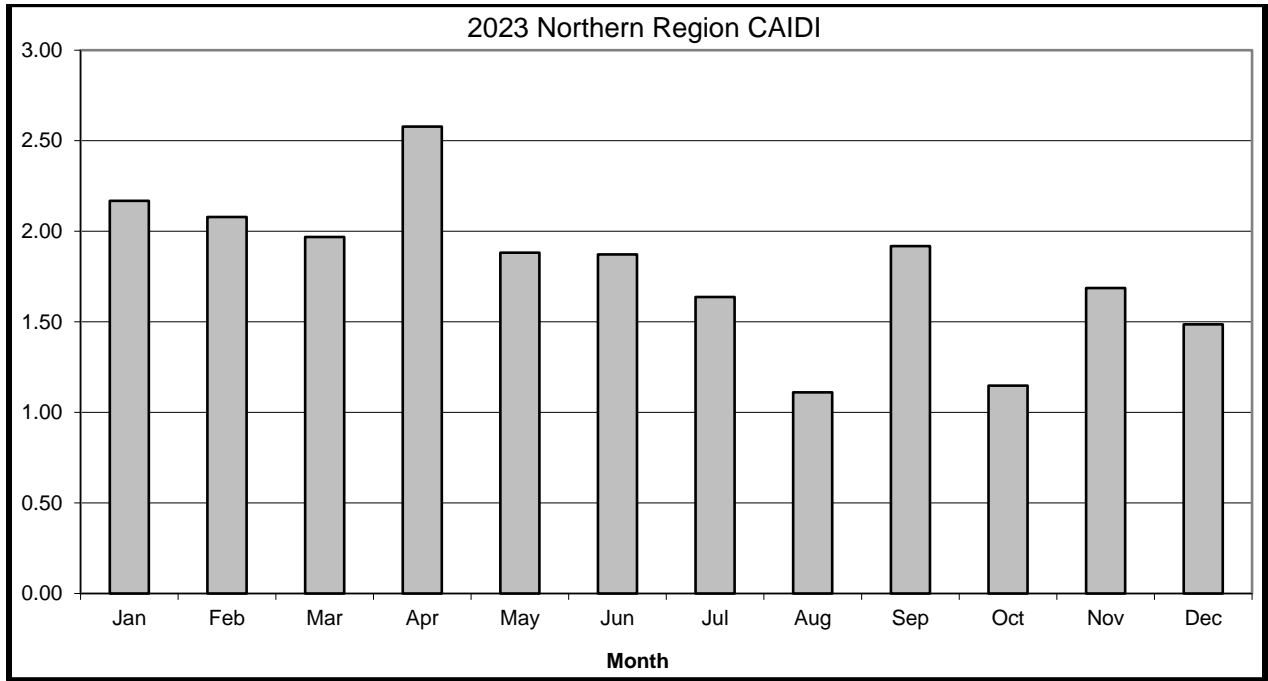
The CAIDI graph shows the individual CAIDI by month. The Northern Region was below the CAIDI threshold of 2.111 hours for 10 of the 12 months in 2023, with January and April being the two months above threshold.

- April was the highest month with a CAIDI of 2.58 hours, accounting for 9% of the customers interrupted (12,903 of 149,646) and 9% of the customer-hours interrupted (25,400 of 286,629). The Northern Region ended the year with an overall CAIDI of 1.92.

The SAIFI graph shows the cumulative SAIFI by month. The Northern Region ended the year at 1.08 interruptions, below the SAIFI threshold of 1.412 interruptions.

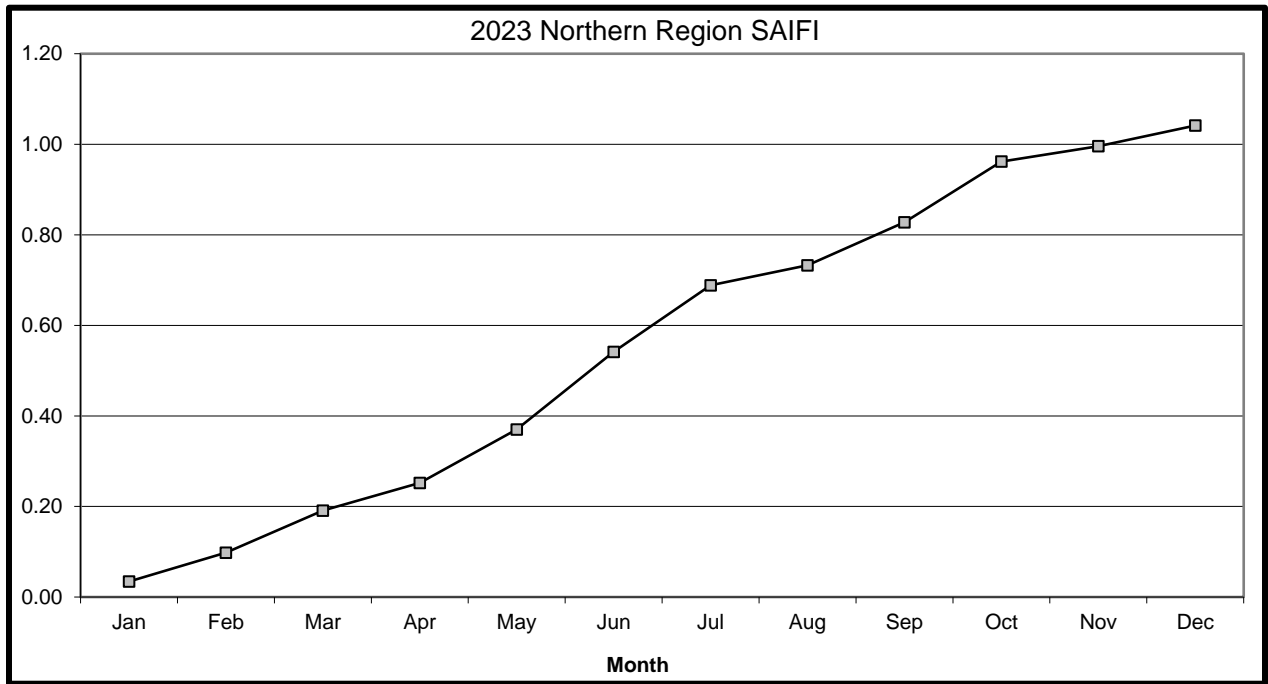
- Excluding Major Storms, there were 8,471 customers interrupted from May to June. Between May through June SAIFI increased by 0.17. This is mainly due to the 2,698 customer interruptions caused by trees.

GRAPH OF MONTHLY CAIDI AND SAIFI FOR THE NORTHERN REGION



PSC CAIDI Goal:	
Threshold	2.111
2023 Actual	1.92

PSC SAIFI Goal:	
Threshold	1.412
2023 Actual	1.08



d. PSC CAUSE CODES

1) Number of Events by Cause – Historical

IDS Info:

Cause Code	2023	2022	2021	2020	2019	2018
01 Major Storms	74	1,286	670	945	1,144	180
02 Tree Contacts	471	433	536	480	504	651
03 Overloads	3	6	8	5	5	7
04 Oper. Error	6	2	8	3	6	2
05 Equipment	362	360	382	425	408	454
06 Accidents	266	350	284	248	262	250
07 Prearranged	49	52	62	48	35	23
08 Cust. Equip.	-	-	-	-	-	-
09 Lightning	126	127	124	115	63	118
10 Unknown	261	314	313	349	400	326
Total	1,618	2,930	2,387	1,898	2,618	2,827

2) Customers Interrupted by Cause – Historical

IDS Info:

Cause Code	2023	2022	2021	2020	2019	2018
01 Major Storms	7,643	102,811	65,782	67,523	84,763	24,128
02 Tree Contacts	34,863	50,158	50,011	51,796	37,260	63,157
03 Overloads	337	428	247	10	18	4,534
04 Oper. Error	1,960	14	9,352	216	199	1,227
05 Equipment	41,693	104,230	53,029	50,671	75,891	57,339
06 Accidents	29,628	43,175	28,386	23,453	21,395	21,261
07 Prearranged	7,433	9,326	11,909	4,693	11,819	18,165
08 Cust. Equip.	-	-	-	-	-	-
09 Lightning	15,081	3,782	4,583	3,459	3,710	5,987
10 Unknown	18,651	13,141	21,673	22,998	32,425	29,338
Total	157,289	327,065	244,972	186,042	224,819	267,480

3) Customer-Hours Interrupted by Cause – Historical

IDS Info:

Cause Code	2023	2022	2021	2020	2019	2018
01 Major Storms	24,049	543,011	585,445	598,233	694,029	108,835
02 Tree Contacts	72,815	95,121	111,124	105,293	94,622	158,959
03 Overloads	609	827	161	30	79	24,363
04 Oper. Error	531	17	7,022	121	331	616
05 Equipment	97,188	121,165	110,743	98,734	134,501	168,457
06 Accidents	56,156	73,153	35,798	59,150	38,125	33,613
07 Prearranged	13,604	16,618	11,707	4,463	19,859	12,312
08 Cust. Equip.	-	-	-	-	-	-
09 Lightning	25,623	6,184	9,314	7,427	5,054	10,919
10 Unknown	20,101	21,714	37,737	38,826	44,277	60,133
Total	310,676	877,810	909,050	393,578	912,278	1,030,877

4) Interruptions, Customers Interrupted and Customer-Hours Interrupted – 2023

Cause Code	Interruptions		Customers Interrupted		Customer-hours Interrupted	
	Number	% Total	Number	% Total	Number	% Total
01 Major Storms	74	4.6%	7,643	4.9%	24,049	7.7%
02 Tree Contacts	471	29.1%	34,863	22.2%	72,815	23.4%
03 Overloads	3	0.2%	337	0.2%	609	0.2%
04 Oper. Error	6	0.4%	1,960	1.2%	531	0.2%
05 Equipment	362	22.4%	41,693	26.5%	97,188	31.3%
06 Accidents	266	16.4%	29,628	18.8%	56,156	18.1%
07 Prearranged	49	3.0%	7,433	4.7%	13,604	4.4%
08 Cust. Equip.	0	0.0%	0	0.0%	0	0.0%
09 Lightning	126	7.8%	15,081	9.6%	25,623	8.2%
10 Unknown	261	16.1%	18,651	11.9%	20,101	6.5%
Total	1,618	100.0%	157,289	100.0%	310,676	100.0%

e. **INTERRUPTION REVIEW BY PSC CAUSE CODES**

Cause Code 01 - Major Storms

In 2023, Major Storms accounted for 5% of interruptions, 5% of customers interrupted, and 8% of Customer-Hours Interrupted.

Interruptions due to Major Storm were down 94% from 2022, and down 91% over the 5-year average. Customers interrupted due to Major Storms were down 93% from 2022, and down 88% over the 5-year average. Customer-Hours interrupted were down 96% from 2022 and down 95% over the 5-year average.

The remaining PSC code descriptions do not include Major Storms in the percentages.

Cause Code 02 - Tree Contacts

In 2023, Tree Contacts accounted for 31% of interruptions, 23% of customers interrupted, and 25% of Customer-Hours Interrupted.

Interruptions due to Tree Contacts were up 9% from 2022, and down 6% over the 5-year average. Customers interrupted due to Tree Contacts were down 30% from 2022, and down 26% over the 5-year average. Customer-Hours interrupted were down 23% from 2022 and down 30% over the 5-year average.

Tree Contacts were the largest cause of interruptions in 2023.

Cause Code 03 - Overloads

In 2023, Overloads accounted for 0% of interruptions, 0% of customers interrupted, and 0% of Customer-Hours Interrupted.

Interruptions due to Overloads were down 50% from 2022, and down 57% over the 5-year average. Customers interrupted due to Overloads were down 21% from 2022, and up 126% over the 5-year average. Customer-Hours interrupted were down 26% from 2022 and up 146% over the 5-year average.

Overloads were the 8th largest cause of interruptions in 2023.

Cause Code 04 - Operator Error

In 2023, Operator Errors accounted for 0% of interruptions, 1% of customers interrupted, and 0% of Customer-Hours Interrupted.

Interruptions due to Operator Error were up 200% from 2022, and up 20% over the 5-year average. Customers interrupted due to Operator Error were up 13900% from 2022, and down 33% over the 5-year average. Customer-Hours interrupted were up 3023% from 2022 and down 76% over the 5-year average.

Operator Error was the 7th largest cause of interruptions in 2023.

Cause Code 05 - Equipment Failure

In 2023, Equipment Failure accounted for 23% of interruptions, 28% of customers interrupted, and 34% of Customer-Hours Interrupted.

Interruptions due to Equipment Failure were up 1% from 2022, and down 9% over the 5-year average. Customers interrupted due to Equipment Failure were down 60% from 2022, and down 38% over the 5-year average. Customer-Hours interrupted were down 20% from 2022 and down 17% over the 5-year average.

Equipment Failures were the 2nd largest cause of interruptions in 2023.

Cause Code 06 - Accidents

In 2023, Accidents accounted for 17% of interruptions, 20% of customers interrupted, and 20% of Customer-Hours Interrupted.

Interruptions due to Accidents were down 24% from 2022, and down 8% over the 5-year average. Customers interrupted due to Accidents were down 31% from 2022, and down 3% over the 5-year average. Customer-Hours interrupted were down 23% from 2022 and up 0% over the 5-year average.

Accidents were the 3rd largest cause of interruptions in 2023.

Cause Code 07 - Prearranged

In 2023, Prearranged accounted for 3% of interruptions, 5% of customers interrupted, and 5% of Customer-Hours Interrupted.

Interruptions due to Prearranged were down 6% from 2022, and down 6% over the 5-year average. Customers interrupted due to Prearranged were down 20% from 2022, and down 24% over the 5-year average. Customer-Hours interrupted were down 18% from 2022 and up 11% over the 5-year average.

Prearranged was the 6th largest cause of interruptions in 2023.

Cause Code 08 - Customer Equipment

There were no Customer Equipment interruptions in 2023.

Cause Code 09 - Lightning

In 2023, Lightning accounted for 8% of interruptions, 10% of customers interrupted, and 9% of Customer-Hours Interrupted.

Interruptions due to Lightning were down 1% from 2022, and up 25% over the 5-year average. Customers interrupted due to Lightning were up 299% from 2022, and up 305% over the 5-year average. Customer-Hours interrupted were up 314% from 2022 and up 297% over the 5-year average.

Lightning was the 5th largest cause of interruptions in 2023.

Cause Code 10 - Unknown

In 2023, Unknown causes accounted for 17% of interruptions, 12% of customers interrupted, and 7% of Customer-Hours Interrupted.

Interruptions due to Unknown causes were down 17% from 2022, and down 25% over the 5-year average. Customers interrupted due to Unknown causes were up 42% from 2022, and down 17% over the 5-year average. Customer-Hours interrupted were down 7% from 2022 and down 45% over the 5-year average.

Unknown causes were the 4th largest cause of interruptions in 2023.

f. DISCUSSION OF REGIONAL CAPEX PROJECTS WITH 2021/2022 SPENDS:

The Northern Region continues to work on capital projects in order to maintain customer satisfaction and future reliability. Some specific projects that were constructed in either CY23 or will be constructed in CY24 are listed below, in addition to a description of a major infrastructure project.

There are load relief projects scheduled to be completed throughout the Northern Region. Most of these load relief projects are ratio transformer replacements or voltage conversions. Line reconductoring is also included in the voltage conversions where appropriate.

There are projects where lines are being rebuilt or reconductored. These projects are either the result of the company's Storm Hardening program, engineering reliability reviews (ERRs) conducted on the Worst Performing Circuits, or are the responses to customer inquiries via the Quick Resolution System (QRS).

Major Capital Projects for Northern Region:

Region	Project Name	Project Type	Fin Sys Proj. No.	Finish	Total Spend
Northern	95756 Linden Street - Rebuild		C052369	7/28/2023	\$1,261,000
Northern	Dexter Rebuild 72661		C089370	12/13/2023	\$1,000,000

g. DISCUSSION OF REGIONAL PERFORMANCE OF LVAC NETWORK DISTRIBUTION SYSTEM(S):

City of Watertown – Mill Street LVAC Network

The Watertown LVAC Network serves the Public Square area of the City of Watertown as well as one or two blocks of the following streets: Court Street, Arsenal Street, Stone Street, Washington Street, Clinton Street, Franklin Street, and State Street. This network is supplied by 6 – 4.8kV feeders, all from the Mill Street Substation. This system serves approximately 667 customer accounts and experienced a peak load of approximately 3.621 MVA in 2023.

The table below lists the breaker operations in 2023 that were a result of a fault and/or failure.

Substation	Feeder Number	Breaker Number	# Breaker Operations from Failures
Mill Street	74860	R600	0
Mill Street	74871	R710	0
Mill Street	74872	R720	0
Mill Street	74873	R730	0
Mill Street	74874	R740	0
Mill Street	74875	R750	0

As shown above, the Watertown LVAC Network experienced zero feeder outages in 2023. At no time was the network operated beyond its single contingency (N-1) design criteria.

There were no major events associated with the network in 2023.

Annual maintenance consisted of manhole and vault inspections, network protector and transformer inspections and network protector operation checks.

Equipment maintenance consisted of manhole and vault rebuilds, network protector and transformer replacements.

There are two major projects being worked upon:

1. Mill Street - 2014 Upgrades - N-1 Project

Resulting from the 04/2014 Network Study,

- 4.8kV Feeder 74875 was extended into the network and now is the 6th network feeder where transformers N7403, N7324, City Hall, & Flower Library Customer-owned Vault 104 have been transferred.
- The transfer of Vault N7106 from Feeder 74871 to 74874 has been completed.

- The reconfiguration of non-standard switching arrangement within Vault 104 to a padmount switchgear arrangement has been completed.

Upon completion of the addition of automatic reclosing relays associated with feeder breakers R720 & R750, then 4.8kV Network Feeders 74872 and 74875 are to be reconnected onto Bus "E" to eliminate the potential loss of 3 network feeders for either a 4.8kV station Bus "C" or a Bus "D" failure.

These network feeder transfers also involve two overhead feeders where one will be placed on 4.8kV station Bus "C" & another on Bus "D" which will provide an additional benefit of eliminating the potential loss of all four overhead feeders for a 4.8kV station Bus "E" failure.

A review of the Mill Street station feeders' relay settings has begun to determine if the present operational practice of opening the bus tie breakers can be eliminated for Arc Flash Mitigation at the station.

The project started in FY2020 and is expected to complete in FY2025.

2. Mill Street - 2014 Upgrades - N-2 Project

Resulting from the 04/2014 Network Study, two 500kVA network transformers are proposed to be installed to support the general network during a double contingency condition:

- (1) One near the corner of Mill Street & Factory Avenue.
- (2) One near the corner of Franklin Street & Public Square.

The project is scheduled to start in FY2026.

2. OPERATING CIRCUIT LISTS

This section includes the following three tables and Worst Performing Circuit analysis for the Northern Region.

- a. Worst Performing Circuit List
- b. Worst Performing Circuits with 3 Year History for CAIDI and SAIFI Indices
- c. Worst Performing Circuits by number of Momentary Interruptions

a. NATIONAL GRID WORST PERFORMING CIRCUIT LIST

NORTHERN REGION

FEEDER #	A CUST. SERVED	B TOTAL INTER.	C # CUST. INTER.	D CUST. HRS. INTER.	C/A SAIFI	D/A SAIDI	D/C CAIDI	NUMBER OF MOMENTARIES
LOWVILLE 77354	2,775	69	9,745	23,468	3.51	8.46	2.41	3
N GOUVERNEUR 98352	1,609	24	3,542	16,774	2.20	10.43	4.74	1
STAR LAKE 72761	825	17	3,067	8,661	3.72	10.50	2.82	2
E WATERTOWN 81757	1,851	38	5,374	6,988	2.90	3.78	1.30	4
BRADY 95756	1,267	23	3,318	5,100	2.62	4.03	1.54	0
FORT COVINGTON 89642	893	20	2,158	4,568	2.42	5.12	2.12	2
FINE 97866	375	12	1,503	4,247	4.01	11.33	2.83	1
BRADY 95757	660	13	2,065	4,250	3.13	6.44	2.06	2
LYME 73352	2,899	24	3,627	12,719	1.25	4.39	3.51	0
PIERCEFIELD 82961	378	9	1,532	5,144	4.05	13.61	3.36	1
STAR LAKE 72762	667	10	2,335	5,357	3.50	8.03	2.29	2
SOUTH PHILADELPHIA 76462	471	13	1,446	3,128	3.07	6.64	2.16	1
ANTWERP 80161	563	8	1,247	10,101	2.21	17.94	8.10	3
MALONE 89552	1,086	12	3,438	4,477	3.17	4.12	1.30	1
THOUSAND ISL 81452	2,195	25	3,204	6,768	1.46	3.08	2.11	0

Regional Goals:
CAIDI 2.111
SAIFI 1.412

b. NATIONAL GRID WORST PERFORMING CIRCUITS WITH 3 YEAR HISTORY FOR CAIDI AND SAIFI INDICES

NORTHERN REGION

FEEDER #	2023 CAIDI	2022 CAIDI	2021 CAIDI	2020 CAIDI	2023 SAIFI	2022 SAIFI	2021 SAIFI	2020 SAIFI
LOWVILLE 77354	2.41	1.03	1.50	1.80	3.51	2.12	3.58	2.70
N GOUVERNEUR 98352	4.74	1.76	2.79	1.38	2.20	2.77	1.61	1.50
STAR LAKE 72761	2.82	1.14	5.19	5.64	3.72	2.72	0.74	1.49
E WATERTOWN 81757	1.30	0.87	3.66	2.18	2.90	2.61	0.25	0.46
BRADY 95756	1.54	1.36	0.99	4.69	2.62	1.48	4.86	2.50
FORT COVINGTON 89642	2.12	2.58	1.60	0.71	2.42	0.73	1.61	4.57
FINE 97866	2.83	0.70	4.11	2.27	4.01	2.09	1.98	0.58
BRADY 95757	2.06	6.34	0.91	1.83	3.13	0.44	4.54	0.04
LYME 73352	3.51	1.10	0.76	2.67	1.25	1.38	1.33	1.78
PIERCEFIELD 82961	3.36	2.09	3.34	4.40	4.05	0.87	1.14	1.36
STAR LAKE 72762	2.29	1.75	1.38	4.67	3.50	4.55	2.91	2.26
SOUTH PHILADELPHIA 76462	2.16	0.33	3.68	2.50	3.07	2.08	0.08	3.48
ANTWERP 80161	8.10	1.78	1.66	3.22	2.21	2.09	0.02	3.06
MALONE 89552	1.30	0.78	3.72	4.64	3.17	2.15	0.09	1.12
THOUSAND ISL 81452	2.11	2.42	2.45	2.50	1.46	3.37	1.65	4.68

Regional Goals:
CAIDI 2.111
SAIFI 1.412

c. NATIONAL GRID WORST PERFORMING CIRCUITS BY # OF MOMENTARY INTERRUPTIONS

NORTHERN REGION

Feeders			Customer Momentaries				Ranks		
Volts (kV)	Station Name	Ckt/F No.	Substation	Transmission	Distribution	Total	Within Region	Within System	Reliability Ranking
No circuits experienced 10 or more momentary interruptions in 2023.									

d. WORST PERFORMING CIRCUIT ANALYSIS

For 2023, the Company identified fourteen Worst Performing Circuits in the Northern Region. The list consists of nine 13.2kV circuits and six 4.8kV circuits.

For the Northern Region, the CAIDI threshold is 2.111 hours and the SAIFI threshold is 1.412 interruptions.

1. LOWVILLE 77354 - 13.2kV

Profile: 2,775 Customers, 176.9 Circuit Miles
 Indices: CAIDI = 2.41, SAIFI = 3.51

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	29	42.03%	3,803	39.03%	9,037	38.51%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	9	13.04%	597	6.13%	1,144	4.87%
6	ACCIDENTS	12	17.39%	1,358	13.94%	6,385	27.21%
7	PREARRANGED	1	1.45%	737	7.56%	1,500	6.39%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	1	1.45%	2,790	28.63%	4,371	18.63%
10	UNKNOWN	17	24.64%	460	4.72%	1,032	4.40%
Totals		69	100.00%	9,745	100.00%	23,468	100.00%

Problem Analysis:

- There were 69 interruptions on the Lowville 77354 in 2023.
- There was 1 transmission interruption.
 - This Transmission interruption occurred on August 07, 2023, coded as a cause of lightning (PSC cause code 09). This lockout accounted for 29% of the total customers interrupted (2,790 of 9,745), and 19% of the total customer-hours interrupted (4,371 of 23,468). A lightning strike locked out the #8 line.
- There were no substation interruptions.
- The remaining 68 events occurred at the distribution level.
- The distribution circuit breaker for the Lowville 77354 experienced 3 momentary operations in 2023.
- The distribution circuit breaker for the Lowville 77354 experienced 0 sustained operations (lockouts) in 2023.
- Trees were the leading cause of interruptions on the Lowville 77354 in 2023, accounting for 42% of total interruptions (29 of 69). Unknown were the 2nd leading cause of interruptions, accounting for 25% of total interruptions (17 of 69). Accidents were the 3rd leading cause of interruptions, accounting for 17% of total interruptions (12 of 69).
- Trees were the leading cause of customers interrupted (CI) on the Lowville 77354 in 2023, accounting for 39% of total customers interrupted (3,803 of 9,745). Lightning were the 2nd leading cause of customers interrupted, accounting for 29% of total customers interrupted (2,790 of 9,745). Accidents were the 3rd leading cause of customers interrupted, accounting for 14% of total customers interrupted (1,358 of 9,745).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Lowville 77354 in 2023, accounting for 39% of total customer-hours interrupted (9,037 of 23,468).

Accidents were the 2nd leading cause of customer-hours interrupted, accounting for 27% of total customer-hours interrupted (6,385 of 23,468). Lightning were the 3rd leading cause of customer-hours interrupted, accounting for 19% of total customer-hours interrupted (4,371 of 23,468).

- Of the 69 interruptions on this circuit, 23 affected 10 customers or less, with 10 being single customer outages.

Action Taken:

- In 2020, the Regional Forestry Department completed scheduled distribution cycle pruning.
- In October 2021, an I&M foot patrol was completed.
- All level 2 maintenance work identified from the feeder inspection was completed in 2022.

Action Plan:

- The next scheduled distribution cycle pruning will be completed in 2026.
- All level 3 maintenance work identified from the feeder inspection will be completed in 2024.
- This feeder is scheduled to be inspected again in 2026.
- No further action is required.

2. N GOUVERNEUR 98352 - 13.2kV

Profile: 1,609 Customers, 122.6 Circuit Miles
 Indices: CAIDI = 4.74, SAIFI = 2.20

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	6	25.00%	182	5.14%	594	3.54%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	6	25.00%	1,669	47.12%	11,506	68.59%
6	ACCIDENTS	3	12.50%	917	25.89%	2,079	12.39%
7	PREARRANGED	3	12.50%	734	20.72%	2,511	14.97%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	2	8.33%	2	0.06%	8	0.05%
10	UNKNOWN	4	16.67%	38	1.07%	76	0.46%
Totals		24	100.00%	3,542	100.00%	16,774	100.00%

Problem Analysis:

- There were 24 interruptions on the N Gouverneur 98352 in 2023.
- There was 1 transmission interruption.
 - This Transmission interruption occurred on October 03, 2023, coded as a cause of no cause associated (PSC cause code 07). This lockout accounted for 20% of the total customers interrupted (725 of 3,542), and 15% of the total customer-hours interrupted (2,493 of 16,774). This was a planned outage to perform work on the Battle Hill #8 line.
- There was 1 substation interruption.
 - This Substation interruption occurred on January 25, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 45% of the total customers interrupted (1,607 of 3,542), and 67% of the total customer-hours interrupted (11,284 of 16,774). This substation interruption is due to an insulator failure.
- The remaining 22 events occurred at the distribution level.
- The distribution circuit breaker for the N Gouverneur 98352 experienced 1 momentary operation in 2023.
- The distribution circuit breaker for the N Gouverneur 98352 experienced 0 sustained operations (lockouts) in 2023.
- Trees were the leading cause of interruptions on the N Gouverneur 98352 in 2023, accounting for 25% of total interruptions (6 of 24). Equipment Failures were the 2nd leading cause of interruptions, accounting for 25% of total interruptions (6 of 24). Unknown were the 3rd leading cause of interruptions, accounting for 17% of total interruptions (4 of 24).

- Equipment Failures were the leading cause of customers interrupted (CI) on the N Gouverneur 98352 in 2023, accounting for 47% of total customers interrupted (1,669 of 3,542). Accidents were the 2nd leading cause of customers interrupted, accounting for 26% of total customers interrupted (917 of 3,542). Prearranged were the 3rd leading cause of customers interrupted, accounting for 21% of total customers interrupted (734 of 3,542).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the N Gouverneur 98352 in 2023, accounting for 69% of total customer-hours interrupted (11,506 of 16,774). Prearranged were the 2nd leading cause of customer-hours interrupted, accounting for 15% of total customer-hours interrupted (2,511 of 16,774). Accidents were the 3rd leading cause of customer-hours interrupted, accounting for 12% of total customer-hours interrupted (2,079 of 16,774).
- Of the 24 interruptions on this circuit, 12 affected 10 customers or less, with 8 being single customer outages.

Action Taken:

- In 2020, the Regional Forestry Department completed the scheduled distribution cycle pruning.
- In 2009, the Regional Forestry Department completed hazard tree removal.
- In April 2023, an I&M foot patrol was completed.

Action Plan:

- The next distribution cycle pruning is scheduled for 2026.
- All level 2 maintenance work identified from the feeder inspection will be completed in 2024.
- All level 3 maintenance work identified from the feeder inspection will be completed in 2026.
- The next I&M foot patrol is scheduled for 2028.
- There are no further actions required.

3. STAR LAKE 72761 – 4.8kV

Profile: 825 Customers, 45.3 Circuit Miles
 Indices: CAIDI = 2.82, SAIFI = 3.72

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	4	23.53%	29	0.95%	42	0.49%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	5	29.41%	1,860	60.65%	5,426	62.65%
6	ACCIDENTS	1	5.88%	1	0.03%	3	0.03%
7	PREARRANGED	1	5.88%	819	26.70%	1,617	18.67%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	2	11.76%	67	2.18%	190	2.20%
10	UNKNOWN	4	23.53%	291	9.49%	1,382	15.96%
Totals		17	100.00%	3,067	100.00%	8,661	100.00%

Problem Analysis:

- There were 17 interruptions on the Star Lake 72761 in 2023.
- There was 1 transmission interruption.
 - This Transmission interruption occurred on October 23, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 27% of the total customers interrupted (827 of 3,067), and 26% of the total customer-hours interrupted (2,288 of 8,661). This outage was due to an insulator failure.
- There were 2 substation interruptions.
 - The first Substation interruption occurred on April 13, 2023, coded as a cause of no cause associated (PSC cause code 07). This lockout accounted for 27% of the total customers interrupted (819 of 3,067), and 19% of the total customer-hours interrupted (1,617 of 8,661). This was a planned outage to perform maintenance at the substation.
 - The second Substation interruption occurred on November 06, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 27% of the total customers interrupted (824 of 3,067), and 22% of the total customer-hours interrupted (1,871 of 8,661). This outage was due to an insulator failure.
- The remaining 14 events occurred at the distribution level.
- The distribution circuit breaker for the Star Lake 72761 experienced 2 momentary operations in 2023.
- The distribution circuit breaker for the Star Lake 72761 experienced 0 sustained operations (lockouts) in 2023.
- Equipment Failures were the leading cause of interruptions on the Star Lake 72761 in 2023, accounting for 29% of total interruptions (5 of 17). Trees were the 2nd leading cause of

interruptions, accounting for 24% of total interruptions (4 of 17). Unknown were the 3rd leading cause of interruptions, accounting for 24% of total interruptions (4 of 17).

- Equipment Failures were the leading cause of customers interrupted (CI) on the Star Lake 72761 in 2023, accounting for 61% of total customers interrupted (1,860 of 3,067). Prearranged were the 2nd leading cause of customers interrupted, accounting for 27% of total customers interrupted (819 of 3,067). Unknown were the 3rd leading cause of customers interrupted, accounting for 9% of total customers interrupted (291 of 3,067).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the Star Lake 72761 in 2023, accounting for 63% of total customer-hours interrupted (5,426 of 8,661). Prearranged were the 2nd leading cause of customer-hours interrupted, accounting for 19% of total customer-hours interrupted (1,617 of 8,661). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 16% of total customer-hours interrupted (1,382 of 8,661).
- Of the 17 interruptions on this circuit, 10 affected 10 customers or less, with 6 being single customer outages.

Action Taken:

- In November 2023, an I&M foot patrol was completed.
- In 2022, the Regional Forestry Department completed the scheduled distribution cycle pruning.

Action Plan:

- The next I&M foot patrol will be completed in 2028.
- All level 2 maintenance work identified from the feeder inspection will be completed in 2024.
- All level 3 maintenance work identified from the feeder inspection will be completed in 2026.
- The next distribution cycle pruning is scheduled for 2028.
- There are no further actions required.

4. E WATERTOWN 81757 – 13.2kV

Profile: 1,851 Customers, 185.3 Circuit Miles
 Indices: CAIDI = 1.30, SAIFI = 2.90

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	16	42.11%	1,157	21.53%	2,318	33.17%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	6	15.79%	25	0.47%	86	1.23%
6	ACCIDENTS	8	21.05%	2,093	38.95%	4,046	57.89%
7	PREARRANGED	1	2.63%	89	1.66%	16	0.22%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	1	2.63%	8	0.15%	13	0.19%
10	UNKNOWN	6	15.79%	2,002	37.25%	509	7.29%
Totals		38	100.00%	5,374	100.00%	6,988	100.00%

Problem Analysis:

- There were 38 interruptions on the E Watertown 81757 in 2023.
- There was 1 transmission interruption.
 - This Transmission interruption occurred on November 28, 2023, coded as a cause of unknown (PSC cause code 10). This lockout accounted for 34% of the total customers interrupted (1,854 of 5,374), and 4% of the total customer-hours interrupted (278 of 6,988). The #5 line locked out due to an unknown cause.
- There were no substation interruptions.
- The remaining 37 events occurred at the distribution level.
- The distribution circuit breaker for the E Watertown 81757 experienced 4 momentary operations in 2023.
- The distribution circuit breaker for the E Watertown 81757 experienced 1 sustained operation (lockout) in 2023. This interruption accounted for 35% of the total amount of customers interrupted (1,875 out of 5,374) and 52% of the total amount of the customer-hours interrupted (3,645 out of 6,988).
 - This lockout occurred on July 11, 2023, coded as a cause of vehicle (PSC cause code 06). This lockout accounted for 35% of the total customers interrupted (1,875 of 5,374), and 52% of the total customer-hours interrupted (3,645 of 6,988). This outage was due to a motor vehicle accident.
- Trees were the leading cause of interruptions on the E Watertown 81757 in 2023, accounting for 42% of total interruptions (16 of 38). Accidents were the 2nd leading cause of interruptions, accounting for 21% of total interruptions (8 of 38). Equipment Failures were the 3rd leading cause of interruptions, accounting for 16% of total interruptions (6 of 38).

- Accidents were the leading cause of customers interrupted (CI) on the E Watertown 81757 in 2023, accounting for 39% of total customers interrupted (2,093 of 5,374). Unknown were the 2nd leading cause of customers interrupted, accounting for 37% of total customers interrupted (2,002 of 5,374). Trees were the 3rd leading cause of customers interrupted, accounting for 22% of total customers interrupted (1,157 of 5,374).
- Accidents were the leading cause of customer-hours interrupted (CHI) on the E Watertown 81757 in 2023, accounting for 58% of total customer-hours interrupted (4,046 of 6,988). Trees were the 2nd leading cause of customer-hours interrupted, accounting for 33% of total customer-hours interrupted (2,318 of 6,988). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 7% of total customer-hours interrupted (509 of 6,988).
- Of the 38 interruptions on this circuit, 16 affected 10 customers or less, with 6 being single customer outages.

Action Taken:

- An I&M foot patrol was completed in June 2020.
- All level 2 maintenance work identified from the feeder inspection was completed in 2021.
- All level 3 maintenance work identified from the feeder inspection was completed in 2023.
- In 2018, the Regional Forestry Department completed the scheduled distribution cycle pruning.
- In 2015, the Regional Forestry Department completed hazard tree removal.

Action Plan:

- The next I&M foot patrol will be completed in 2025.
- The next distribution cycle pruning is scheduled for 2026.
- No further actions are required.

5. BRADY 95756 - 13.2kV

Profile: 1,267 Customers, 74.1 Circuit Miles
 Indices: CAIDI = 1.54, SAIFI = 2.62

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	12	52.17%	2,625	79.11%	3,919	76.84%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	2	8.70%	31	0.93%	73	1.43%
6	ACCIDENTS	4	17.39%	167	5.03%	156	3.05%
7	PREARRANGED	3	13.04%	369	11.12%	795	15.59%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	2	8.70%	126	3.80%	158	3.09%
Totals		23	100.00%	3,318	100.00%	5,100	100.00%

Problem Analysis:

- There were 23 interruptions on the Brady 95756 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 23 events occurred at the distribution level.
- The distribution circuit breaker for the Brady 95756 experienced 0 momentary operations in 2023.
- The distribution circuit breaker for the Brady 95756 experienced 0 sustained operations (lockouts) in 2023.
- Trees were the leading cause of interruptions on the Brady 95756 in 2023, accounting for 52% of total interruptions (12 of 23). Accidents were the 2nd leading cause of interruptions, accounting for 17% of total interruptions (4 of 23). Prearranged were the 3rd leading cause of interruptions, accounting for 13% of total interruptions (3 of 23).
- Trees were the leading cause of customers interrupted (CI) on the Brady 95756 in 2023, accounting for 79% of total customers interrupted (2,625 of 3,318). Prearranged were the 2nd leading cause of customers interrupted, accounting for 11% of total customers interrupted (369 of 3,318). Accidents were the 3rd leading cause of customers interrupted, accounting for 5% of total customers interrupted (167 of 3,318).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Brady 95756 in 2023, accounting for 77% of total customer-hours interrupted (3,919 of 5,100). Prearranged were the 2nd leading cause of customer-hours interrupted, accounting for 16% of total customer-hours interrupted (795 of 5,100). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 3% of total customer-hours interrupted (158 of 5,100).

- Of the 23 interruptions on this circuit, 7 affected 10 customers or less, with 2 being single customer outages.

Action Taken:

- In 2019, the Regional Forestry Department completed the scheduled distribution cycle pruning.
- In August 2019, an I&M foot patrol was completed.
- The level 2 maintenance work identified from the feeder inspection was completed in 2020.
- The level 3 maintenance work identified from the feeder inspection was completed in 2022.

Action Plan:

- The next I&M foot patrol is scheduled for 2024.
- The next distribution cycle pruning is scheduled for 2025.
- At this time, no further action is required.

6. FORT COVINGTON 89642 – 13.2kV

Profile: 893 Customers, 54.6 Circuit Miles
 Indices: CAIDI = 2.12, SAIFI = 2.42

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	5	25.00%	1,079	50.00%	1,779	38.95%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	1	5.00%	1	0.05%	3	0.07%
5	EQUIPMENT	2	10.00%	889	41.20%	2,437	53.34%
6	ACCIDENTS	6	30.00%	165	7.65%	296	6.48%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	6	30.00%	24	1.11%	53	1.16%
Totals		20	100.00%	2,158	100.00%	4,568	100.00%

Problem Analysis:

- There were 20 interruptions on the Fort Covington 89642 in 2023.
- There was 1 transmission interruption.
 - This Transmission interruption occurred on March 11, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 41% of the total customers interrupted (888 of 2,158), and 53% of the total customer-hours interrupted (2,436 of 4,568). This interruption was due to an insulator failure.
- There were no substation interruptions.
- The remaining 19 events occurred at the distribution level.
- The distribution circuit breaker for the Fort Covington 89642 experienced 2 momentary operations in 2023.
- The distribution circuit breaker for the Fort Covington 89642 experienced 0 sustained operations (lockouts) in 2023.
- Accidents were the leading cause of interruptions on the Fort Covington 89642 in 2023, accounting for 30% of total interruptions (6 of 20). Unknown were the 2nd leading cause of interruptions, accounting for 30% of total interruptions (6 of 20). Trees were the 3rd leading cause of interruptions, accounting for 25% of total interruptions (5 of 20).
- Trees were the leading cause of customers interrupted (CI) on the Fort Covington 89642 in 2023, accounting for 50% of total customers interrupted (1,079 of 2,158). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 41% of total customers interrupted (889 of 2,158). Accidents were the 3rd leading cause of customers interrupted, accounting for 8% of total customers interrupted (165 of 2,158).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the Fort Covington 89642 in 2023, accounting for 53% of total customer-hours interrupted (2,437

of 4,568). Trees were the 2nd leading cause of customer-hours interrupted, accounting for 39% of total customer-hours interrupted (1,779 of 4,568). Accidents were the 3rd leading cause of customer-hours interrupted, accounting for 6% of total customer-hours interrupted (296 of 4,568).

- Of the 20 interruptions on this circuit, 13 affected 10 customers or less, with 8 being single customer outages.

Action Taken:

- In 2018, the Regional Forestry Department completed the scheduled distribution cycle pruning.
- In 2015, the Regional Forestry Department completed hazard tree removal.
- In November 2020, an I&M foot patrol was completed.
- The level 2 maintenance work identified was completed in 2021.
- The level 3 maintenance work identified will be completed in 2023.

Action Plan:

- The next distribution cycle pruning is scheduled for 2024.
- The next I&M foot patrol is scheduled for 2025.
- No further actions are required.

7. FINE 97866 – 4.8kV

Profile: 375 Customers, 39.8 Circuit Miles
 Indices: CAIDI = 2.83, SAIFI = 4.01

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	5	41.67%	424	28.21%	1,050	24.73%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	4	33.33%	1,059	70.46%	3,175	74.76%
6	ACCIDENTS	1	8.33%	2	0.13%	3	0.06%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	1	8.33%	1	0.07%	5	0.12%
10	UNKNOWN	1	8.33%	17	1.13%	14	0.32%
Totals		12	100.00%	1,503	100.00%	4,247	100.00%

Problem Analysis:

- There were 12 interruptions on the Fine 97866 in 2023.
- There was 1 transmission interruption.
 - This Transmission interruption occurred on October 23, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 25% of the total customers interrupted (372 of 1,503), and 15% of the total customer-hours interrupted (657 of 4,247). This outage was due to an insulator failure.
- There were 2 substation interruptions.
 - The first Substation interruption occurred on February 06, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 25% of the total customers interrupted (375 of 1,503), and 44% of the total customer-hours interrupted (1,879 of 4,247). This outage was due to an insulator failure.
 - The second Substation interruption occurred on November 06, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 21% of the total customers interrupted (311 of 1,503), and 15% of the total customer-hours interrupted (633 of 4,247). This outage was due to an insulator failure.
- The remaining 9 events occurred at the distribution level.
- The distribution circuit breaker for the Fine 97866 experienced 1 momentary operation in 2023.
- The distribution circuit breaker for the Fine 97866 experienced 0 sustained operations (lockouts) in 2023.
- Trees were the leading cause of interruptions on the Fine 97866 in 2023, accounting for 42% of total interruptions (5 of 12). Equipment Failures were the 2nd leading cause of interruptions, accounting for 33% of total interruptions (4 of 12). Accidents were the 3rd leading cause of interruptions, accounting for 8% of total interruptions (1 of 12).

- Equipment Failures were the leading cause of customers interrupted (CI) on the Fine 97866 in 2023, accounting for 70% of total customers interrupted (1,059 of 1,503). Trees were the 2nd leading cause of customers interrupted, accounting for 28% of total customers interrupted (424 of 1,503). Unknown were the 3rd leading cause of customers interrupted, accounting for 1% of total customers interrupted (17 of 1,503).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the Fine 97866 in 2023, accounting for 75% of total customer-hours interrupted (3,175 of 4,247). Trees were the 2nd leading cause of customer-hours interrupted, accounting for 25% of total customer-hours interrupted (1,050 of 4,247). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 0% of total customer-hours interrupted (14 of 4,247).
- Of the 12 interruptions on this circuit, 3 affected 10 customers or less, with 2 being single customer outages.

Action Taken:

- In 2021, the Regional Forestry Department completed the scheduled distribution cycle pruning.
- In 2015, the Regional Forestry Department completed the scheduled distribution cycle pruning.
- In December 2020, an I&M foot patrol was completed.
- The level 2 maintenance work identified from the feeder inspection was completed in 2021.
- The level 3 maintenance work identified from the feeder inspection was completed in 2023.

Action Plan:

- The next I&M foot patrol will be completed in 2025.
- The next distribution cycle pruning is scheduled for 2027.
- No further actions are required.

8. BRADY 95757 - 13.2kV

Profile: 660 Customers, 71.3 Circuit Miles
 Indices: CAIDI = 2.06, SAIFI = 3.13

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	3	23.08%	930	45.04%	1,902	44.74%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	5	38.46%	449	21.74%	126	2.97%
6	ACCIDENTS	2	15.38%	663	32.11%	2,184	51.38%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	3	23.08%	23	1.11%	39	0.91%
Totals		13	100.00%	2,065	100.00%	4,250	100.00%

Problems Analysis:

- There were 13 interruptions on the Brady 95757 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 13 events occurred at the distribution level.
- The distribution circuit breaker for the Brady 95757 experienced 2 momentary operations in 2023.
- The distribution circuit breaker for the Brady 95757 experienced 2 sustained operations (lockouts) in 2023. These interruptions accounted for 64% of the total amount of customers interrupted (1,322 out of 2,065) and 81% of the total amount of the customer-hours interrupted (3,434 out of 4,250).
 - The first lockout occurred on January 11, 2023, coded as a cause of vehicle (PSC cause code 06). This lockout accounted for 32% of the total customers interrupted (661 of 2,065), and 51% of the total customer-hours interrupted (2,181 of 4,250). This outage was due to a motor vehicle accident.
 - The second lockout occurred on January 28, 2023, coded as a cause of tree - broken limb (PSC cause code 02). This lockout accounted for 32% of the total customers interrupted (661 of 2,065), and 30% of the total customer-hours interrupted (1,254 of 4,250). This outage was due to a tree branch falling.
- Equipment Failures were the leading cause of interruptions on the Brady 95757 in 2023, accounting for 38% of total interruptions (5 of 13). Trees were the 2nd leading cause of interruptions, accounting for 23% of total interruptions (3 of 13). Unknown were the 3rd leading cause of interruptions, accounting for 23% of total interruptions (3 of 13).

- Trees were the leading cause of customers interrupted (CI) on the Brady 95757 in 2023, accounting for 45% of total customers interrupted (930 of 2,065). Accidents were the 2nd leading cause of customers interrupted, accounting for 32% of total customers interrupted (663 of 2,065). Equipment Failures were the 3rd leading cause of customers interrupted, accounting for 22% of total customers interrupted (449 of 2,065).
- Accidents were the leading cause of customer-hours interrupted (CHI) on the Brady 95757 in 2023, accounting for 51% of total customer-hours interrupted (2,184 of 4,250). Trees were the 2nd leading cause of customer-hours interrupted, accounting for 45% of total customer-hours interrupted (1,902 of 4,250). Equipment Failures were the 3rd leading cause of customer-hours interrupted, accounting for 3% of total customer-hours interrupted (126 of 4,250).
- Of the 13 interruptions on this circuit, 6 affected 10 customers or less, with 4 being single customer outages.

Action Taken:

- An I&M foot patrol was completed in October 2023.
- In 2021, the Regional Forestry Department completed the scheduled distribution cycle pruning.

Action Plan:

- The level 2 maintenance work identified from the feeder inspection will be completed in 2024.
- The level 3 maintenance work identified from the feeder inspection will be completed by 2026.
- The next I&M foot patrol is scheduled to be completed in 2028.
- The next distribution cycle pruning is scheduled for 2027.
- No further actions are required.

9. LYME 73352 - 13.2kV

Profile: 2,899 Customers, 131.1 Circuit Miles
 Indices: CAIDI = 3.51, SAIFI = 1.25

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	2	8.33%	5	0.14%	9	0.07%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	9	37.50%	468	12.90%	917	7.21%
6	ACCIDENTS	11	45.83%	3,001	82.74%	11,565	90.93%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	1	4.17%	92	2.54%	141	1.11%
10	UNKNOWN	1	4.17%	61	1.68%	86	0.68%
Totals		24	100.00%	3,627	100.00%	12,719	100.00%

Problem Analysis:

- There were 24 interruptions on the Lyme 73352 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 24 events occurred at the distribution level.
- The distribution circuit breaker for the Lyme 73352 experienced 0 momentary operations in 2023.
- The distribution circuit breaker for the Lyme 73352 experienced 0 sustained operations (lockouts) in 2023.
- Accidents were the leading cause of interruptions on the Lyme 73352 in 2023, accounting for 46% of total interruptions (11 of 24). Equipment Failures were the 2nd leading cause of interruptions, accounting for 38% of total interruptions (9 of 24). Trees were the 3rd leading cause of interruptions, accounting for 8% of total interruptions (2 of 24).
- Accidents were the leading cause of customers interrupted (CI) on the Lyme 73352 in 2023, accounting for 83% of total customers interrupted (3,001 of 3,627). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 13% of total customers interrupted (468 of 3,627). Lightning were the 3rd leading cause of customers interrupted, accounting for 3% of total customers interrupted (92 of 3,627).
- Accidents were the leading cause of customer-hours interrupted (CHI) on the Lyme 73352 in 2023, accounting for 91% of total customer-hours interrupted (11,565 of 12,719). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 7% of total customer-hours interrupted (917 of 12,719). Lightning were the 3rd leading cause of customer-hours interrupted, accounting for 1% of total customer-hours interrupted (141 of 12,719).

- Of the 24 interruptions on this circuit, 13 affected 10 customers or less, with 7 being single customer outages.

Action Taken:

- In 2021, the Regional Forestry Department completed the scheduled distribution cycle pruning.
- In 2014, the Regional Forestry Department completed hazard tree removal.
- An I&M foot patrol was completed in December 2020.
- The level 2 maintenance work identified from the feeder inspection was completed in 2021.
- The level 3 maintenance work identified from the feeder inspection was completed in 2023.

Action Plan:

- The next I&M foot patrol is scheduled for 2025.
- The next distribution cycle pruning is scheduled for 2028.
- There are no further actions required.

10. PIERCEFIELD 82961 – 4.8kV

Profile: 378 Customers, 37.3 Circuit Miles
Indices: CAIDI = 3.36, SAIFI = 4.05

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	2	22.22%	164	10.71%	540	10.50%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	1	11.11%	71	4.63%	12	0.24%
5	EQUIPMENT	1	11.11%	90	5.87%	595	11.57%
6	ACCIDENTS	0	0.00%	0	0.00%	0	0.00%
7	PREARRANGED	3	33.33%	1,140	74.41%	3,701	71.96%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	1	11.11%	27	1.76%	100	1.94%
10	UNKNOWN	1	11.11%	40	2.61%	195	3.80%
Totals		9	100.00%	1,532	100.00%	5,144	100.00%

Problem Analysis:

- There were 9 interruptions on the Piercefield 82961 in 2023.
- There was 1 transmission interruption.
 - This Transmission interruption occurred on August 22, 2023, coded as a cause of no cause associated (PSC cause code 07). This lockout accounted for 25% of the total customers interrupted (380 of 1,532), and 18% of the total customer-hours interrupted (927 of 5,144). This was a planned outage for substation maintenance.
- There were 2 substation interruptions.
 - The first Substation interruption occurred on August 07, 2023, coded as a cause of no cause associated (PSC cause code 07). This lockout accounted for 25% of the total customers interrupted (380 of 1,532), and 35% of the total customer-hours interrupted (1,824 of 5,144). This was a planned outage for substation maintenance.
 - The second Substation interruption occurred on August 09, 2023, coded as a cause of no cause associated (PSC cause code 07). This lockout accounted for 25% of the total customers interrupted (380 of 1,532), and 18% of the total customer-hours interrupted (950 of 5,144). This was a planned outage for substation maintenance.
- The remaining 6 events occurred at the distribution level.
- The distribution circuit breaker for the Piercefield 82961 experienced 1 momentary operation in 2023.
- The distribution circuit breaker for the Piercefield 82961 experienced 0 sustained operations (lockouts) in 2023.
- Prearranged were the leading cause of interruptions on the Piercefield 82961 in 2023, accounting for 33% of total interruptions (3 of 9). Trees were the 2nd leading cause of

interruptions, accounting for 22% of total interruptions (2 of 9). Operators Errors were the 3rd leading cause of interruptions, accounting for 11% of total interruptions (1 of 9).

- Prearranged were the leading cause of customers interrupted (CI) on the Piercefield 82961 in 2023, accounting for 74% of total customers interrupted (1,140 of 1,532). Trees were the 2nd leading cause of customers interrupted, accounting for 11% of total customers interrupted (164 of 1,532). Equipment Failures were the 3rd leading cause of customers interrupted, accounting for 6% of total customers interrupted (90 of 1,532).
- Prearranged were the leading cause of customer-hours interrupted (CHI) on the Piercefield 82961 in 2023, accounting for 72% of total customer-hours interrupted (3,701 of 5,144). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 12% of total customer-hours interrupted (595 of 5,144). Trees were the 3rd leading cause of customer-hours interrupted, accounting for 10% of total customer-hours interrupted (540 of 5,144).
- Of the 9 interruptions on this circuit, 3 affected 10 customers or less, with 3 being single customer outages.

Action Taken:

- In 2015, the Regional Forestry Department completed the scheduled distribution cycle pruning.
- In 2014, the Regional Forestry Department completed the scheduled distribution cycle pruning.
- An I&M foot patrol was completed in December 2020.
- All level 2 maintenance work identified during the inspection was completed in 2021.
- All level 3 maintenance work identified during the inspection was completed in 2023.

Action Plan:

- The next I&M foot patrol is scheduled for 2025.
- The next distribution cycle pruning is scheduled for 2024.
- No further actions are required.

11. STAR LAKE 72762 – 4.8kV

Profile: 667 Customers, 36.1 Circuit Miles
 Indices: CAIDI = 2.29, SAIFI = 3.50

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	4	40.00%	231	9.89%	496	9.26%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	2	20.00%	1,339	57.34%	3,373	62.98%
6	ACCIDENTS	0	0.00%	0	0.00%	0	0.00%
7	PREARRANGED	2	20.00%	694	29.72%	1,356	25.32%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	2	20.00%	71	3.04%	131	2.44%
Totals		10	100.00%	2,335	100.00%	5,357	100.00%

Problem Analysis:

- There were 10 interruptions on the Star Lake 72762 in 2023.
- There was 1 transmission interruption.
 - This Transmission interruption occurred on October 23, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 29% of the total customers interrupted (672 of 2,335), and 35% of the total customer-hours interrupted (1,859 of 5,357). This outage was due to an insulator failure.
- There were 2 substation interruptions.
 - The first Substation interruption occurred on April 13, 2023, coded as a cause of no cause associated (PSC cause code 07). This lockout accounted for 28% of the total customers interrupted (663 of 2,335), and 25% of the total customer-hours interrupted (1,320 of 5,357). This was a planned outage to replace insulators in the substation.
 - The second Substation interruption occurred on November 06, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 29% of the total customers interrupted (667 of 2,335), and 28% of the total customer-hours interrupted (1,514 of 5,357). This outage was due to an insulator failure.
- The remaining 7 events occurred at the distribution level.
- The distribution circuit breaker for the Star Lake 72762 experienced 2 momentary operations in 2023.
- The distribution circuit breaker for the Star Lake 72762 experienced 0 sustained operations (lockouts) in 2023.
- Trees were the leading cause of interruptions on the Star Lake 72762 in 2023, accounting for 40% of total interruptions (4 of 10). Equipment Failures were the 2nd leading cause of

interruptions, accounting for 20% of total interruptions (2 of 10). Prearranged were the 3rd leading cause of interruptions, accounting for 20% of total interruptions (2 of 10).

- Equipment Failures were the leading cause of customers interrupted (CI) on the Star Lake 72762 in 2023, accounting for 57% of total customers interrupted (1,339 of 2,335). Prearranged were the 2nd leading cause of customers interrupted, accounting for 30% of total customers interrupted (694 of 2,335). Trees were the 3rd leading cause of customers interrupted, accounting for 10% of total customers interrupted (231 of 2,335).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the Star Lake 72762 in 2023, accounting for 63% of total customer-hours interrupted (3,373 of 5,357). Prearranged were the 2nd leading cause of customer-hours interrupted, accounting for 25% of total customer-hours interrupted (1,356 of 5,357). Trees were the 3rd leading cause of customer-hours interrupted, accounting for 9% of total customer-hours interrupted (496 of 5,357).
- Of the 10 interruptions on this circuit, 3 affected 10 customers or less, with 2 being single customer outages.

Action Taken:

- In 2018, the Regional Forestry Department completed the scheduled distribution cycle pruning.
- An I&M foot patrol was completed in October 2022.
- All level 2 maintenance work identified during the inspection was completed in 2023.

Action Plan:

- All level 3 maintenance work identified during the inspection will be completed in 2025.
- The next I&M foot patrol is scheduled for 2027.
- The next distribution cycle pruning is scheduled for 2024.
- No further actions are required.

12. SOUTH PHILADELPHIA 76462 – 4.8kV

Profile: 471 Customers, 75.3 Circuit Miles
Indices: CAIDI = 2.16, SAIFI = 3.07

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	3	23.08%	105	7.26%	590	18.87%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	2	15.38%	505	34.92%	1,461	46.70%
6	ACCIDENTS	4	30.77%	93	6.43%	496	15.84%
7	PREARRANGED	1	7.69%	331	22.89%	40	1.26%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	3	23.08%	412	28.49%	542	17.32%
10	UNKNOWN	0	0.00%	0	0.00%	0	0.00%
Totals		13	100.00%	1,446	100.00%	3,128	100.00%

Problem Analysis:

- There were 13 interruptions on the South Philadelphia 76462 in 2023.
- There were 2 transmission interruptions.
 - The first Transmission interruption occurred on May 16, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 28% of the total customers interrupted (407 of 1,446), and 33% of the total customer-hours interrupted (1,045 of 3,128). This outage was due to an insulator failure which resulted in a pole fire.
 - The second Transmission interruption occurred on August 04, 2023, coded as a cause of lightning (PSC cause code 09). This lockout accounted for 28% of the total customers interrupted (409 of 1,446), and 17% of the total customer-hours interrupted (533 of 3,128). This interruption was due to a lightning strike.
- There were no substation interruptions.
- The remaining 11 events occurred at the distribution level.
- The distribution circuit breaker for the South Philadelphia 76462 experienced 1 momentary operation in 2023.
- The distribution circuit breaker for the South Philadelphia 76462 experienced 0 sustained operations (lockouts) in 2023.
- Accidents were the leading cause of interruptions on the South Philadelphia 76462 in 2023, accounting for 31% of total interruptions (4 of 13). Trees were the 2nd leading cause of interruptions, accounting for 23% of total interruptions (3 of 13). Lightning were the 3rd leading cause of interruptions, accounting for 23% of total interruptions (3 of 13).
- Equipment Failures were the leading cause of customers interrupted (CI) on the South Philadelphia 76462 in 2023, accounting for 35% of total customers interrupted (505 of

- 1,446). Lightning were the 2nd leading cause of customers interrupted, accounting for 28% of total customers interrupted (412 of 1,446). Prearranged were the 3rd leading cause of customers interrupted, accounting for 23% of total customers interrupted (331 of 1,446).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the South Philadelphia 76462 in 2023, accounting for 47% of total customer-hours interrupted (1,461 of 3,128). Trees were the 2nd leading cause of customer-hours interrupted, accounting for 19% of total customer-hours interrupted (590 of 3,128). Lightning were the 3rd leading cause of customer-hours interrupted, accounting for 17% of total customer-hours interrupted (542 of 3,128).
 - Of the 13 interruptions on this circuit, 6 affected 10 customers or less, with 5 being single customer outages.

Action Taken:

- In 2017, the Regional Forestry Department completed the scheduled distribution cycle pruning.
- In 2015, the Regional Forestry Department completed the scheduled distribution cycle pruning.
- An I&M foot patrol was completed in March 2019.
- The level 2 maintenance work identified from the feeder inspection was completed in 2020.
- The level 3 maintenance work identified from the feeder inspection will be completed in 2022.

Action Plan:

- The next I&M foot patrol is scheduled for 2024.
- The next distribution cycle pruning is scheduled for 2026.
- No further actions are required.

13. ANTWERP 80161 – 4.8kV

Profile: 563 Customers, 40.4 Circuit Miles
 Indices: CAIDI = 8.10, SAIFI = 2.21

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	2	25.00%	31	2.49%	99	0.98%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	1	12.50%	567	45.47%	5,727	56.69%
6	ACCIDENTS	0	0.00%	0	0.00%	0	0.00%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	3	37.50%	574	46.03%	4,122	40.81%
10	UNKNOWN	2	25.00%	75	6.01%	153	1.52%
Totals		8	100.00%	1,247	100.00%	10,101	100.00%

Problem Analysis:

- There were 8 interruptions on the Antwerp 80161 in 2023.
- There were 2 transmission interruptions.
 - The first Transmission interruption occurred on May 16, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 45% of the total customers interrupted (567 of 1,247), and 57% of the total customer-hours interrupted (5,727 of 10,101). This outage was due to an insulator failure.
 - The second Transmission interruption occurred on August 04, 2023, coded as a cause of lightning (PSC cause code 09). This lockout accounted for 45% of the total customers interrupted (567 of 1,247), and 41% of the total customer-hours interrupted (4,102 of 10,101). This outage was due to a lightning strike.
- There were no substation interruptions.
- The remaining 6 events occurred at the distribution level.
- The distribution circuit breaker for the Antwerp 80161 experienced 3 momentary operations in 2023.
- The distribution circuit breaker for the Antwerp 80161 experienced 0 sustained operations (lockouts) in 2023.
- Lightning were the leading cause of interruptions on the Antwerp 80161 in 2023, accounting for 38% of total interruptions (3 of 8). Trees were the 2nd leading cause of interruptions, accounting for 25% of total interruptions (2 of 8). Unknown were the 3rd leading cause of interruptions, accounting for 25% of total interruptions (2 of 8).
- Lightning were the leading cause of customers interrupted (CI) on the Antwerp 80161 in 2023, accounting for 46% of total customers interrupted (574 of 1,247). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 45% of total

customers interrupted (567 of 1,247). Unknown were the 3rd leading cause of customers interrupted, accounting for 6% of total customers interrupted (75 of 1,247).

- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the Antwerp 80161 in 2023, accounting for 57% of total customer-hours interrupted (5,727 of 10,101). Lightning were the 2nd leading cause of customer-hours interrupted, accounting for 41% of total customer-hours interrupted (4,122 of 10,101). Unknown were the 3rd leading cause of customer-hours interrupted, accounting for 2% of total customer-hours interrupted (153 of 10,101).
- Of the 8 interruptions on this circuit, 3 affected 10 customers or less, with 2 being single customer outages.

Action Taken:

- In 2021, the Regional Forestry Department completed the scheduled distribution cycle pruning.
- In 2015, the Regional Forestry Department completed the scheduled distribution cycle pruning.
- An I&M foot patrol was completed in March 2020.
- The level 2 maintenance work identified during the inspection was completed in 2021.
- The level 3 maintenance work identified during the inspection was completed in 2023.

Action Plan:

- In 2027, the Regional Forestry Department will be completing the scheduled distribution cycle pruning.
- The next I&M foot patrol is scheduled for 2025.
- No further actions are required.

14. MALONE 89552 – 13.2kV

Profile: 1,086 Customers, 85.4 Circuit Miles
 Indices: CAIDI = 1.30, SAIFI = 3.17

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	2	16.67%	657	19.11%	600	13.41%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	2	16.67%	1,150	33.45%	1,096	24.48%
6	ACCIDENTS	3	25.00%	257	7.48%	359	8.03%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	2	16.67%	1,096	31.88%	1,933	43.18%
10	UNKNOWN	3	25.00%	278	8.09%	488	10.90%
Totals		12	100.00%	3,438	100.00%	4,477	100.00%

Problem Analysis:

- There were 12 interruptions on the Malone 89552 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 12 events occurred at the distribution level.
- The distribution circuit breaker for the Malone 89552 experienced 1 momentary operation in 2023.
- The distribution circuit breaker for the Malone 89552 experienced 2 sustained operations (lockouts) in 2023. These interruptions accounted for 64% of the total amount of customers interrupted (2,188 out of 3,438) and 64% of the total amount of the customer-hours interrupted (2,886 out of 4,477).
 - The first lockout occurred on July 21, 2023, coded as a cause of lightning (PSC cause code 09). This lockout accounted for 32% of the total customers interrupted (1,093 of 3,438), and 43% of the total customer-hours interrupted (1,913 of 4,477). This outage was due to a lightning strike.
 - The second lockout occurred on December 26, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 32% of the total customers interrupted (1,095 of 3,438), and 22% of the total customer-hours interrupted (974 of 4,477). This outage was due to a transformer failure.
- Accidents were the leading cause of interruptions on the Malone 89552 in 2023, accounting for 25% of total interruptions (3 of 12). Unknown were the 2nd leading cause of interruptions, accounting for 25% of total interruptions (3 of 12). Trees were the 3rd leading cause of interruptions, accounting for 17% of total interruptions (2 of 12).

- Equipment Failures were the leading cause of customers interrupted (CI) on the Malone 89552 in 2023, accounting for 33% of total customers interrupted (1,150 of 3,438). Lightning were the 2nd leading cause of customers interrupted, accounting for 32% of total customers interrupted (1,096 of 3,438). Trees were the 3rd leading cause of customers interrupted, accounting for 19% of total customers interrupted (657 of 3,438).
- Lightning were the leading cause of customer-hours interrupted (CHI) on the Malone 89552 in 2023, accounting for 43% of total customer-hours interrupted (1,933 of 4,477). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 24% of total customer-hours interrupted (1,096 of 4,477). Trees were the 3rd leading cause of customer-hours interrupted, accounting for 13% of total customer-hours interrupted (600 of 4,477).
- Of the 12 interruptions on this circuit, 2 affected 10 customers or less, with 1 being single customer outages.

Action Taken:

- In 2018, the Regional Forestry Department completed the scheduled distribution cycle pruning.
- In 2009, the Regional Forestry Department completed hazard tree removal.
- An I&M foot patrol was completed in August 2022.
- The level 2 maintenance work identified during the inspection was completed in 2023.

Action Plan:

- The next distribution cycle pruning is scheduled for 2025.
- The level 3 maintenance work identified during the inspection will be completed in 2025.
- The next I&M foot patrol is scheduled for 2027.
- No further actions are required.

15. THOUSAND ISL 81452 – 13.2kV

Profile: 2,195 Customers, 112.7 Circuit Miles
Indices: CAIDI = 2.11, SAIFI = 1.46

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	12	48.00%	2,342	73.10%	4,393	64.92%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	11	44.00%	778	24.28%	2,228	32.93%
6	ACCIDENTS	0	0.00%	0	0.00%	0	0.00%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	2	8.00%	84	2.62%	146	2.16%
Totals		25	100.00%	3,204	100.00%	6,768	100.00%

Problem Analysis:

- There were 25 interruptions on the Thousand Isl 81452 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 25 events occurred at the distribution level.
- The distribution circuit breaker for the Thousand Isl 81452 experienced 0 momentary operations in 2023.
- The distribution circuit breaker for the Thousand Isl 81452 experienced 0 sustained operations (lockouts) in 2023.
- Trees were the leading cause of interruptions on the Thousand Isl 81452 in 2023, accounting for 48% of total interruptions (12 of 25). Equipment Failures were the 2nd leading cause of interruptions, accounting for 44% of total interruptions (11 of 25). Unknown were the 3rd leading cause of interruptions, accounting for 8% of total interruptions (2 of 25).
- Trees were the leading cause of customers interrupted (CI) on the Thousand Isl 81452 in 2023, accounting for 73% of total customers interrupted (2,342 of 3,204). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 24% of total customers interrupted (778 of 3,204). Unknown were the 3rd leading cause of customers interrupted, accounting for 3% of total customers interrupted (84 of 3,204).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Thousand Isl 81452 in 2023, accounting for 65% of total customer-hours interrupted (4,393 of 6,768). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 33% of total customer-hours interrupted (2,228 of 6,768). Unknown were the 3rd

leading cause of customer-hours interrupted, accounting for 2% of total customer-hours interrupted (146 of 6,768).

- Of the 25 interruptions on this circuit, 10 affected 10 customers or less, with 4 being single customer outages.

Action Taken:

- In 2022, the Regional Forestry Department completed the scheduled distribution cycle pruning.
- An I&M foot patrol was completed in November 2022.
- The level 2 maintenance work identified during the inspection was completed in 2023.

Action Plan:

- The next distribution cycle pruning is scheduled for 2030.
- The level 3 maintenance work identified during the inspection will be completed in 2025.
- The next I&M foot patrol is scheduled for 2027.
- No further actions are required.

3. ACTION PLAN SUMMARIES

a. SUMMARY OF ACTION PLANS FOR 2023 WORST PERFORMING CIRCUITS

Station	Circuit	Report Year	Action Plan	Estimated Completion Date	Comments
Lowville	77354	2023	The next scheduled distribution cycle pruning will be completed in 2026.	2026	
Lowville	77354	2023	All level 3 maintenance work identified from the feeder inspection will be completed in 2024.	2024	
Lowville	77354	2023	This feeder is scheduled to be inspected again in 2026.	2026	
N Gouverneur	98352	2023	This feeder is scheduled to be inspected again in 2026.	2026	
N Gouverneur	98352	2023	All level 2 maintenance work identified from the feeder inspection will be completed in 2024.	2024	
N Gouverneur	98352	2023	All level 3 maintenance work identified from the feeder inspection will be completed in 2026.	2026	
N Gouverneur	98352	2023	The next I&M foot patrol is scheduled for 2028.	2028	
Star Lake	72761	2023	The next I&M foot patrol is scheduled for 2028.	2028	
Star Lake	72761	2023	All level 2 maintenance work identified from the feeder inspection will be completed in 2024.	2024	
Star Lake	72761	2023	All level 3 maintenance work identified from the feeder inspection will be completed in 2026.	2026	
Star Lake	72761	2023	The next distribution cycle pruning is scheduled for 2028.	2028	
E Watertown	81757	2023	The next I&M foot patrol will be completed in 2025.	2025	
E Watertown	81757	2023	The next distribution cycle pruning is scheduled for 2026.	2026	
Brady	95756	2023	The next I&M foot patrol will be completed in 2024.	2024	
Brady	95756	2023	The next distribution cycle pruning is scheduled for 2025.	2025	
Fort Covington	89642	2023	The next I&M foot patrol is scheduled for 2025.	2025	
Fort Covington	89642	2023	The next distribution cycle pruning is scheduled for 2024.	2024	
Fine	97866	2023	The next I&M foot patrol is scheduled for 2025.	2025	
Fine	97866	2023	The next distribution cycle pruning is scheduled for 2027.	2027	
Brady	95757	2023	The level 2 maintenance work identified from the feeder inspection will be completed in 2024.	2024	
Brady	95757	2023	The level 3 maintenance work identified from the feeder inspection will be completed by 2026.	2026	
Brady	95757	2023	The next I&M foot patrol is scheduled to be completed in 2028.	2028	
Brady	95757	2023	The next distribution cycle pruning is scheduled for 2027.	2027	
Lyme	73352	2023	The next I&M foot patrol is scheduled for 2025.	2025	
Lyme	73352	2023	The next distribution cycle pruning is scheduled for 2028.	2028	
Piercefield	82961	2023	The next I&M foot patrol is scheduled to be completed in 2025.	2025	
Piercefield	82961	2023	The next distribution cycle pruning is scheduled for 2024.	2024	
Star Lake	72762	2023	All level 3 maintenance work identified during the inspection will be completed in 2025.	2025	
Star Lake	72762	2023	The next I&M foot patrol is scheduled for 2027.	2027	
Star Lake	72762	2023	The next distribution cycle pruning is scheduled for 2024.	2024	
S Philadelphia	76462	2023	The next I&M foot patrol is scheduled for 2024.	2024	
S Philadelphia	76462	2023	The next distribution cycle pruning is scheduled for 2026.	2026	
Antwerp	80161	2023	In 2027, the Regional Forestry Department will be completing the scheduled distribution cycle pruning.	2027	
Antwerp	80161	2023	The next I&M foot patrol is scheduled for 2025.	2025	
Malone	89552	2023	The next distribution cycle pruning is scheduled for 2025.	2025	

Station	Circuit	Report Year	Action Plan	Estimated Completion Date	Comments
Malone	89552	2023	The level 3 maintenance work identified from the feeder inspection will be completed in 2025.	2025	
Malone	89552	2023	The next I&M foot patrol is scheduled for 2027.	2027	
Thousand Isl	81452	2023	The next distribution cycle pruning is scheduled for 2030.	2030	
Thousand Isl	81452	2023	The level 3 maintenance work identified during the inspection will be completed in 2025.	2025	
Thousand Isl	81452	2023	The next I&M foot patrol is scheduled for 2027.	2027	

b. STATUS OF ACTION PLANS FOR 2022 WORST PERFORMING CIRCUITS

Station	Circuit	Report Year	Action Plan	Actual Completion Date	Comments
Chasm Falls	85251	2022	The next scheduled distribution cycle pruning will be completed in 2027.	2027	
Chasm Falls	85251	2022	In 2023, the Regional Forestry Department will complete the hazard tree removal.	2023	
Chasm Falls	85251	2022	All level 3 maintenance work identified from the feeder inspection will be completed in 2024.	2024	
Chasm Falls	85251	2022	This feeder is scheduled to be inspected again in 2026.	2026	
Thousand Isl	81452	2022	The next distribution cycle pruning is scheduled for 2028.	2028	
Thousand Isl	81452	2022	All level 2 maintenance work identified from the feeder inspection will be completed in 2023.	2023	
Thousand Isl	81452	2022	All level 3 maintenance work identified from the feeder inspection will be completed in 2025.	2025	
Thousand Isl	81452	2022	The next I&M foot patrol is scheduled for 2027.	2027	
Higley	92452	2022	The next I&M foot patrol will be completed in 2026.	2026	
Higley	92452	2022	All level 3 maintenance work identified from the feeder inspection will be completed in 2024.	2024	
Higley	92452	2022	The next distribution cycle pruning is scheduled for 2026.	2026	
Dekalb	98455	2022	The next I&M foot patrol will be completed in 2027.	2027	
Dekalb	98455	2022	All level 2 maintenance work identified from the feeder inspection will be completed in 2023.	2023	
Dekalb	98455	2022	All level 3 maintenance work identified from the feeder inspection will be completed in 2025.	2025	
Dekalb	98455	2022	The next distribution cycle pruning is scheduled for 2025.	2025	
Thousand Isl	81456	2022	The next I&M foot patrol is scheduled for 2024.	2024	
Thousand Isl	81456	2022	The next distribution cycle pruning is scheduled for 2028.	2028	
W Adams	87554	2022	The level 3 maintenance work identified will be completed in 2024.	2024	
W Adams	87554	2022	The next I&M foot patrol is scheduled for 2026.	2026	
W Adams	87554	2022	The next distribution cycle pruning is scheduled for 2025.	2025	
W Adams	87554	2022	In 2025, the Regional Forestry Department will be performing hazard tree removal.	2025	
N Gouverneur	98352	2022	The next I&M foot patrol will be completed in 2023.	2023	
N Gouverneur	98352	2022	The next distribution cycle pruning is scheduled for 2024.	2024	
N Gouverneur	98352	2022	In 2023, the Regional Forestry Department will be performing hazard tree removal.	2023	
E Watertown	81756	2022	The level 3 maintenance work identified from the feeder inspection will be completed by 2024.	2024	
E Watertown	81756	2022	The next I&M foot patrol is scheduled to be completed in 2026.	2026	
E Watertown	81756	2022	The next distribution cycle pruning is scheduled for 2025.	2025	
E Watertown	81756	2022	In 2023, the Regional Forestry Department is performing hazard tree removal.	2023	
Thousands Isl	81458	2022	The next I&M foot patrol is scheduled for 2024.	2024	
Thousands Isl	81458	2022	The next distribution cycle pruning is scheduled for 2023.	2023	
Ogdensburg	93852	2022	The next I&M foot patrol is scheduled for 2024.	2024	
Ogdensburg	93852	2022	The next distribution cycle pruning is scheduled for 2028.	2028	
Ogdensburg	93852	2022	In 2023, the Regional Forestry Department is performing extended hazard tree maintenance.	2023	
North Carthage	81652	2022	The next I&M foot patrol is scheduled for 2024.	2024	
North Carthage	81652	2022	The next distribution cycle pruning is scheduled for 2028.	2028	

Station	Circuit	Report Year	Action Plan	Actual Completion Date	Comments
North Carthage	81653	2022	The level 3 maintenance work identified from the feeder inspection will be completed in 2024.	2024	
North Carthage	81653	2022	The next I&M foot patrol is scheduled for 2026.	2026	
North Carthage	81653	2022	The next distribution cycle pruning is scheduled for 2026.	2026	
Hammond	37061	2022	In 2028, the Regional Forestry Department will be completing the scheduled distribution cycle pruning.	2028	
Hammond	37061	2022	In 2023, the Regional Forestry Department will be performing extended hazard tree maintenance.	2023	
Hammond	37061	2022	The next I&M foot patrol is scheduled for 2024.	2024	
W. Adams	87551	2022	The next distribution cycle pruning is scheduled for 2024.	2024	
W. Adams	87551	2022	In 2023, the Regional Forestry Department will be performing extended hazard tree maintenance.	2023	
W. Adams	87551	2022	The level 3 maintenance work identified during the inspection will be completed in 2023.	2023	
W. Adams	87551	2022	The next I&M foot patrol is scheduled for 2025.	2025	

J. SOUTHWEST REGION

1. OPERATING REGIONAL PERFORMANCE

a. HISTORIC CAIDI AND SAIFI INDICES

IDS Info:

	2023	2022	2021	2020	2019	2018
CAIDI (Threshold 1.950)	1.74	1.72	1.74	1.70	1.68	1.86
SAIFI (Threshold 1.181)	0.89	1.32	1.06	0.99	1.11	1.02
SAIDI	1.55	2.27	1.85	1.67	1.86	1.90
Interruptions	974	1,207	1,192	1,088	1,126	1,050
Customers Interrupted	94,412	139,448	112,268	103,991	116,388	106,962
Customer-Hours Interrupted	163,990	240,403	195,894	176,339	195,716	198,886
Customers Served	105,951	106,001	105,961	105,512	105,136	104,824
Customers Per Interruption	96.93	115.53	94.18	95.58	103.36	101.87
Availability Index	99.9823	99.9741	99.9789	99.9810	99.9787	99.9783
Interruptions/1000 Customers	9.19	11.39	11.25	10.31	10.71	10.02

b. DISCUSSION OF REGIONAL PERFORMANCE

In 2023, the Southwest Region met its CAIDI reliability target and met its SAIFI reliability target as set forth by the New York Public Service Commission (PSC). The final System Average Interruption Frequency Index (SAIFI) result was 0.89 interruptions, 25% below the PSC goal of 1.181 interruptions. As shown in the table above, the Customer Average Interruption Duration index (CAIDI) was 1.74 in 2023, 11% below the PSC's regional target of 1.950 hours.

The 2023 CAIDI result was 1% above the 2022 result of 1.72 hours, and equal to the previous 5-year average of 1.74 hours. The 2023 SAIFI was 33% below the 2022 result of 1.32 interruptions, and 19% below the previous 5-year average of 1.10 interruptions.

In 2023, excluding major storms, the Southwest Region experienced 8 transmission interruptions. These interruptions accounted for 1% of the region's total interruptions (8 of 974), 27% of the region's total customers interrupted (CI), (25,029 of 94,412), and 18% (29,026 of 163,990) of the region's total customer-hours interrupted (CHI). Overall, transmission interruptions had a CAIDI of 1.16 hours, and a SAIFI of 0.24 interruptions.

The number of transmission-related interruptions decreased from 23 in 2022 to 8 in 2023 (a decrease of 65%). The number of customers interrupted decreased from 43,148 in 2022, to 25,029 in 2023 (a decrease of 42%), while the customer-hours interrupted decreased from 57,154 in 2022, to 29,026 in 2023 (a decrease of 49%).

In 2023, excluding major storms, the Southwest Region experienced 5 substation interruptions. These interruptions accounted for 1% of the region's total interruptions (5 of 974), 5% of the region's total customers interrupted, (4,309 of 94,412), and 3% (5,590 of 163,990) of the region's total customer-hours interrupted. Overall, substation interruptions had a CAIDI of 1.3 hours, and a SAIFI of 0.04 interruptions.

The number of substation-related interruptions decreased from 8 to 5 from 2022 to 2023 (a decrease of 38%). The number of customers interrupted decreased from 13,858 in 2022, to 4,309 in 2023 (a decrease of 69%), while the customer-hours interrupted decreased from 27,905 in 2022, to 5,590 in 2023 (a decrease of 80%).

In 2023, excluding major storms, the Southwest Region experienced 961 distribution interruptions. These interruptions accounted for 99% of the region's total interruptions (961 of 974), 69% of the region's total customers interrupted, (65,074 of 94,412), and 79% (129,374 of 163,990) of the region's total customer-hours interrupted. Overall, distribution interruptions had a CAIDI of 1.99 hours, and a SAIFI of 0.61 interruptions.

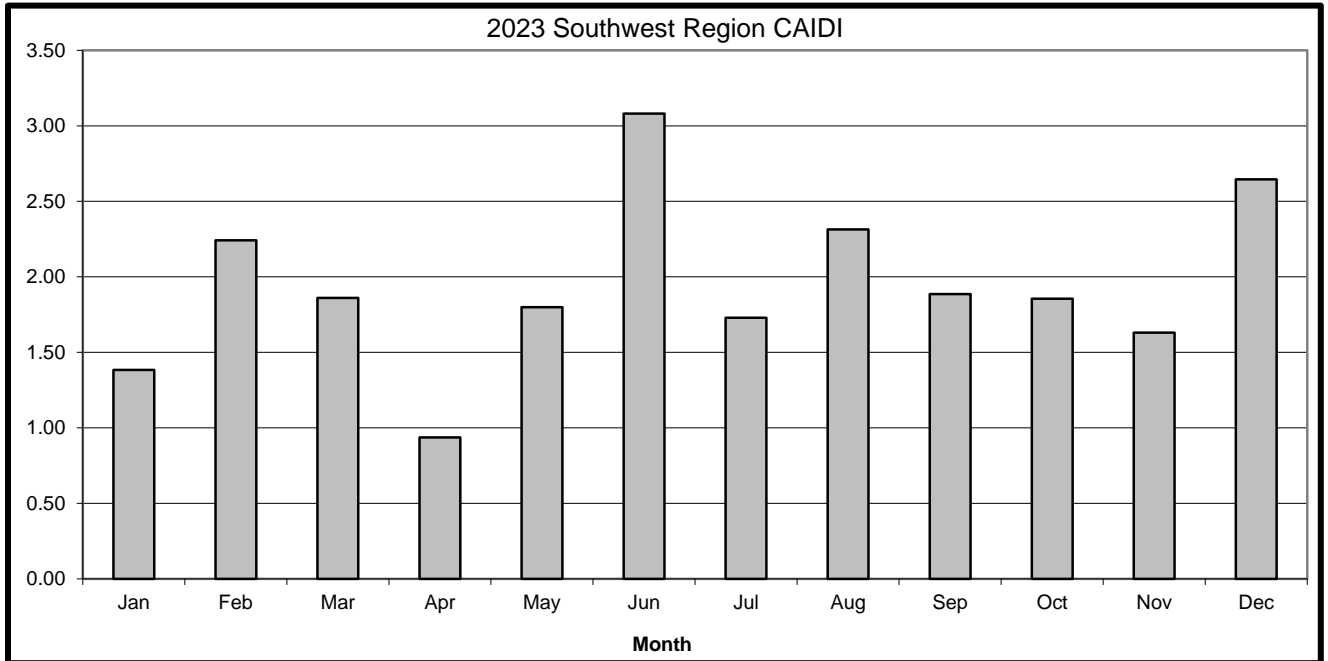
The number of distribution-related interruptions decreased from 1,176 to 961 from 2022 to 2023 (a decrease of 18%). The number of customers interrupted decreased from 82,442 in 2022, to 65,074 in 2023 (a decrease of 21%), while the customer-hours interrupted decreased from 155,343 in 2022, to 129,374 in 2023 (a decrease of 17%).

c. MONTHLY CAIDI AND SAIFI GRAPHS

The graphs on the following page show the monthly CAIDI and SAIFI for the Southwest Region for 2023. The Southwest Region met the CAIDI goals during eight months, with the lowest two months being January (1.38) and April (0.07). CAIDI was above the threshold for four months in 2023: February (2.24), June (3.08), August (2.31), December (2.65).

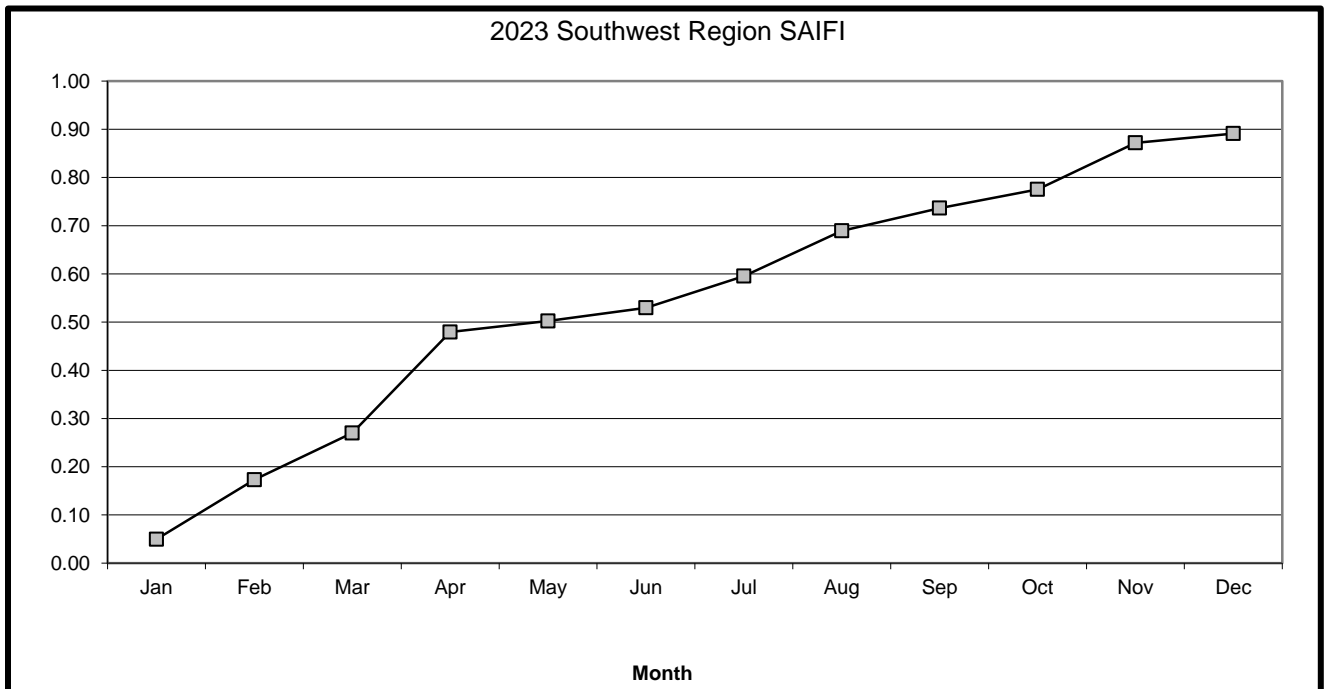
The year-end SAIFI for 2023 did meet the target for the Southwest Region. It showed the greatest increase during the months of February (0.12), March (0.10), April (0.21), August (0.09) and November (0.09); 69% of the SAIFI was accrued during these five months. The lowest five months for SAIFI were May (0.02), June (0.03), September (0.05), October (0.04) and December (0.02); the interruptions which occurred during these five months contributed 18% of the total SAIFI.

GRAPH OF MONTHLY CAIDI AND SAIFI FOR THE SOUTHWEST REGION



PSC CAIDI Goal:	
Threshold	1.950
2023 Actual	1.74

PSC SAIFI Goal:	
Threshold	1.181
2023 Actual	0.89



d. PSC CAUSE CODES

1) Number of Events by Cause – Historical

IDS Info:

Cause Code	2023	2022	2021	2020	2019	2018
01 Major Storms	522	264	300	264	809	347
02 Tree Contacts	447	554	507	469	391	596
03 Overloads	6	5	7	3	11	3
04 Oper. Error	6	9	4	3	6	4
05 Equipment	178	255	191	248	235	266
06 Accidents	126	157	156	112	120	165
07 Prearranged	20	20	33	19	22	17
08 Cust. Equip.	-	-	-	-	-	-
09 Lightning	46	56	123	70	82	108
10 Unknown	145	151	171	202	183	159
Total	1,496	1,471	1,492	1,796	1,390	1,859

2) Customers Interrupted by Cause – Historical

Cause Code	2023	2022	2021	2020	2019	2018
01 Major Storms	61,611	24,060	21,813	50,280	58,846	37,960
02 Tree Contacts	26,430	59,477	46,680	36,522	32,021	39,946
03 Overloads	22	17	439	42	839	73
04 Oper. Error	1,443	7,070	277	1,005	84	856
05 Equipment	20,972	24,143	24,740	25,493	18,232	29,519
06 Accidents	8,178	14,734	12,525	16,737	11,418	13,087
07 Prearranged	5,375	9,476	3,654	1,375	1,778	7,031
08 Cust. Equip.	-	-	-	-	-	-
09 Lightning	7,079	2,918	10,144	1,591	3,614	7,404
10 Unknown	24,913	21,613	13,809	33,623	38,976	19,797
Total	156,023	163,508	134,081	174,666	166,668	165,808

3) Customer-Hours Interrupted by Cause – Historical

Cause Code	2023	2022	2021	2020	2019	2018
Major Storms	347,089	110,325	141,665	136,780	890,163	377,373
Tree Contacts	66,011	129,551	92,454	94,555	61,644	116,292
Overloads	63	47	641	80	1,073	293
Oper. Error	1,523	1,474	111	187	36	1,133
Equipment	43,126	52,288	43,633	47,833	67,679	51,858
Accidents	14,384	18,803	22,955	18,831	19,995	17,279
Prearranged	7,509	10,265	3,080	1,144	2,460	5,966
Cust. Equip.	-	-	-	-	-	-
Lightning	10,615	6,321	20,180	3,833	6,615	16,571
Unknown	20,758	21,653	12,841	29,254	39,385	30,504
Total	511,079	350,727	337,560	532,440	332,496	1,089,050

4) Interruptions, Customers Interrupted, and Customer-Hours Interrupted – 2023

Cause Code	Interruptions		Customers Interrupted		Customer Hours Interrupted	
	Number	% Total	Number	% Total	Number	% Total
01 Major Storms	522	34.9%	61,611	39.5%	347,089	67.9%
02 Tree Contacts	447	29.9%	26,430	16.9%	66,011	12.9%
03 Overloads	6	0.4%	22	0.0%	63	0.0%
04 Oper. Error	6	0.4%	1,443	0.9%	1,523	0.3%
05 Equipment	178	11.9%	20,972	13.4%	43,126	8.4%
06 Accidents	126	8.4%	8,178	5.2%	14,384	2.8%
07 Prearranged	20	1.3%	5,375	3.4%	7,509	1.5%
08 Cust. Equip.	0	0.0%	0	0.0%	0	0.0%
09 Lightning	46	3.1%	7,079	4.5%	10,615	2.1%
10 Unknown	145	9.7%	24,913	16.0%	20,758	4.1%
Total	1,496	100.0%	156,023	100.0%	511,079	100.0%

e. **INTERRUPTION REVIEW BY PSC CAUSE CODES**

Cause Code 01 - Major Storms

In 2023, Major Storms accounted for 35% of interruptions, 39% of customers interrupted, and 68% of Customer-Hours Interrupted.

Interruptions due to Major Storm were up 98% from 2022, and up 11% over the 5-year average. Customers interrupted due to Major Storms were up 156% from 2022, and up 37% over the 5-year average. Customer-Hours interrupted were up 215% from 2022 and up 6% over the 5-year average.

The remaining PSC code descriptions do not include Major Storms in the percentages.

Cause Code 02 - Tree Contacts

In 2023, Tree Contacts accounted for 46% of interruptions, 28% of customers interrupted, and 40% of Customer-Hours Interrupted.

Interruptions due to Tree Contacts were down 19% from 2022, and down 6% over the 5-year average. Customers interrupted due to Tree Contacts were down 56% from 2022, and down 39% over the 5-year average. Customer-Hours interrupted were down 49% from 2022 and down 29% over the 5-year average.

Tree Contacts were the largest cause of interruptions in 2023.

Cause Code 03 - Overloads

In 2023, Overloads accounted for 1% of interruptions, 0% of customers interrupted, and 0% of Customer-Hours Interrupted.

Interruptions due to Overloads were up 20% from 2022, and down 14% over the 5-year average. Customers interrupted due to Overloads were up 29% from 2022, and down 92% over the 5-year average. Customer-Hours interrupted were up 36% from 2022 and down 84% over the 5-year average.

Overloads were the 7th largest cause of interruptions in 2023.

Cause Code 04 - Operator Error

In 2023, Operator Error accounted for 1% of interruptions, 2% of customers interrupted, and 1% of Customer-Hours Interrupted.

Interruptions due to Operator Error were down 33% from 2022, and flat at 0% over the 5-year average. Customers interrupted due to Operator Error were down 80% from 2022, and down 18% over the 5-year average. Customer-Hours interrupted were up 3% from 2022 and up 227% over the 5-year average.

Operator Error was the 7th largest cause of interruptions in 2023.

Cause Code 05 - Equipment Failure

In 2023, Equipment Failures accounted for 18% of interruptions, 22% of customers interrupted, and 26% of Customer-Hours Interrupted.

Interruptions due to Equipment Failure were down 30% from 2022, and down 21% over the 5-year average. Customers interrupted due to Equipment Failure were down 13% from 2022, and up 0% over the 5-year average. Customer-Hours interrupted were down 18% from 2022 and down 7% over the 5-year average.

Equipment Failures were the 2nd largest cause of interruptions in 2023.

Cause Code 06 - Accidents

In 2023, Accidents accounted for 13% of interruptions, 9% of customers interrupted, and 9% of Customer-Hours Interrupted.

Interruptions due to Accidents were down 20% from 2022, and down 10% over the 5-year average. Customers interrupted due to Accidents were down 44% from 2022, and down 44% over the 5-year average. Customer-Hours interrupted were down 23% from 2022 and down 34% over the 5-year average.

Accidents were the 4th largest cause of interruptions in 2023.

Cause Code 07 - Prearranged

In 2023, Prearranged accounted for 2% of interruptions, 6% of customers interrupted, and 5% of Customer-Hours Interrupted.

Interruptions due to Prearranged were flat at 0% from 2022, and down 17% over the 5-year average. Customers interrupted due to Prearranged were down 43% from 2022, and up 40% over the 5-year average. Customer-Hours interrupted were down 27% from 2022 and up 91% over the 5-year average.

Prearranged was the 6th largest cause of interruptions in 2023.

Cause Code 08 - Customer Equipment

There were no Customer Equipment interruptions in 2023.

Cause Code 09 - Lightning

In 2023, Lightning accounted for 5% of interruptions, 7% of customers interrupted, and 6% of Customer-Hours Interrupted.

Interruptions due to Lightning were down 18% from 2022, and down 45% over the 5-year average. Customers interrupted due to Lightning were up 143% from 2022, and up 35% over the 5-year average. Customer-Hours interrupted were up 68% from 2022 and up 16% over the 5-year average.

Lightning was the 5th largest cause of interruptions in 2023.

Cause Code 10 - Unknown

In 2023, Unknown causes accounted for 15% of interruptions, 26% of customers interrupted, and 13% of Customer-Hours Interrupted.

Interruptions due to Unknown causes were down 4% from 2022, and down 16% over the 5-year average. Customers interrupted due to Unknown causes were up 15% from 2022, and down 3% over the 5-year average. Customer-Hours interrupted were down 4% from 2022 and down 22% over the 5-year average.

Unknown causes were the 3rd largest cause of interruptions in 2023.

f. **DISCUSSION OF REGIONAL CAPEX PROJECTS WITH 2023/24 SPENDS:**

The Southwest Region continues to work on capital-related projects in order to maintain customer satisfaction and future reliability. Some specific projects constructed either in 2023 or planned for construction in 2024 are discussed below. An additional table of major infrastructure projects follows and includes distribution, sub-transmission, and transmission-related projects.

Some projects on the list or discussed below are substation-related projects located throughout the Region intended to address reliability, loading concerns or equipment condition issues, including Delameter #93 and Eden Switch Structure.

There are numerous distribution projects where lines are being rebuilt or reconductored. These projects resulted from reliability reviews, responses to QRS inquiries, results of implementing asset strategies, and/or responses to load-related issues. Some specific reliability-related projects in the Southwest Region follow below:

Delameter Substation #93

Delameter substation is an 115kV/13.2kV substation with one transformer bank, which serves over 9,342 customers. A project is underway to add another for reliability and reconfigure two new feeders. Transformer bank #1 violates the 240MWhr criteria. The station has only one tie to an adjacent 13.2kV station (Lakeview). This project will improve asset condition and reliability. The project is expected to be completed by the end of 2027.

Eden Switch Structure Substation

Eden Switch Structure substation will be a 34.5kV/13.2kV substation with one transformer banks, which serves customers from North Eden, Delameter, Eden Center, and North Collins. A project is underway to purchase the land nearby the existing structures and create a standard 13.2 distribution station. This project will improve surround area system capacity and reliability. The project is expected to be completed by the end of 2027.

Sub-Transmission Infrastructure Projects:

The 34.5kV system in the Southwest Region consists of several very long loops, which traverse through some of the most rugged terrain in the Western Division. Additionally, there are numerous distribution circuits built below the sub-transmission circuits on shared poles. If either circuit fails, often times both are affected. The following sub-transmission projects were completed in 2022: Dunkirk Steam-Rel/Repl 34.5 Ins-West Portland 851, Hartfield -South Dow 859 34.5 kV part 3., W. Salamanca-Homer Hill 805-34.5kV, and Homer Hill-Nile 811-34.5 kV Insulator. Several the projects planned for 2023/2024 will maintain and upgrade the system, including the projects following the sub-transmission lines: Install DA Scheme on the 863 Sherman-Ashville Line, Sherman-Ashville 863-Ref/Rec, install DA Scheme on Line 811 Homer Hill-Nile. These projects will improve asset condition and reliability.

Major Capital Projects for Southwest Region:

Region	Project Name	Project Type	Fin Sys Proj No.	Finish	Total Spend
Southwest	Ball Hill Wind Project - Line - C082372	Trans	C082372	5/5/23	\$2,492,000
Southwest	BALL HILL WIND PROJECT - STATIONS - C082373	Trans	C082373	5/5/23	\$3,466,000
Southwest	EMPIRE CHEESE STATION WORK - C088696	Sub Trans	C088696	12/15/23	\$1,496,000
Southwest	EMPIRE CHEESE NG MACHIAS UPGRADES - C089661	Trans Sub	C089661	12/18/23	\$1,162,000
Southwest	Empire Cheese - Sub-T Line Work - C088698	Sub Trans	C088698	11/10/23	\$9,751,000
Southwest	W. Ashville-Ashville 868 and 863 tap	Sub Trans	C081141	2/10/23	\$1,369,165
Southwest	HOMER HILL SWITCH STRUCTURE DSCADA (REPLACE CPU & DUAL PORT) - C081809	Trans	C081809	12/7/23	\$2,190,000
Southwest	M9000 - SOUTHDOW STATION M9000 RTU - C069437	Trans	C069437	3/31/23	\$1,870,000

2. OPERATING CIRCUIT LISTS

This section includes the following three (3) tables and Worst Performing Circuit analysis for the Southwest Region.

- a. Worst Performing Circuit List
- b. Worst Performing Circuits with Three-Year History for CAIDI and SAIFI Indices
- c. Worst Performing Circuits by number of Momentary Interruptions

a. NATIONAL GRID WORST PERFORMING CIRCUIT LIST

SOUTHWEST REGION

FEEDER #	A CUST. SERVED	B TOTAL INTER.	C #CUST. INTER.	D CUST. HRS. INTER.	C/A SAIFI	D/A SAIDI	D/C CAIDI	NUMBER OF MOMENTARIES
DELAMETER 9354	3,115	32	7,618	13,500	2.45	4.33	1.77	1
SINCLAIRVILLE STA 72 7261	1,233	15	4,174	10,880	3.39	8.82	2.61	2
CATTARAUGUS STA 15 1562	699	15	1,765	7,866	2.53	11.25	4.46	1
ANDOVER STA 09 0962	448	11	2,021	5,308	4.51	11.85	2.63	2
FARMERSVILLE STA 27 2762	716	13	1,168	6,342	1.63	8.86	5.43	1

Regional Goals:
 CAIDI 1.95
 SAIFI 1.181

b. NATIONAL GRID WORST PERFORMING CIRCUITS WITH A 3 YEAR HISTORY FOR CAIDI AND SAIFI INDICES.

SOUTHWEST REGION

FEEDER #	2023 CAIDI	2022 CAIDI	2021 CAIDI	2020 CAIDI	2023 SAIFI	2022 SAIFI	2021 SAIFI	2020 SAIFI
DELAMETER 9354	1.77	1.50	2.33	1.66	2.45	3.43	1.18	1.94
SINCLAIRVILLE STA 72 7261	2.61	3.04	1.32	1.27	3.39	0.31	0.57	0.85
CATTARAUGUS STA 15 1562	4.46	4.82	5.49	4.23	2.53	3.87	2.32	0.81
ANDOVER STA 09 0962	2.63	4.03	0.60	0.99	4.51	1.02	1.63	1.06
FARMERSVILLE STA 27 2762	5.43	0.39	1.90	4.15	1.63	1.31	0.79	1.43

Regional Goals:
 CAIDI 1.95
 SAIFI 1.181

c. NATIONAL GRID WORST PERFORMING CIRCUITS BY # OF MOMENTARY INTERRUPTIONS

SOUTHWEST REGION

Feeders			Customer Momentaries				Ranks		
Volts (kV)	Station Name	Ckt/F No.	Substation	Transmission	Distribution	Total	Within Region	Within System	Reliability Ranking
No circuits experienced 10 or more momentary interruptions in 2023.									

d. WORST PERFORMING CIRCUIT ANALYSIS

For 2023, the Company is reporting on the five worst performing feeders in the Southwest Region. The list consists of one 13.2kV feeders and four 4.8kV feeder.

For the Southwest Region, the CAIDI threshold is 1.95 hours, and the SAIFI threshold is 1.181 interruptions.

1. DELAMETER 9354 – 13.2kV

Profile: 3,115 Customers, 66.1 Circuit Miles

Indices: CAIDI = 1.77, SAIFI = 2.45

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	17	53.13%	5,252	68.94%	7,163	53.06%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	4	12.50%	16	0.21%	44	0.33%
6	ACCIDENTS	5	15.63%	18	0.24%	40	0.29%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	2	6.25%	2,320	30.45%	6,225	46.11%
10	UNKNOWN	4	12.50%	12	0.16%	29	0.21%
Totals		32	100.00%	7,618	100.00%	13,500	100.00%

Problem Analysis:

- There were 32 interruptions on the Delameter 9354 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 32 events occurred at the distribution level.
- The distribution circuit breaker for the Delameter 9354 experienced 1 momentary operation in 2023.
- The distribution circuit breaker for the Delameter 9354 experienced 0 sustained operations (lockouts) in 2023.
- Trees were the leading cause of interruptions on the Delameter 9354 in 2023, accounting for 53% of total interruptions (17 of 32). Accidents were the 2nd leading cause of interruptions, accounting for 16% of total interruptions (5 of 32). Equipment Failures were the 3rd leading cause of interruptions, accounting for 13% of total interruptions (4 of 32).
- Trees were the leading cause of customers interrupted (CI) on the Delameter 9354 in 2023, accounting for 69% of total customers interrupted (5,252 of 7,618). Lightning were the 2nd leading cause of customers interrupted, accounting for 30% of total customers interrupted (2,320 of 7,618). Accidents were the 3rd leading cause of customers interrupted, accounting for 0% of total customers interrupted (18 of 7,618).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Delameter 9354 in 2023, accounting for 53% of total customer-hours interrupted (7,163 of 13,500). Lightning were the 2nd leading cause of customer-hours interrupted, accounting for 46% of total customer-hours interrupted (6,225 of 13,500). Equipment Failures were the 3rd leading cause of customer-hours interrupted, accounting for 0% of total customer-hours interrupted (44 of 13,500).
- Of the 32 interruptions on this circuit, 26 affected 10 customers or less, with 13 being single customer outages.

Action Taken:

- Distribution Line Inspection was completed in June 2021. All level 1 and Level 2 maintenance has been completed.
- Sub-T Line Inspection was completed in July 2023. All levels of maintenance have been completed.
- Hazard Tree Removal performed in FY2018.

Action Plan:

- Complete Level 2 Distribution Line Inspection work due in 2024.
- Complete Level 3 Distribution Line Inspection work due in 2025.
- Distribution cycle tree trimming scheduled for FY2025

2. SINCLAIRVILLE STA 72 7261 – 4.8kV

Profile: 1,233 Customers, 89 Circuit Miles
 Indices: CAIDI = 2.61, SAIFI = 3.39

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	9	60.00%	1,643	39.36%	6,168	56.69%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	3	20.00%	1,237	29.64%	2,785	25.59%
6	ACCIDENTS	2	13.33%	1,232	29.52%	1,796	16.51%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	1	6.67%	62	1.49%	131	1.21%
Totals		15	100.00%	4,174	100.00%	10,880	100.00%

Problem Analysis:

- There were 15 interruptions on the Sinclairville Sta 72 7261 in 2023.
- There were no transmission interruptions.
- There were no substation interruptions.
- All 15 events occurred at the distribution level.
- The distribution circuit breaker for the Sinclairville Sta 72 7261 experienced 2 momentary operations in 2023.
- The distribution circuit breaker for the Sinclairville Sta 72 7261 experienced 2 sustained operations (lockouts) in 2023. These interruptions accounted for 59% of the total amount of customers interrupted (2,462 out of 4,174) and 63% of the total amount of the customer-hours interrupted (6,832 out of 10,880).
 - The first lockout occurred on January 29, 2023, coded as a cause of vehicle (PSC cause code 06). This lockout accounted for 29% of the total customers interrupted (1,231 of 4,174), and 16% of the total customer-hours interrupted (1,784 of 10,880). This event resulted from Pole 78 Sylvester Rd - guy wire wrapped around all three phases resulting in an outage of 1,783.6 hours.
 - The second lockout occurred on April 16, 2023, coded as a cause of tree fell (PSC cause code 02). This lockout accounted for 29% of the total customers interrupted (1,231 of 4,174), and 46% of the total customer-hours interrupted (5,048 of 10,880). This event resulted from Feeder lockout due to trees falling into primary at multiple locations - tree down broke P8 Old Chautauqua Rd and pulled down 5 sections of primary - opened at P1 to isolate and make repairs resulting in an outage of 5,048.3 hours.

- Trees were the leading cause of interruptions on the Sinclairville Sta 72 7261 in 2023, accounting for 60% of total interruptions (9 of 15). Equipment Failures were the 2nd leading cause of interruptions, accounting for 20% of total interruptions (3 of 15). Accidents were the 3rd leading cause of interruptions, accounting for 13% of total interruptions (2 of 15).
- Trees were the leading cause of customers interrupted (CI) on the Sinclairville Sta 72 7261 in 2023, accounting for 39% of total customers interrupted (1,643 of 4,174). Equipment Failures were the 2nd leading cause of customers interrupted, accounting for 30% of total customers interrupted (1,237 of 4,174). Accidents were the 3rd leading cause of customers interrupted, accounting for 30% of total customers interrupted (1,232 of 4,174).
- Trees were the leading cause of customer-hours interrupted (CHI) on the Sinclairville Sta 72 7261 in 2023, accounting for 57% of total customer-hours interrupted (6,168 of 10,880). Equipment Failures were the 2nd leading cause of customer-hours interrupted, accounting for 26% of total customer-hours interrupted (2,785 of 10,880). Accidents were the 3rd leading cause of customer-hours interrupted, accounting for 17% of total customer-hours interrupted (1,796 of 10,880).
- Of the 15 interruptions on this circuit, 10 affected 10 customers or less, with 7 being single customer outages.

Action Taken:

- Distribution line inspection was last completed in June 2020. All Level 1 and Level 2 work has been completed.
- Last Tree Pruning was completed in 2023, next scheduled for 2030.
- Ash Tree Mitigation was completed in 2019.
- Hazard Tree Mitigation was completed in 2016/2019.

Action Plan:

- Complete Level 2 Distribution Line Inspection work due in 2024.
- Complete Level 3 Distribution Line Inspection work due in 2025.
- Perform mid-cycle hazard tree review out to first protective device by 2025.

3. CATTARAUGUS STA 15 1562 – 4.8kV

Profile: 699 Customers, 73.6 Circuit Miles
 Indices: CAIDI = 4.46, SAIFI = 2.53

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	9	60.00%	1,047	59.32%	6,281	79.85%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	4	26.67%	16	0.91%	50	0.63%
6	ACCIDENTS	0	0.00%	0	0.00%	0	0.00%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	2	13.33%	702	39.77%	1,535	19.52%
Totals		15	100.00%	1,765	100.00%	7,866	100.00%

Problem Analysis:

- There were 15 interruptions on the Cattaraugus Sta 15 1562 in 2023.
- There was 1 transmission interruption.
 - This Transmission interruption occurred on April 10, 2023, coded as a cause of unknown (PSC cause code 10). This lockout accounted for 39% of the total customers interrupted (697 of 1,765), and 19% of the total customer-hours interrupted (1,515 of 7,866). This event resulted from an unknown cause resulting in an outage of 2,575.4 hours. The outage was isolated and restored from West Salamanca.
- There were no substation interruptions.
- The remaining 14 events occurred at the distribution level.
- The distribution circuit breaker for the Cattaraugus Sta 15 1562 experienced 1 momentary operation in 2023.
- The distribution circuit breaker for the Cattaraugus Sta 15 1562 experienced 0 sustained operations (lockouts) in 2023.
- Trees were the leading cause of interruptions on the Cattaraugus Sta 15 1562 in 2023, accounting for 60% of total interruptions (9 of 15). Equipment Failures were the 2nd leading cause of interruptions, accounting for 27% of total interruptions (4 of 15). Unknown were the 3rd leading cause of interruptions, accounting for 13% of total interruptions (2 of 15).
- Trees were the leading cause of customers interrupted (CI) on the Cattaraugus Sta 15 1562 in 2023, accounting for 59% of total customers interrupted (1,047 of 1,765). Unknown were the 2nd leading cause of customers interrupted, accounting for 40% of total customers interrupted (702 of 1,765). Equipment Failures were the 3rd leading cause of customers interrupted, accounting for 1% of total customers interrupted (16 of 1,765).

- Trees were the leading cause of customer-hours interrupted (CHI) on the Cattaraugus Sta 15 1562 in 2023, accounting for 80% of total customer-hours interrupted (6,281 of 7,866). Unknown were the 2nd leading cause of customer-hours interrupted, accounting for 20% of total customer-hours interrupted (1,535 of 7,866). Equipment Failures were the 3rd leading cause of customer-hours interrupted, accounting for 1% of total customer-hours interrupted (50 of 7,866).
- Of the 15 interruptions on this circuit, 13 affected 10 customers or less, with 8 being single customer outages.

Action Taken:

- Distribution Line Inspection was completed in September 2020 and March 2022.
- All level 1 distribution line inspection maintenance work has been completed.
- All level 2 distribution line inspection maintenance work has been completed.
- All level 1 distribution line inspection maintenance work has been completed.
- $216/293 = 74\%$ Level 3 distribution line inspection maintenance work has been completed.
- Last Tree Pruning was completed in October 2023; next schedule for 2024.
- Hazard Tree Mitigation was completed in 2016.

Action Plan:

- Complete Level 2 Distribution Line Inspection work due in 2024.
- Complete Level 3 Distribution Line Inspection work due in 2025.

4. ANDOVER STA 09 0962 – 4.8kV

Profile: 448 Customers, 12.3 Circuit Miles
 Indices: CAIDI = 2.63, SAIFI = 4.51

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	5	45.45%	207	10.24%	1,015	19.12%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	3	27.27%	472	23.35%	2,291	43.16%
6	ACCIDENTS	1	9.09%	447	22.12%	593	11.17%
7	PREARRANGED	1	9.09%	447	22.12%	804	15.16%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	1	9.09%	448	22.17%	605	11.39%
10	UNKNOWN	0	0.00%	0	0.00%	0	0.00%
Totals		11	100.00%	2,021	100.00%	5,308	100.00%

Problem Analysis:

- There were 11 interruptions on the Andover Sta 09 0962 in 2023.
- There was 1 transmission interruption.
 - This Transmission interruption occurred on August 25, 2023, coded as a cause of lightning (PSC cause code 09). This lockout accounted for 22% of the total customers interrupted (448 of 2,021), and 11% of the total customer-hours interrupted (605 of 5,308). This event resulted from a lockout on L541 isolated and restored - breaker R975 at Andover failure – lightning, resulting in an outage of 1,566.6 hours.
- There was 1 substation interruption.
 - This Substation interruption occurred on March 07, 2023, coded as a cause of no cause associated (PSC cause code 07). This lockout accounted for 22% of the total customers interrupted (447 of 2,021), and 15% of the total customer-hours interrupted (804 of 5,308). This event resulted from Maintenance - Planned outage to replace Andover Station regulators, resulting in an outage of 804.5 hours.
- The remaining 9 events occurred at the distribution level.
- The distribution circuit breaker for the Andover Sta 09 0962 experienced 2 momentary operations in 2023.
- The distribution circuit breaker for the Andover Sta 09 0962 experienced 2 sustained operations (lockouts) in 2023. These interruptions accounted for 44% of the total amount of customers interrupted (895 out of 2,021) and 51% of the total amount of the customer-hours interrupted (2,694 out of 5,308).
 - The first lockout occurred on May 31, 2023, coded as a cause of non-company activities (PSC cause code 06). This lockout accounted for 22% of the total customers interrupted (447 of 2,021), and 11% of the total customer-hours interrupted (593 of 5,308). This event resulted from P1 ROW off Baker St - guy wire let go and wrapped into primary causing station breaker to L/O - removed guy wire and closed in station breaker - noncompany activities, resulting in an outage of 592.7 hours.

- The second lockout occurred on August 30, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 22% of the total customers interrupted (448 of 2,021), and 40% of the total customer-hours interrupted (2,101 of 5,308). This event resulted from Emergency Repair - Planned outage Andover station to put portable on - device failed/ transformer, resulting in an outage of 2,101.1 hours.
- Trees were the leading cause of interruptions on the Andover Sta 09 0962 in 2023, accounting for 45% of total interruptions (5 of 11). Equipment Failures were the 2nd leading cause of interruptions, accounting for 27% of total interruptions (3 of 11). Accidents were the 3rd leading cause of interruptions, accounting for 9% of total interruptions (1 of 11).
- Equipment Failures were the leading cause of customers interrupted (CI) on the Andover Sta 09 0962 in 2023, accounting for 23% of total customers interrupted (472 of 2,021). Lightning were the 2nd leading cause of customers interrupted, accounting for 22% of total customers interrupted (448 of 2,021). Accidents were the 3rd leading cause of customers interrupted, accounting for 22% of total customers interrupted (447 of 2,021).
- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the Andover Sta 09 0962 in 2023, accounting for 43% of total customer-hours interrupted (2,291 of 5,308). Trees were the 2nd leading cause of customer-hours interrupted, accounting for 19% of total customer-hours interrupted (1,015 of 5,308). Prearranged were the 3rd leading cause of customer-hours interrupted, accounting for 15% of total customer-hours interrupted (804 of 5,308).
- Of the 11 interruptions on this circuit, 5 affected 10 customers or less, with 3 being single customer outages.

Action Taken:

- In September 2020, distribution line inspection was completed. All level distribution line inspection maintenance was completed.
- Last Tree Pruning was completed in October 2019; next schedule for 2026.

Action Plan:

- Complete Level 2 Distribution Line Inspection work due in 2024.
- Complete Level 3 Distribution Line Inspection work due in 2025.
- Actively monitor 2024 hazard tree events and will escalate if necessary.

5. FARMERSVILLE STA 27 2762 – 4.8V

Profile: 716 Customers, 81.8 Circuit Miles
 Indices: CAIDI = 5.43, SAIFI = 1.63

CAUSE CODE PERFORMANCE TABLE

Code	Category	Interruptions		Customers Interrupted		Customer Hours	
		Number	% Total	Number	% Total	Number	% Total
2	TREE	6	46.15%	117	10.02%	462	7.28%
3	OVERLOADS	0	0.00%	0	0.00%	0	0.00%
4	OPER. ERROR	0	0.00%	0	0.00%	0	0.00%
5	EQUIPMENT	1	7.69%	715	61.22%	5,327	84.00%
6	ACCIDENTS	1	7.69%	1	0.09%	1	0.02%
7	PREARRANGED	0	0.00%	0	0.00%	0	0.00%
8	CUST. EQUIP.	0	0.00%	0	0.00%	0	0.00%
9	LIGHTNING	0	0.00%	0	0.00%	0	0.00%
10	UNKNOWN	5	38.46%	335	28.68%	551	8.69%
Totals		13	100.00%	1,168	100.00%	6,342	100.00%

Problem Analysis:

- There were 13 interruptions on the Farmersville Sta 27 2762 in 2023.
- There was 1 transmission interruption.
 - This Transmission interruption occurred on February 05, 2023, coded as a cause of device failed (PSC cause code 05). This lockout accounted for 61% of the total customers interrupted (715 of 1,168), and 84% of the total customer-hours interrupted (5,327 of 6,342). This event resulted from Sub Transmission line pole on fire/ placed clearance on L801 resulting in Delevan and Farmersville Stations being de-energized - sub transmission line came down into distribution/ checks performed before restoring distribution feeders - failed insulator at P102/ replaced pole and re-energized L801 and stations, resulting in an outage of 16,016.8 hours.
- There were no substation interruptions.
- The remaining 12 events occurred at the distribution level.
- The distribution circuit breaker for the Farmersville Sta 27 2762 experienced 1 momentary operation in 2023.
- The distribution circuit breaker for the Farmersville Sta 27 2762 experienced 0 sustained operations (lockouts) in 2023.
- Trees were the leading cause of interruptions on the Farmersville Sta 27 2762 in 2023, accounting for 46% of total interruptions (6 of 13). Unknown were the 2nd leading cause of interruptions, accounting for 38% of total interruptions (5 of 13). Equipment Failures were the 3rd leading cause of interruptions, accounting for 8% of total interruptions (1 of 13).
- Equipment Failures were the leading cause of customers interrupted (CI) on the Farmersville Sta 27 2762 in 2023, accounting for 61% of total customers interrupted (715 of 1,168). Unknown were the 2nd leading cause of customers interrupted, accounting for 29% of total customers interrupted (335 of 1,168). Trees were the 3rd leading cause of customers interrupted, accounting for 10% of total customers interrupted (117 of 1,168).

- Equipment Failures were the leading cause of customer-hours interrupted (CHI) on the Farmersville Sta 27 2762 in 2023, accounting for 84% of total customer-hours interrupted (5,327 of 6,342). Unknown were the 2nd leading cause of customer-hours interrupted, accounting for 9% of total customer-hours interrupted (551 of 6,342). Trees were the 3rd leading cause of customer-hours interrupted, accounting for 7% of total customer-hours interrupted (462 of 6,342).
- Of the 13 interruptions on this circuit, 9 affected 10 customers or less, with 7 being single customer outages.

Action Taken:

- Distribution line inspection was last completed October 2022. All Level 1 and Level 2 work has been completed.
- Last Tree Pruning was completed in October 2020; next schedule for 2027.
- Ash Tree Mitigation was completed in 2021.

Action Plan:

- Complete Level 2 Distribution Line Inspection work due in 2024.
- Complete Level 3 Distribution Line Inspection work due in 2025.
- Actively monitor 2024 hazard tree events and will escalate if necessary.

3. ACTION PLAN SUMMARIES

a. SUMMARY OF ACTION PLANS FOR 2023 WORST PERFORMING CIRCUIT

Station	Feeder	Report Year	Action Plan	Estimated Compl. Date	Comments
Delameter	07-9354	2023	Complete Level 2 Distribution Line Inspection work due in 2024.	2024	
Delameter	07-9354	2023	Complete Level 3 Distribution Line Inspection work due in 2025.	2025	
Delameter	07-9354	2023	Distribution cycle tree trimming scheduled for FY2025.	2025	
Sinclairville	08-7261	2023	Complete Level 2 Distribution Line Inspection work due in 2024.	2024	
Sinclairville	08-7261	2023	Complete Level 3 Distribution Line Inspection work due in 2025.	2025	
Sinclairville	08-7261	2023	Perform mid-cycle hazard tree review out to first protective device.	2025	
Cattaraugus	10-1562	2023	Complete Level 2 Distribution Line Inspection work due in 2024.	2024	
Cattaraugus	10-1562	2023	Complete Level 3 Distribution Line Inspection work due in 2025.	2025	
Andover	10-0962	2023	Complete Level 2 Distribution Line Inspection work due in 2024.	2024	
Andover	10-0962	2023	Complete Level 3 Distribution Line Inspection work due in 2025.	2025	
Andover	10-0962	2023	Actively monitor 2024 hazard tree events and will escalate if necessary.	2024	
Farmersville	10-2762	2023	Complete Level 2 Distribution Line Inspection work due in 2024.	2024	
Farmersville	10-2762	2023	Complete Level 3 Distribution Line Inspection work due in 2025.	2025	
Farmersville	10-2762	2023	Actively monitor 2024 hazard tree events and will escalate if necessary.	2024	

b. STATUS OF ACTION PLANS FOR 2022 WORST PERFORMING CIRCUITS

Station	Feeder	Report Year	Action Plan	Estimated Compl. Date	Comments
Cattaraugus	10-1562	2022	Distribution cycle tree trimming scheduled for FY2024.	2023	Complete
Cattaraugus	10-1562	2022	L816 SubT line inspection	2023	Complete
Cattaraugus	10-1562	2022	Complete Level 3 maintenance work	2023	Complete
Delameter	07-9354	2022	Complete Level 2 maintenance work	2023	Complete
Delameter	07-9354	2022	Complete Level 3 maintenance work	2024	
Delameter	07-9354	2022	Hazard Tree Removal work in FY 2023.	2023	Complete
Delameter	07-9353	2022	Complete Level 2 maintenance work	2024	
Delameter	07-9353	2022	Complete Level 3 maintenance work	2025	
Baker St	09-15055	2022	Complete Level 2 maintenance work	2023	Complete
Baker St	09-15055	2022	Actively monitor 2023 hazard tree events and will escalate if necessary.	2023	Complete
Berry Rd	08-15352	2022	Complete Level 2 maintenance work	2023	Complete
Berry Rd	08-15352	2022	Complete Level 3 maintenance work	2024	
Baker St	09-15056	2022	Distribution line inspection to be completed	2023	Complete

K. GLOSSARY

CAIDI - Customer Average Interruption Duration Index is the average service restoration time for customers interrupted. It is determined by dividing the sum of all customer interruption durations by the total number of customers interrupted in a year.

Customer Hours of Interruption - The hours of interruption duration multiplied by the number of customers interrupted for a given interruption.

Distribution Circuit - An electric feeder line serving customers and operating at voltage levels below 23,000 volts - Typically, 4.16, 4.8 or 13.2kV.

Failed Region - Any region whose indices exceed the CAIDI or SAIFI performance level set for that region.

Fiscal Year – Beginning in 2002 the Company changed the cycle of its annual budgeting and reporting process from a calendar year beginning January 1st and ending December 31st to a fiscal year beginning April 1st and ending March 31st of the following year. Budget estimates for work to be performed on worst performing feeders will most likely reflect this shift in fiscal year budgeting while actual costs typically reflect work completed by the end of the calendar year.

Interruption - Loss of electric service for five minutes or more to one or more customers. This is a reliability issue rather than a power quality issue.

Major Storm - A storm that causes at least 10% of the metered customers in a region to be without service or a storm that results in metered customers to be without service for 24 hours or more.

Minimum Goal - As defined by the Company and the PSC, this is the level of service reliability below which a region fails and additional analysis is required.

Momentary Interruption - Loss of electric service for less than five minutes to one customer or more. This a power quality rather than a reliability issue.

Objective Goal - The target level of service reliability as defined by the Company and the PSC.

Power Quality - The performance of a circuit other than that defined by reliability. It is characterized by parameters such as the number of momentary (less than 5 minute) interruptions, steady state voltage sags, swells, surges, noise and harmonics.

Recloser - A loadbreak device that operates when a fault current of pre-determined level and duration flows through it.

Region - One of eight geographic areas within the Company's electric territory. For the purpose of this report, the eight regions are: Capital (Albany, Troy, Schenectady, Hudson); Central (Syracuse, Fulton, Oswego, Pulaski, Cortland); Frontier (Buffalo, Niagara Falls); Genesee (Batavia, Avon,

Albion, Medina); Mohawk Valley (Utica, Rome, Oneida, Herkimer); Northeast (Glens Falls, Saratoga, Ticonderoga); Northern (Watertown, Ogdensburg, Malone, Potsdam); And Southwest (Angola, Fredonia, Stow, Olean).

Reliability - The electric performance of a distribution circuit as experienced by its customers. It is based on interruptions of five (5) minutes or longer, their duration, frequency and number of customers affected.

SAI - System Availability Index is the percent of time that service was available during the year. The SAI is derived from the ratio of the total number of customer hours that service was available during the year (24/hour/day x 365 days/year - SAIDI) to the total customer hours available per year (8,760 = 24 hours/day x 365 days/year) multiplied by 100 percent.

SAIDI - System Average Interruption Duration Index is an average interruption duration per customers served per year. It is the ratio of the customer hours interrupted to the total number of customers served.

SAIFI - System Average Interruption Frequency Index is the average number of times that a customer is interrupted in a year. It is determined by dividing the number of customers interrupted in a year by the average number of customers connected during the year.

SECTIONALIZER - A non-loadbreak circuit device that works with substation breaker or a recloser to minimize the number of customers involved in an interruption.

Worst-Performing Circuits - Circuits in the system or a given region that are the worst performing based on the Company's combined rankings of:

- a. SAIFI
- b. SAIDI
- c. Number of Interruptions
- d. Number of Customer Hours Interrupted

NATIONAL GRID
ELECTRIC SERVICE INTERRUPTION - ACTIVE FEEDER RANKING
DURING TIME PERIOD JAN 01, 2023 TO DEC 31, 2023
FACILITY TYPE(S) INCLUDE: DISTRIBUTION, SUBSTATION, AND TRANSMISSION
EXCLUDING PSC CODE(S): 01
REPORT # 4
SYSTEM REPORT

Region	Station Name	Ckt/F No.	No. Cst. Served	No. Intr.	Intr. Rank	Tot. Dur. Hours	Avg. Dur.	Max. Dur.	Cust. Intr.	Max. Cust.	Tot. Cust. Hours	Tot. CH Rank	SAIFI	SAIFI Rank	SAIDI	SAIDI Rank	CAIDI	Fdr Rank	Mmty Intr.
Northeast	Hague Road	41-41853	2237	42	2096	131	3.1	9.8	18836	2244	42096.64	2109	8.42	2109	18.82	2109	2.23	8423	0
Northeast	Port Henry	41-38551	1809	43	2099	185.2	4.3	11.2	10298	1810	28868.67	2107	5.69	2105	15.96	2100	2.8	8411	0
Northeast	Chestertown	40-04252	2408	56	2107	291.3	5.2	21.3	10629	2420	42244.15	2110	4.41	2086	17.54	2105	3.97	8408	1
Northeast	Schroon Lake	41-42951	2410	56	2107	194	3.5	8.7	9375	2401	30681.97	2108	3.89	2077	12.73	2081	3.27	8373	2
Mohawk	Eagle Bay	17-38272	1076	30	2058	167.2	5.6	15.1	6827	1080	17273.84	2096	6.34	2108	16.05	2101	2.53	8363	3
Mohawk	Raquette Lake	17-39861	515	26	2027	228.7	8.8	28.6	5146	520	18716.63	2100	9.99	2110	36.34	2110	3.64	8347	3
Northeast	St Johnsville	35-33551	967	51	2104	207	4.1	14.6	4483	963	10646.72	2065	4.64	2092	11.01	2062	2.37	8323	0
Capital	Curry Road	32-36552	1989	37	2085	227.6	6.2	28.5	8581	1996	19314.58	2101	4.31	2085	9.71	2047	2.25	8318	2
Northern	Lowville	23-77354	2775	69	2109	188.1	2.7	7.6	9745	2790	23468.07	2106	3.51	2065	8.46	2028	2.41	8308	3
Mohawk	Salisbury	19-67857	1048	36	2083	132.6	3.7	9.7	6256	1047	10537.15	2064	5.97	2106	10.05	2051	1.68	8304	2
Northeast	Pottersville	40-42451	1144	23	1992	68.6	3	9.4	6170	1148	18709.28	2099	5.39	2103	16.35	2102	3.03	8296	2
Northeast	Chestertown	40-04251	1441	26	2027	75.7	2.9	7.5	5082	1444	20587.93	2102	3.53	2068	14.29	2095	4.05	8292	2
Genesee	W Hamlin	06-8254	2131	35	2080	107.3	3.1	12.1	10155	2140	15677.31	2089	4.77	2094	7.36	2015	1.54	8278	2
Northeast	Queensbury	38-29554	1901	27	2036	99.6	3.7	11.6	9898	1910	17886.41	2097	5.21	2099	9.41	2045	1.81	8277	6
Northeast	Scofield	38-45053	1466	27	2036	142.5	5.3	11.8	4220	1464	21896.11	2105	2.88	2026	14.94	2097	5.19	8264	1
Central	West Monroe	11-27451	2043	25	2017	101	4	10.7	9136	2054	20839.9	2103	4.47	2087	10.2	2052	2.28	8259	2
Central	West Cleveland	11-32651	1018	27	2036	101	3.7	9.4	4023	1084	12144.56	2073	3.95	2079	11.93	2070	3.02	8258	0
Mohawk	Old Forge	17-38362	747	24	2009	187.9	7.8	38.2	3953	751	10026.86	2057	5.29	2102	13.42	2089	2.54	8257	3
Capital	Brunswick	31-26453	1798	29	2050	173.7	6	15.4	6463	1804	15859.8	2090	3.59	2069	8.82	2036	2.45	8245	1
Northeast	Gilmantown	35-15451	2068	32	2068	148.1	4.6	13.2	6687	2061	16017.06	2092	3.23	2059	7.75	2021	2.4	8240	0
Northeast	Crown Point	41-24951	1117	23	1992	83.6	3.6	8.1	4130	1118	13057.11	2081	3.7	2073	11.69	2068	3.16	8214	0
Northeast	Hague Road	41-41852	1881	20	1955	75.4	3.8	7.3	6996	1884	21304.9	2104	3.72	2075	11.33	2066	3.05	8200	1
Mohawk	Eagle Bay	17-38271	950	18	1914	117.4	6.5	23.3	4969	959	13380.95	2083	5.23	2100	14.09	2093	2.69	8190	3
Northeast	Butler	38-36251	2109	25	2017	88.5	3.5	17	7681	2118	15195.18	2088	3.64	2072	7.2	2011	1.98	8188	2
Northeast	Port Henry	41-38552	1617	19	1936	70.2	3.7	9.5	6530	1619	18385.36	2098	4.04	2082	11.37	2067	2.82	8183	1
Northeast	East Springfield	37-47751	1023	24	2009	124.7	5.2	23.7	3063	1030	11542.09	2070	2.99	2038	11.28	2064	3.77	8181	0
Northeast	Union St-Saratoga	39-37654	577	18	1914	78.2	4.3	12.8	2808	577	10027.5	2058	4.87	2095	17.38	2104	3.57	8171	1
Central	Whitaker	14-29652	2143	33	2072	107.9	3.3	11.6	9638	2146	9758.49	2054	4.5	2088	4.55	1944	1.01	8158	1
Central	Phoenix	11-5165	986	17	1890	77.4	4.6	17.2	4525	987	13731.09	2085	4.59	2091	13.93	2092	3.03	8158	1
Mohawk	Alder Creek	17-70152	1097	35	2080	148	4.2	12.5	3306	1115	7647.05	2015	3.01	2045	6.97	2007	2.31	8147	1
Northeast	Burgoyne	38-33751	1833	45	2101	166.4	3.7	15.7	4611	1832	9586.21	2050	2.52	1999	5.23	1972	2.08	8122	1
Capital	Everett Road	30-42051	1754	37	2085	106.6	2.9	11	4838	1748	9002.98	2041	2.76	2024	5.13	1967	1.86	8117	0
Mohawk	Lehigh	18-66953	2188	55	2105	238.6	4.3	18.2	5105	1895	11334.06	2069	2.33	1972	5.18	1970	2.22	8116	1
Mohawk	Sherman	17-33352	1510	31	2060	148.5	4.8	17.4	4011	1511	9168.4	2044	2.66	2018	6.07	1991	2.29	8113	0
Northeast	Otten	41-41213	555	16	1857	76.6	4.8	10.7	2549	564	9932.78	2056	4.59	2091	17.9	2107	3.9	8111	0

Region	Station Name	Ckt/F No.	No. Cst. Served	No. Intr.	Intr. Rank	Tot. Dur. Hours	Avg. Dur.	Max. Dur.	Cust. Intr.	Max. Cust.	Tot. Cust. Hours	Tot. CH Rank	SAIFI	SAIFI Rank	SAIDI	SAIDI Rank	CAIDI	Fdr Rank	Mmty Intr.
Northern	N Gouverneur	29-98352	1609	24	2009	83.6	3.5	7.8	3542	1607	16773.89	2095	2.2	1948	10.43	2055	4.74	8107	1
Northeast	E J West	35-03851	1467	26	2027	136.1	5.2	17.1	3326	701	12876.91	2078	2.27	1963	8.78	2033	3.87	8101	0
Central	Niles	11-29451	1328	43	2099	227.5	5.3	11.8	3345	1334	7561.24	2013	2.52	1999	5.69	1985	2.26	8096	2
Capital	Brunswick	31-26452	1998	33	2072	91.1	2.8	8.6	5445	2003	9673.06	2051	2.73	2020	4.84	1953	1.78	8096	0
Mohawk	Alder Creek	17-70161	1013	26	2027	92.1	3.5	10.2	2796	1017	7774.21	2019	2.76	2024	7.67	2020	2.78	8090	1
Central	Lighthouse Hill	16-6144	2346	65	2108	302.2	4.6	15.8	4935	2363	12230.6	2076	2.1	1932	5.21	1971	2.48	8087	0
Mohawk	Oneida	20-50151	1872	32	2068	119.5	3.7	15.9	4411	1870	10073.08	2059	2.36	1980	5.38	1978	2.28	8085	1
Northeast	Wilton	39-32951	1601	30	2058	130.2	4.3	15.8	4410	908	8394.2	2032	2.75	2021	5.24	1973	1.9	8084	4
Southwest	Delameter	07-9354	3115	32	2068	82.7	2.6	6.4	7618	3119	13500.18	2084	2.45	1990	4.33	1928	1.77	8070	1
Mohawk	Old Forge	17-38361	619	15	1829	62.7	4.2	11.7	3891	624	8843.49	2039	6.29	2107	14.29	2095	2.27	8070	3
Northern	Star Lake	29-72761	825	17	1890	60.5	3.6	7.8	3067	827	8660.63	2035	3.72	2075	10.5	2056	2.82	8056	2
Capital	Blue Stores	33-30353	1422	32	2068	141.5	4.4	17.8	3328	1420	7830.08	2020	2.34	1975	5.51	1982	2.35	8045	3
Mohawk	Lehigh	18-66954	777	27	2036	98.3	3.6	11.6	1885	671	6145.66	1978	2.43	1988	7.91	2024	3.26	8026	1
Central	Colosse	16-32151	2449	36	2083	146.3	4.1	13.9	4533	1294	13008.85	2079	1.85	1882	5.31	1977	2.87	8021	3
Capital	North Troy	31-12353	2720	18	1914	81.8	4.5	17	7193	2708	16606.78	2094	2.64	2015	6.11	1992	2.31	8015	5
Northern	E Watertown	13-81757	1851	38	2087	136.4	3.6	11.2	5374	1875	6988.15	2004	2.9	2027	3.78	1888	1.3	8006	4
Genesee	W Hamlin	06-8255	1658	15	1829	40.6	2.7	9.3	6311	1659	12193.51	2075	3.81	2076	7.35	2014	1.93	7994	1
Southwest	Sinclairville Sta 72	08-7261	1233	15	1829	55.6	3.7	12.5	4174	1231	10879.82	2066	3.39	2062	8.82	2036	2.61	7993	2
Central	Cleveland	11-1166	1050	15	1829	88.8	5.9	21.7	3158	1155	10506.94	2063	3.01	2045	10.01	2050	3.33	7987	0
Mohawk	Old Forge	17-38364	889	13	1765	71.4	5.5	20.5	4497	895	9739.47	2052	5.06	2098	10.96	2061	2.17	7976	3
Genesee	Wethersfield Sta 23	04-2361	426	13	1765	46.3	3.6	8.1	2087	426	7315.42	2011	4.9	2096	17.17	2103	3.51	7975	0
Genesee	Byron Sta 18	04-1863	699	18	1914	78	4.3	12.5	1859	701	6156.38	1979	2.66	2018	8.81	2034	3.31	7945	0
Central	New Haven	14-25653	2020	36	2083	152.4	4.2	13.5	4725	1297	7092.24	2007	2.34	1975	3.51	1857	1.5	7922	1
Capital	Curry Road	32-36557	1693	13	1765	48.5	3.7	19	5036	1691	14712.75	2087	2.97	2034	8.69	2031	2.92	7917	0
Southwest	Cattaraugus Sta 15	10-1562	699	15	1829	61.7	4.1	15.6	1765	904	7866.44	2022	2.53	2000	11.25	2063	4.46	7914	1
Central	Wine Creek	14-28354	2399	19	1936	65.1	3.4	9.6	7140	2360	9250.91	2046	2.98	2036	3.86	1893	1.3	7911	0
Mohawk	Lehigh	18-66951	1150	23	1992	121.6	5.3	19.8	1994	1010	8776.88	2038	1.73	1860	7.63	2018	4.4	7908	0
Mohawk	Rome	18-76258	1125	17	1890	94.1	5.5	12.6	2914	1129	7227.4	2009	2.59	2005	6.42	1998	2.48	7902	0
Central	Gilbert Mills	11-24751	2180	24	2009	61.8	2.6	14.6	5064	2186	8360.5	2031	2.32	1969	3.84	1889	1.65	7898	1
Capital	Burdeck St	32-26553	1698	28	2045	112.3	4	11.8	3239	1675	7676.23	2016	1.91	1893	4.52	1943	2.37	7897	0
Central	Wetzel Rd Substation	11-690055	1509	13	1765	27.9	2.1	4.1	7080	1600	8136.94	2029	4.69	2093	5.39	1979	1.15	7866	2
Northern	Brady	25-95756	1267	23	1992	53.8	2.3	5.8	3318	1153	5099.88	1946	2.62	2012	4.03	1907	1.54	7857	0
Central	Tully Center	12-27851	2360	35	2080	149	4.3	15	6189	2355	6547.55	1991	2.62	2012	2.77	1761	1.06	7844	2
Central	Lords Hill	11-15067	797	18	1914	60.3	3.3	10.3	2262	802	4556.27	1918	2.84	2025	5.72	1986	2.01	7843	1
Capital	Hemstreet	31-32851	1886	33	2072	130.8	4	15.2	3167	838	7726.15	2017	1.68	1842	4.1	1910	2.44	7841	1
Mohawk	White Lake	17-39963	996	15	1829	45.8	3.1	8.1	2617	1005	6520.26	1990	2.63	2014	6.55	2003	2.49	7836	3
Frontier	Buffalo Sta 40	01-4075	1158	11	1674	26.1	2.4	12.9	2730	1145	15996.45	2091	2.36	1980	13.81	2091	5.86	7836	0
Capital	Boyntonville	31-33351	2129	42	2096	161.6	3.8	10.7	3529	555	7867.15	2023	1.66	1834	3.7	1877	2.23	7830	0
Northern	Fort Covington	27-89642	893	20	1955	42.4	2.1	4.2	2158	888	4567.75	1921	2.42	1987	5.12	1966	2.12	7829	2
Mohawk	Poland - Utica	17-62257	1631	29	2050	120.6	4.2	15.9	3101	1211	6425.01	1987	1.9	1892	3.94	1899	2.07	7828	2
Mohawk	Poland - Utica	17-62258	1618	48	2103	242.9	5.1	17.1	2100	282	8018.1	2025	1.3	1723	4.96	1961	3.82	7812	2
Capital	Front St	32-36051	3326	30	2058	98.2	3.3	12.8	5663	3320	11055.93	2067	1.7	1850	3.32	1836	1.95	7811	0
Central	Bartell Rd	11-32554	2815	25	2017	93.4	3.7	14.9	7380	2826	7575.86	2014	2.62	2012	2.69	1749	1.03	7792	9

Region	Station Name	Ckt/F No.	No. Cst. Served	No. Intr.	Intr. Rank	Tot. Dur. Hours	Avg. Dur.	Max. Dur.	Cust. Intr.	Max. Cust.	Tot. Cust. Hours	Tot. CH Rank	SAIFI	SAIFI Rank	SAIDI	SAIDI Rank	CAIDI	Fdr Rank	Mmty Intr.
Southwest	Andover Sta 09	10-0962	448	11	1674	59.6	5.4	11.2	2021	448	5307.7	1956	4.51	2089	11.85	2069	2.63	7788	2
Genesee	Linden Sta 21	04-2161	384	18	1914	114.2	6.3	17.9	914	381	3440.86	1852	2.38	1982	8.96	2038	3.76	7786	1
Capital	Hoags Corners	30-22151	971	22	1978	91	4.1	9.8	1446	299	6848.85	2001	1.49	1796	7.05	2010	4.74	7785	1
Northern	Fine	29-97866	375	12	1729	35.4	2.9	5.5	1503	375	4247.12	1901	4.01	2081	11.33	2066	2.83	7777	1
Central	Third St	14-21672	943	14	1802	50.7	3.6	9.5	2812	941	4959.91	1934	2.98	2036	5.26	1975	1.76	7747	1
Genesee	Wethersfield Sta 23	04-2362	190	12	1729	37.9	3.2	6.4	1060	191	3000.23	1813	5.58	2104	15.79	2099	2.83	7745	0
Central	Collamer Crossing	11-151156	1132	16	1857	58.5	3.7	8.6	2899	1136	4988.45	1937	2.56	2002	4.41	1938	1.72	7734	1
Central	Sorrell Hill	11-26954	3275	16	1857	58.4	3.6	12.2	6235	3271	13045.39	2080	1.9	1892	3.98	1903	2.09	7732	2
Northern	Brady	25-95757	660	13	1765	39.5	3	9.4	2065	661	4250.11	1902	3.13	2052	6.44	2000	2.06	7719	2
Northern	Lyme	13-73352	2899	24	2009	74.6	3.1	11.4	3627	2340	12719.13	2077	1.25	1696	4.39	1935	3.51	7717	0
Capital	Swaggertown	32-36451	1778	17	1890	43.9	2.6	8.4	4470	1777	6057.29	1975	2.51	1997	3.41	1850	1.36	7712	0
Mohawk	Deerfield	17-60658	1955	20	1955	69.8	3.5	13.8	4380	1960	6169.27	1981	2.24	1957	3.16	1818	1.41	7711	1
Central	Lords Hill	11-15066	451	18	1914	77	4.3	15.1	1182	451	2804.89	1787	2.62	2012	6.22	1994	2.37	7707	1
Genesee	E Golah	05-5155	1707	22	1978	58	2.6	7.9	6025	1706	4556.26	1917	3.53	2068	2.67	1743	0.76	7706	0
Central	Belmont	11-26052	1736	11	1674	31.1	2.8	5.6	5611	1737	7925.16	2024	3.23	2059	4.57	1947	1.41	7704	2
Mohawk	Stittville	17-67052	1712	32	2068	121.7	3.8	12.5	2877	610	5447.2	1962	1.68	1842	3.18	1821	1.89	7693	0
Northern	Piercefield	24-82961	378	9	1570	32.6	3.6	6.6	1532	380	5143.91	1949	4.05	2083	13.61	2090	3.36	7692	1
Genesee	York Ctr	05-5352	939	23	1992	76.2	3.3	14.1	1450	935	4566.36	1919	1.54	1814	4.86	1954	3.15	7679	2
Capital	Oathout Ln	30-40251	1011	14	1802	75.3	5.4	12	2355	1017	5017	1942	2.33	1972	4.96	1961	2.13	7677	2
Northern	Star Lake	29-72762	667	10	1627	20.4	2	2.9	2335	672	5356.74	1958	3.5	2064	8.03	2025	2.29	7674	2
Northern	South Philadelphia	13-76462	471	13	1765	48.8	3.8	9.6	1446	409	3127.91	1825	3.07	2048	6.64	2004	2.16	7642	1
Northern	Antwerp	29-80161	563	8	1512	33.6	4.2	10.1	1247	567	10101.48	2060	2.21	1951	17.94	2108	8.1	7631	3
Capital	Lansingburg	31-09313	519	7	1447	25.3	3.6	12.2	1519	615	9220.85	2045	2.93	2030	17.77	2106	6.07	7628	1
Southwest	Farmersville Sta 27	10-2762	716	13	1765	40.2	3.1	7.5	1168	715	6341.82	1986	1.63	1830	8.86	2037	5.43	7618	1
Genesee	E Golah	05-5156	1993	18	1914	45	2.5	8.9	4828	2001	5437.81	1961	2.42	1987	2.73	1754	1.13	7616	0
Northern	Malone	27-89552	1086	12	1729	26.8	2.2	6.8	3438	1095	4476.9	1912	3.17	2053	4.12	1914	1.3	7608	1
Northern	Thousand Isl	26-81452	2195	25	2017	159.3	6.4	13.6	3204	1794	6767.59	1998	1.46	1785	3.08	1802	2.11	7602	0
Capital	Watt St	32-23052	2450	19	1936	55.3	2.9	11.5	5049	2455	6457.79	1988	2.06	1924	2.64	1740	1.28	7588	2

**2023 HIGHEST NUMBER OF MOMENTARIES CIRCUIT LIST
(Circuits with 10 or more Momentaries)**

Region	Station Name	Ckt/F No.	Circuit kV	# of MI's	Rank		
					Within Region	Within System	Reliability Ranking
No circuits experienced 10 or more momentary interruptions in 2023.							