CENTRAL HUDSON
GAS & ELECTRIC CORPORATION

2022

ELECTRIC RELIABILITY REPORT

MARCH 31, 2023

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1. Overall Assessment of Reliability Performance

a) Corporate Overview/Definitions

Improved electric reliability and power quality continue to be important objectives for Central Hudson. The five Operating Divisions have System Average Interruption Frequency Index (SAIFI) and Customer Average Interruption Duration Index (CAIDI) goals in accordance with the 2004 Order Adopting Changes to Standards on Reliability of Electric Service in Cases 02-E-1240 and 02-E-0701[1] to guide their efforts in providing Central Hudson's customers with the best possible electric service reliability. In 2022, Central Hudson met the electric service Reliability Performance Mechanism targets defined in Case 20-E-0428[2] for both the CAIDI index and the SAIFI index. Central Hudson's 2022 non-storm SAIFI was 1.274, which was below the Reliability Performance Mechanism SAIFI target of 1.320. Central Hudson's 2022 non-storm CAIDI was 2.25, which was below the Reliability Performance Mechanism CAIDI target of 2.50.

The Electric Distribution and Standards Engineering Section and the Electric Planning and Interconnections Section share responsibility within the Engineering Group to closely monitor the Central Hudson electric system and to analyze and develop plans to improve the performance and the reliability of electric service to all Central Hudson customers. In 2022 the Electric Distribution and Standards Engineering Section consisted of four subsections: Electric Operations, Electric Construction Standards, Electric Distribution Automation and Electric Distribution Reliability & Resiliency. The Electric Planning and Interconnections Section consisted of General Transmission and Distribution Planning as well as Interconnections. All reported to the Manager of Electric Engineering Services. Section staffing consisted of the following:

- 1 Director of Electric Distribution & Standards
  - 1 Electric Distribution Operations Section Engineer
    - 6 Electric Operations Engineers
    - 1 Engineering Technician
  - 1 Electric Distribution Automation Section Engineer
    - 3 Electric Distribution Automation Engineers
  - 1 Electric Distribution Construction Standards Section Engineer
    - 2 Electric Distribution Standards Engineers
  - 1 Electric Distribution Reliability & Resiliency Engineer
    - 1 Stray (Contact) Voltage and Inspections Engineering Technician
- 1 Director of Electric Planning & Interconnections
  - 1 Electric Planning & Interconnections Section Engineer
    - 3 Electric Planning & Interconnections Engineers
    - 3 Electric Interconnections Technicians
  - 1 Electric Transmission Planning Engineer Lead
    - 3 Electric Transmission Planning Engineers
    - 1 Business Analyst
  - 1 Electric Planning & Interconnections Engineer

Most of the above employees were based in the Corporate Headquarters in Poughkeepsie, with a few exceptions. The Electric Operations Engineers were located throughout the service territory. Two were based in the Lower Hudson Division, two in the Mid-Hudson Division, and two in the Upper Hudson Division.

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[1] Cases 02-E-1240 and 02-E-0701, Order Adopting Changes to Standards on Reliability of Electric Service (2004 Standards Order), (issued and effective October 12, 2004).

[2] Case 20-E-0428, Order Adopting Terms of Joint Proposal and Establishing Electric and Gas Rate Plan (issued and effective November 18, 2021).

The following report details the 2022 reliability performance of the Central Hudson System and an assessment of the five operating areas' performance. This assessment includes a five-year history of performance, listings of both the SAIFI and CAIDI indices, and a synopsis of Central Hudson's current power quality programs.

****** NOTE ******

For clarification purposes, Central Hudson Substations are named by their geographic location. In addition, the distribution circuits emanating from them are numbered in accordance with their operating voltage. For example, a circuit operating at less than 5 kV is named with a three-digit number, a 15 kV circuit consists of a four-digit number with the second digit being a "0," and a 34.5 kV circuit consists of a four-digit number with the second number being a "3." Also, where possible, sequential numbers are used for the circuits exiting from the same substation.

b) Corporate Performance List

i) 5 Year Detailed Assessment of Performance Indices (SAIFI & CAIDI)

The tables below summarize Central Hudson's performance over a period of five years. The SAIFI indices are calculated by dividing the total number of customers interrupted by the total number of customers served. The CAIDI indices are calculated by dividing the sum of the customer interruption duration by the total number of customers interrupted.

	SAIFI (Without Storms)	CAIDI (Without Storms)	SAIFI (With Storms)	CAIDI (With Storms)
2018	1.49	2.04	2.58	8.14
2019	1.25	2.38	1.54	3.15
2020	1.29	2.37	2.15	7.16
2021	1.42	2.67	1.81	3.44
2022	1.27	2.25	1.86	6.30
5-Year Average	1.34	2.34	1.99	5.64

Table 1a – 5-Year System SAIFI & CAIDI Performance Indices

	CAIDI (Without-Storms)				
	2018	**2019**	**2020**	**2021**	**2022**
Work Hours	1.46	1.58	1.82	1.95	1.83
Non-Work Hours	2.34	2.82	2.68	2.96	2.45

Table 1b – 5-Year System CAIDI Work Hours vs. Non-Work Hours (Without Storms)

Cause Code	Cause Code Description	SAIFI						CAIDI					
		2018	2019	2020	2021	2022	5-Year Average	2018	2019	2020	2021	2022	5-Year Average
2	Tree Contacts	0.571	0.517	0.594	0.733	0.603	0.604	2.80	3.07	2.77	3.07	2.73	2.89
3	Overloads	0.002	0.007	0.003	0.008	0.003	0.004	2.21	3.37	2.56	2.78	2.57	2.70
4	Operating or Working Errors	0.072	0.050	0.021	0.027	0.009	0.036	1.22	0.87	1.23	1.30	1.09	1.14
5	Apparatus or Equipment Failures	0.360	0.250	0.175	0.228	0.243	0.251	1.35	2.06	2.26	1.98	2.01	1.93
6	Accidents or Events Not Under the Utility's Control	0.299	0.194	0.322	0.240	0.271	0.265	1.58	1.71	1.72	2.08	1.50	1.72
7	Prearranged	0.004	0.014	0.011	0.006	0.006	0.008	2.47	2.39	2.38	1.92	2.04	2.24
8	Customer's Equipment or Failures	0.001	0.003	0.001	0.001	0.001	0.001	2.90	1.86	2.55	3.96	2.01	2.66
9	Lightning	0.048	0.043	0.014	0.044	0.017	0.033	2.34	2.25	2.39	3.22	3.10	2.66
10	Unknown or Unclassified	0.134	0.168	0.150	0.131	0.123	0.141	2.02	1.93	2.46	2.85	2.01	2.25

Table 2 – 5-Year System SAIFI & CAIDI Performance Indices by Cause Code

Evaluation of Table 2 indicates outages due to “tree contacts” (Cause Code 2) were the number one non-storm SAIFI driver for 2022, comprising 47% of the total. Tree contact SAIFI in 2022 was 18% lower compared to 2021 and approximately equal to the 5-year average. The largest contributor to tree contact SAIFI was limbs and trees from outside the clearance zone (81% of Cause Code 2 SAIFI). In addition to completing routine cycle trimming and targeted hazard tree removal in 2022, Central Hudson performed mid-cycle “hot spot” trimming on circuits out of Woodstock Substation based on engineering analysis and field conditions. Two further actions were taken in 2022 regarding the prioritization of routine trimming circuits:

- The circuits planned for routine trimming in 2022 were re-prioritized in order to shift resources to the areas that would have the largest impact on SAIFI to the beginning of the year, thus maximizing SAIFI reduction.
- Circuits out of Kerhonkson and Highland Substations, originally planned for routine trimming completion in 2023, were accelerated for completion in 2022 based on their poor SAIFI performance. These circuits were trimmed in place of circuits out of East Park and North Chelsea Substations which demonstrated good reliability performance during 2021.

Notably, non-storm tree contact outage SAIFI in the Kingston District – the focus of most mid-cycle trimming and routine trimming re-prioritization activities as described above – was down 19% compared to the five-year historical average.

Outages as a result of “accidents or events not under the utility’s control” (Cause Code 6) were the second-highest non-storm SAIFI driver in 2022, contributing a SAIFI of 0.271. This figure is 13% higher than the Cause Code 6 SAIFI for 2021 and 2% higher than the five-year average. This increase was driven by a 180% increase in SAIFI caused by animal contacts in substations (constituting 11% of total Cause Code 6 SAIFI in 2022) compared to the 5-year historical average. While vehicle pole hits made up a much higher percentage of SAIFI in this category (36% of Cause Code 6 SAIFI), their SAIFI impact was in line with prior years at 1% above the five-year average. Squirrel outages on distribution equipment had the second-highest SAIFI impact at 0.084 (constituting 28% of Case Code 6 SAIFI), a 9% decrease over the five-year average.

Outages as a result of equipment failures (Cause Code 5) were the third-highest non-storm SAIFI driver in 2022, contributing a SAIFI of 0.243. This figure is 7% higher than the Cause Code 5 SAIFI for 2021 but 3% lower than the five-year average. The biggest driver for Cause Code 5 SAIFI in 2022 was conductor/cable failure, which contributed a SAIFI of 0.053, or 22% of the total equipment failure SAIFI. This SAIFI number is equivalent to the five-year historical average. Such failures are typically attributed to age and loss of strand connections, which cause gradual overheating during normal loading cycles. The second-largest equipment failure driver in 2022 was equipment failure occurring within substations (15% of total SAIFI) followed by connectors (9% of the total). Taken together, these three types of equipment failures comprised 46% of the total SAIFI related to equipment failure in 2022. Notably, cutout failure SAIFI was down by 52% in 2022 compared to the five-year average. Beginning with the 2018/2019 winter season, Central Hudson’s thermal scanning program was expanded to include winter peaking circuits and spur lines with large numbers of customers in order to identify hot spots on equipment such as splices, overhead bare conductors, connectors, cutouts and arrestors. The program was expanded again during 2020 to include heavily loaded single phase and two-phase lines. These measures are expected to reduce equipment failure SAIFI by proactively identifying and replacing/repairing equipment that is near failure.

As indicated in Table 1a above, non-storm CAIDI in 2022 was 2.25, or 10% below the PSC target level. This value represents a 16% decrease in CAIDI compared to 2021 and is 4% below the five-year average. Outages due to tree contacts were the number one non-storm CAIDI driver, as evidenced by tree contact outages contributing an ECM of 98.75, or 57% of the total. This figure is 27% lower than the Cause Code 2 ECM for 2021 and 6% lower than the five-year average. The biggest driver for Cause Code 2 ECM for 2022 was trees/limbs from outside the clearance zone, which contributed an ECM of 81.67, or 83% of the total. This represents an ECM increase of 20% in this subcategory compared to the five-year average.

Outages as a result of equipment failures (Cause Code 5) were the second-highest non-storm CAIDI driver in 2022, contributing an ECM of 29.30, or 17% of the total. This figure is 8% higher than the Cause Code 5 ECM for 2021 and 5% higher than the five-year average. The biggest driver for Cause Code 5 non-storm CAIDI in 2022 was conductor/cable failure, which contributed an ECM of 9.33, or 32% of the total. This represents an ECM increase of 3% in this subcategory compared to the five-year average.

Outages in the Accidents/Events category were the third-highest non-storm CAIDI driver in 2022, contributing a total ECM of 24.43, or 14% of the total. This figure is 18% lower than the Cause Code 6 ECM for 2021 and 10% lower than the five-year average. The biggest driver for Cause Code 6 non-storm ECM in 2022 was vehicle pole hits, which contributed an ECM of 9.40, or 38% of the total Accidents/Events ECM. This represents an ECM decrease of 12% in this subcategory compared to the five-year average.

Central Hudson assembled a cross-functional team for 2022 including the Engineering, Electric T&D, Operations Services and System Operations groups to focus on SAIFI and CAIDI improvement. In addition, distribution switching is used whenever feasible to restore as many customers as possible before completing repairs. Specific CAIDI drivers are discussed in the Operating Area Performance section of this report (Section 2).

ii) Description of all major storms excluded from the reliability indices

February 2022

- February 4th through February 9th, 2022 – Winter Storm Landon

  The first Code 1 storm of the year began on February 4th, primarily affecting Central Hudson's Kingston district, where radial ice accretion exceeded 0.6 inches in some areas. This storm caused over thirty circuit breaker lockouts and about 100 broken poles. The restoration effort involved the largest contingent of mutual aid support ever amassed in Central Hudson's history.

  This storm caused outages to 78,965 customers in the Kingston district spanning 768 trouble cases. The average outage duration during this storm was 38 hours and 58 minutes and the longest case lasted for 108 hours and 39 minutes. This yielded a system SAIFI of 0.252 and a system ECM of 360.52.

  This storm also caused outages to 6,457 customers in the Poughkeepsie district spanning 104 trouble cases. The average outage duration in Poughkeepsie was 5 hours and 53 minutes and the longest case lasted for 24 hours and 28 minutes. This yielded a system SAIFI of 0.021 and a system ECM of 4.52.

  Finally, this storm caused outages to 9,443 customers in the Newburgh district spanning 96 trouble cases. The average outage duration in Newburgh was 11 hours and 35 minutes and the longest case lasted for 61 hours and 22 minutes. This yielded a system SAIFI of 0.030 and a system ECM of 9.01.

March 2022

- March 7th through March 10th, 2022 - Wind

  A windstorm occurred beginning March 7th that affected Central Hudson's Catskill and Kingston districts.

  This storm caused outages to 7,311 customers in the Catskill district spanning 95 trouble cases. The average outage duration during this storm was 18 hours and 13 minutes and the longest case lasted for 41 hours and 40 minutes. This yielded a system SAIFI of 0.023 and a system ECM of 12:58.

  In addition, this storm caused outages to 15,679 customers in the Kingston district spanning 155 trouble cases. The average outage duration during this storm in Kingston was 17 hours and 11 minutes and the longest case lasted for 50 hours and 11 minutes. This yielded a system SAIFI of 0.050 and a system ECM of 23.63.

July 2022

- July 12th through July 13th, 2022 – Wind/Rain

  The Catskill district experienced a wind and rain event on July 12th that affected over 10% of its customers, thus qualifying it for a Code 1 designation.

  This storm caused outages to 4,998 customers in the Catskill district spanning 29 trouble cases. The average outage duration during this storm was 3 hours and 22 minutes and the longest case lasted for 9 hours and 7 minutes. This yielded a system SAIFI of 0.016 and a system ECM of 3.16.

- July 13th through July 17th, 2022 – Thunderstorm/Tornado/Microburst

  The Kingston district experienced thunderstorm and tornado activity on July 13th with a microburst confirmed by The National Weather Service.

  This storm caused outages to 13,300 customers in the Kingston district spanning 160 outage cases. The average outage duration during this storm was 20 hours and 36 minutes and the longest case lasted for 60 hours and 51 minutes. This yielded a system SAIFI of 0.042 and a system ECM of 46.31.

- July 24th through July 27th, 2022 – Thunderstorm

  On July 24th, a thunderstorm came through the service territory that was designated as Code 1 in three out of Central Hudson's five districts.

  This storm caused outages to 23,563 customers in the Kingston district spanning 200 trouble cases. The average outage duration during this storm was 16 hours and 55 minutes and the longest case lasted for 45 hours and 3 minutes. This yielded a system SAIFI of 0.075 and a system ECM of 35.60.

  In addition, this storm caused outages to 7,747 customers in the Poughkeepsie district spanning 114 trouble cases. The average outage duration during this storm in Poughkeepsie was 16 hours and 16 minutes, and the longest case lasted for 40 hours and 52 minutes. This yielded a system SAIFI of 0.025 and a system ECM of 18.70.

  Finally, this storm caused outages to 7,757 customers in the Newburgh district spanning 71 trouble cases. The average outage duration during this storm in Newburgh was 14 hours and 11 minutes, and the longest case lasted for 37 hours and 31 minutes. This yielded a system SAIFI of 0.025 and a system ECM of 6.98.

November 2022

- November 30th through December 2nd, 2022 - Wind

  On November 30th, a wind event began in the Kingston district that continued into the following day and caused outages lasting longer than 24 hours.

  This storm caused outages to 1,716 customers in the Kingston district spanning 40 trouble cases. The average outage duration during this storm was 7 hours and 41 minutes and the longest case lasted for 24 hours and 35 minutes. This yielded a system SAIFI of 0.005 and a system ECM of 1.55.

December 2022

- December 16th through December 17th, 2022 – Snow/Ice/Wind

  On December 16th, a winter storm affected the northern part of Central Hudson's service territory, causing Code 1 storm designation in the Catskill district based on customer count.

  This storm caused outages to 3,586 customers in the Catskill district spanning 143 trouble cases. The average outage duration during this storm was 5 hours and 51 minutes and the longest case lasted for 21 hours and 5 minutes. This yielded a system SAIFI of 0.011 and a system ECM of 3.64.

- December 23rd through December 25th, 2022 – Wind/Ice

  Another winter storm came through on December 23rd, affecting customers primarily in the Kingston district.

  This storm caused outages to 4,123 customers in the Kingston district spanning 119 trouble cases. The average outage duration during this storm was 8 hours and 43 minutes and the longest case lasted for 25 hours and 22 minutes. This yielded a system SAIFI of 0.013 and a system ECM of 3.87.

iii) Corrective actions to be taken in areas where reliability performance indices were not met

In 2022, Central Hudson met the electric service Reliability Performance Mechanism targets defined in Case 20-E-0428 for both the CAIDI index and the SAIFI index. Central Hudson's 2022 non-storm SAIFI was 1.274, which was below the Reliability Performance Mechanism SAIFI target of 1.320. Central Hudson's 2022 non-storm CAIDI was 2.25, which was below the Reliability Performance Mechanism CAIDI target of 2.50.

iv) Corrective actions to be taken in response to adverse trends or performance in specific areas or categories

During 2022, three cause codes contributed 87% of the total non-storm SAIFI: Code 2 (tree contacts, 47%), Code 6 (accidents/events not under Central Hudson control, 21%) and Code 5 (equipment failures, 19%). Table 2 does not indicate any adverse trends over the past five years in cause codes categories that had a major impact on reliability.

2022 non-storm SAIFI was primarily driven by tree contacts. Central Hudson strives to continue the tree trimming program as scheduled within budget constraints and to implement spot trimming and danger tree removal as necessary to help further reduce the number of tree-related incidents. More information on these programs can be found in the "Vegetation Management" section below.

c) Major distribution capital investments made in the year and their impact on reliability

d) Details about distribution reliability projects/investments made in the year and their impact on reliability

Remote Communication

A Network Strategy project is in progress to replace Central Hudson's existing Sensus cellular communications in most locations. The Network Strategy solution will provide enhanced communications to Central Hudson's field devices. Intelligent electronic devices on the distribution system will communicate over the Tier 2 communications platform before transitioning to the Tier 1 platform for backhaul to the Distribution Management System (DMS). The Tier 2 network strategy will provide sufficient bandwidth to allow more frequent data polling from our field devices along with remote control via the DMS. Installation of the Tier 2 network radios was primarily focused on in the Poughkeepsie and Fishkill operating districts during 2022.

Central Hudson continues to utilize Sensus RTM (formerly referred to as Telemetric) communication devices to provide communications to Distribution Automation (DA) devices. Central Hudson will maintain communications to our field devices with Sensus RTM until the Network Strategy program is fully rolled out in a particular area. Communications to field devices enable operations personnel to receive immediate notification of disturbances on the electric system which can allow for faster response times. In addition, communications enable immediate notification of alarms on devices which allow for faster troubleshooting and restoration of the devices providing improved reliability.

Distribution Line Infrared Surveys

During the summer of 2022, distribution line infrared surveys were conducted in each of the five operating areas. These surveys help identify equipment with poor connections that will eventually lead to thermal failure. By identifying these "hot spots," action can be taken to proactively prevent outages due to equipment failure. Distribution line infrared surveys of the three-phase mainline of all distribution circuits and higher loaded single phase and two-phase circuitry were completed in 2022. There were 49 items found that were deemed "Immediate," "Critical," or "Serious" in 2022. The majority of repairs on items deemed "Immediate" have been completed. Remaining repairs will be completed before the 2023 summer peak. The total cost of the infrared survey in 2022 was $26,829 which also included additional winter surveys of winter-peaking circuits. Repairs made are not considered major capital investment work and are handled through expense at the operating area level.

e) Details about distribution reliability projects/investments to be taken based on the results from the annual distribution facility inspection reports provided in February of each year

Central Hudson performs physical inspections of the following facilities:

- Distribution Overhead
- URD – Pad-Mounted equipment

- Underground – Manholes / Pull Boxes
- Transmission Overhead

Facility inspections continue to be performed at the same time as contact (stray) voltage testing whenever possible. Inspectors are instructed to be conservative and report anything that looks questionable, at which point the finding is reviewed by a Central Hudson employee prior to repair/replacement. This is a more efficient utilization of available resources to ensure all potential issues are identified. Due to the complexity of the network system and intricacies of working in manholes and pull boxes, Central Hudson personnel are utilized to perform inspections on these facilities.

In 2008, Central Hudson began to utilize third party contractors to replace guy guards that had been broken or were missing from guy wires. These contractors provide specialized repair teams that are able to store extra guy guards on their vehicles. This program has been a success. In 2018, 2019, 2020, 2021 and 2022, 1,763, 1,049, 1,284, 1,603, and 1,064 locations had missing guy guards replaced, respectively. Currently, there are 661 known locations in need of replacement guy guards.

Facility inspections provide the benefit of identifying locations in need of trimming. Since 2018, 6,149 trimming conditions were identified and ranked as Level III, 149 trimming conditions were identified and ranked as Level II and 5 trimming conditions were identified and ranked as Level I. Of the total 6,303 trimming conditions identified, 5,832 (92.53%) were closed within the established “Time Frame for Repair,” 3 (0.05%) were repaired outside of the established “Time Frame for Repair” (“Repaired – Overdue”), 1 (0.02%) is overdue and is scheduled for repair in 2023 (“Not Repaired – Overdue”), and 467 (7.41%) conditions are not due and will be repaired at a later date (“Not Repaired – Not Due”).

Facility inspections help identify poles in need of replacement. Careful inspections determine if poles are in need of replacement due to conditions such as being broken, severe pole lean, pole rot, wash out, evidence of flashover, or woodpecker holes. Replacements are included in an annual Distribution Pole Replacement Program. As a direct result of facility inspections, approximately 2,208 poles were replaced in 2022. Each year, many poles identified are replaced through larger capital budget projects. For the Distribution Pole Replacement Program, $3,973,000, $4,609,000, $6,083,060, and $9,021,598 were budgeted in 2019, 2020, 2021, and 2022, respectively. $8,810,446 has been budgeted for 2023. These budgets do not reflect total expenditures on pole replacements.

Facility inspections help identify manholes and pull boxes, padmount transformers and switches, as well as cable and underground equipment that is in need of repair. Several items were addressed in 2022, including wall reinforcement, broken covers, minor ceiling repair, reinforcement / replacement of rusted I-beams, tripping hazards and clearing of debris.

Facility inspections are often utilized to drive reliability and efficiency improvement programs. Contract technicians perform micro-surveys as a part of regular facility inspections. In the past, these have included inventories for cutouts and animal guards. Currently, surveys are performed for streetlights, pole rot, third-party attachments, and porcelain insulators on 600A disconnect switches. The findings from micro-surveys are used to help plan replacement and maintenance programs.

2. Division/Operating Area Performance

CATSKILL OPERATING DISTRICT

a) Detailed assessment of the Catskill District reliability performance indices (SAIFI & CAIDI) and all applicable cause codes. Assessment should include annual and five-year performance information for each measure and each cause code.

	PSC SAIFI Objective	SAIFI (Without Storms)	PSC CAIDI Objective	CAIDI (Without Storms)
2018	1.0	1.70	2.00	1.71
2019	1.0	1.46	2.00	1.90
2020	1.0	1.52	2.00	2.35
2021	1.0	1.71	2.00	2.20
2022	1.0	1.40	2.00	2.35
5 Year Average		1.56		2.10

Table 3 – 5-Year Catskill SAIFI & CAIDI Performance Indices

Cause Code	Cause Code Description	SAIFI						CAIDI					
		2018	2019	2020	2021	2022	5-Year Average	2018	2019	2020	2021	2022	5-Year Average
2	Tree Contacts	0.480	0.470	0.583	0.588	0.693	0.563	2.38	2.75	3.24	2.85	3.09	2.89
3	Overloads	0.000	0.005	0.003	0.007	0.001	0.003	0.00	2.00	0.85	5.48	1.81	3.31
4	Operating or Working Errors	0.125	0.103	0.000	0.108	0.000	0.067	1.79	0.10	0.00	1.91	1.80	1.31
5	Apparatus or Equipment Failures	0.213	0.470	0.274	0.289	0.213	0.292	1.27	1.49	2.04	1.13	1.58	1.50
6	Accidents or Events Not Under the Utility's Control	0.520	0.165	0.381	0.403	0.277	0.349	1.19	1.38	1.20	2.20	1.89	1.56
7	Prearranged	0.004	0.007	0.001	0.000	0.009	0.004	2.48	2.16	1.72	1.72	1.39	1.86
8	Customer's Equipment or Failures	0.000	0.000	0.000	0.002	0.000	0.001	0.00	1.99	4.25	1.82	1.59	2.13
9	Lightning	0.080	0.012	0.003	0.095	0.030	0.044	1.14	3.33	1.92	1.95	0.96	1.60
10	Unknown or Unclassified	0.278	0.228	0.274	0.213	0.176	0.234	2.01	2.08	2.38	2.03	1.40	2.02

Table 4 – 5-Year Catskill SAIFI & CAIDI Performance Indices by Cause Code

b) If SAIFI/CAIDI targets were not met, provide the following:

i) <u>Description of problems that resulted in failure to meet the target</u>

During 2022, the Catskill Operating Area had a SAIFI of 1.40 and a CAIDI of 2.35 (excluding "major storm" activity). The SAIFI of 1.40 is higher than the established operating area target of 1.00 by 0.40 and is approximately 10% lower than the 5-year average SAIFI of 1.56. The CAIDI of 2.35 is higher than the established operating area target of 2.00 and approximately 12% greater than the 5-year average CAIDI of 2.10. Central Hudson met the corporate target for SAIFI and CAIDI. Individual District targets, however, are not in line with the corporate objectives.

As shown in the tables in Section 5 of this report, of the 26 active circuits in the Catskill Operating Area, 38% of these circuits (10 out of 26) performed at or better than the Electric Service Standard SAIFI level of 1.0. 54% of the active Catskill circuits (14 out of 26) performed better than the Electric Service Standard CAIDI level of 2.00 (120 minutes per interruption).

The Catskill Operating District non-storm SAIFI and CAIDI objectives were exceeded for the following reasons:

1) Tree related interruptions were the leading cause of customer interruptions in the district during 2022. Outages of this nature accounted for 50% of the 2022 non-storm SAIFI with a value of 0.693. SAIFI impact due to tree related interruptions has worsened 18% since 2021 and is 23% worse than the 5-year average. The CAIDI as the result of tree related outages was 3.09, which has increased 8% since 2021 and is 7% higher than the 5-year average. The tree related interruption with the greatest SAIFI impact occurred on October 25th when a tree came down in an offroad section of the North Catskill 2005 circuit. The largest impact to ECM from tree related outages was on October 13, 2022, when a tree came down in an off road section and broke a cross arm on the Vinegar Hill 2389. This led to the interruption of 1,779 customers for 3 hours and 21 minutes. This accounted for 8.2% of the total non-storm ECM for the year.

2) Accidents or Events Not Under the Utility's Control were the second leading cause of customer interruptions in 2022, accounting for 20% of 2022 non-storm SAIFI. SAIFI as a result of Accidents/Events is 31% lower than 2021 and is 21% lower than the 5-year average. CAIDI impact as a result of Accidents/Events has improved 14% since 2021, but in comparison to the 5-year average is 21% higher. The largest driver for SAIFI for accidents or events was due to a motor vehicle accident on the South Cairo 2043; crews needed to take an outage to make the scene safe that affected 993 customers for one hour and six minutes. The largest contributor to ECM in the Accidents and events category was on December 23, 2022 when there was an outage on the adjacent utility feed causing 246 customers to be interrupted. This accounted for nine hours and 52 minutes which was 2.1% of the total non-storm ECM.

ii) <u>Historical O&M efforts and expenditures within the Catskill area (to the extent possible) for each of the past 5 years</u>

Central Hudson does not identify O&M efforts and expenditures on a District level. This is done on a System level and is addressed in Section 3 of this report.

iii) <u>Corrective actions to be taken with target dates for completion</u>

1) Coxsackie Circuit Exits – Install new circuit exits to the new switchgear in the Coxsackie Substation. This is an infrastructure/reliability improvement project which is scheduled to be completed by Q4 of 2023.

2) Catskill Distribution Automation (FLISR Component) – In progress and scheduled to be completed by Q4 of 2023.

3) Golden Hill Road Rebuild – Budget project C-2018-01 to rebuild 2 miles of the aging three phase infrastructure on Golden Hill Road and relocate on road where it is easier to repair. The estimated completion date for this project is Q4 2023

4) Sodom Road Rebuild – Budget project C-2014-04 to rebuild and convert 4.25 miles of Sodom Road and Shady Lane from 2.4kV to 7.62kV. The existing infrastructure experiences significant outages throughout the years as well as numerous stray voltage concerns within the area. The estimated completion of this project is Q4 2023.

5) During 2023, 11 circuits in the Catskill district are scheduled for routine tree trimming. These circuits serve 18,408 customers comprising 52% of the district's total customer count. This is scheduled for completion by Q4 2023. During 2023, 2 circuits in the Catskill District are scheduled for danger tree removal. These circuits serve 3,818 customers comprising 11% of the district's total customer count. This is scheduled for completion Q4 2023.

c) Confirm compliance with corrective actions identified in last year's report if Catskill missed the targets in the previous year.

The Catskill District missed its SAIFI and CAIDI targets in 2022. The following 2022 projects were listed in the 2021 Annual Electric Reliability Report as being expected to improve the future reliability in the Catskill Operating Area. More time will be needed to realize the impact on reliability these projects will have.

1) Circuit 1071 – Rebuild Three Phase along Route 81 for a total of 12 miles. This is an infrastructure/reliability improvement project which will be completed over three phases. Phase II of this project has been completed as of April 2022**.**

2) Coxsackie Circuit Exits – In progress and scheduled to be completed by Q3 2023.

3) Catskill Distribution Automation – In progress. FLISR device installations will be completed by Q4 of 2023. VVO device installations will be completed by Q4 of 2024.

4) Tree trimming of 8 Catskill District circuits were planned throughout 2022 to improve the reliability of 13,254 customers as tree-related outages have outage durations that are typically longer than average. Work is expected to be completed by Q4 2023.

KINGSTON OPERATING DISTRICT

a) Detailed assessment of the Kingston District reliability performance indices (SAIFI & CAIDI) and all applicable cause codes. Assessment should include annual and five-year performance information for each measure and each cause code.

	PSC SAIFI Objective	SAIFI (Without Storms)	PSC CAIDI Objective	CAIDI (Without Storms)
2018	1.00	2.22	2.25	2.21
2019	1.00	1.83	2.25	2.50
2020	1.00	1.94	2.25	2.41
2021	1.00	2.19	2.25	2.71
2022	1.00	1.57	2.25	2.42
5 Year Average		1.95		2.45

Table 5 – 5-Year Kingston SAIFI & CAIDI Performance Indices

Cause Code	Cause Code Description	SAIFI						CAIDI					
		2018	2019	2020	2021	2022	5-Year Average	2018	2019	2020	2021	2022	5-Year Average
2	Tree Contacts	1.057	0.920	1.068	1.402	0.896	1.069	3.00	3.18	2.63	2.97	2.98	2.95
3	Overloads	0.006	0.003	0.008	0.021	0.002	0.008	1.86	2.99	2.74	1.79	1.89	2.07
4	Operating or Working Errors	0.240	0.012	0.025	0.022	0.006	0.061	1.06	1.83	4.16	0.57	4.17	1.37
5	Apparatus or Equipment Failures	0.454	0.334	0.270	0.215	0.296	0.314	1.56	1.95	1.86	1.54	1.34	1.65
6	Accidents or Events Not Under the Utility's Control	0.302	0.214	0.360	0.265	0.158	0.260	1.34	1.71	2.07	1.96	1.61	1.76
7	Prearranged	0.003	0.013	0.028	0.020	0.009	0.015	1.22	2.97	2.67	2.10	2.12	2.44
8	Customer's Equipment or Failures	0.003	0.012	0.002	0.003	0.002	0.004	2.15	1.64	2.22	4.34	2.03	2.12
9	Lightning	0.035	0.096	0.032	0.070	0.020	0.051	2.32	2.41	2.14	3.43	3.07	2.70
10	Unknown or Unclassified	0.119	0.226	0.145	0.177	0.182	0.170	2.17	1.39	2.35	3.33	2.03	2.21

Table 6 – 5-Year Kingston SAIFI & CAIDI Performance Indices by Cause Code

b) If SAIFI/CAIDI targets were not met, provide the following:

i) <u>Description of problems that resulted in failure to meet the target</u>

During 2022, the Kingston Operating Area had a SAIFI of 1.57 and a CAIDI of 2.42 (excluding major storm activity). The SAIFI of 1.57 for 2022 was above the established operating area target of 1.00 and is approximately 24% lower than the 5-year average SAIFI of 1.95. The CAIDI of 2.42 is higher than the established operating area target of 2.00 and is approximately 1% below the 5-year average CAIDI of 2.45. Central Hudson met the corporate target for SAIFI and CAIDI. Individual District targets, however, are not in line with the corporate objectives

As shown in the tables in Section 5 of this report, of the 65 circuits in the Kingston Operating Area, 54% of these circuits (35 out of 65) performed at or better than the Electric Service Standard SAIFI level of 1.0. 51% of the Kingston circuits (33 out of 65) performed better than the Electric Service Standard CAIDI level of 2.25 (135 minutes per interruption).

The Kingston Operating District non-storm SAIFI and CAIDI objectives were exceeded for the following reasons:

1) Tree-related interruptions were overwhelmingly the leading driver for SAIFI and CAIDI in 2022, accounting for approximately 57% of Kingston's 2022 non-storm SAIFI and 70% of the non-storm ECM. The Tree-Contact SAIFI and ECM results for 2022 were the lowest in the last five years for the district. The leading contributor to tree-contact reliability performance occurred on 7/1/22 when a tree fell onto double-circuit construction from outside the clearance zone and caused breaker lockouts for the Boulevard 1023 and 1024 circuits. The interruption accounted for 5% and 3% of the district's 2022 tree contact SAIFI and ECM (non-storm), respectively.

2) Equipment failures were the second leading driver for the district's reliability performance in 2022. Outages of this nature accounted for 19% of the non-storm SAIFI and 10% of the non-storm ECM. The leading contributor to the equipment failure reliability performance occurred on 2/22 when a tie-wire failed which resulted in a phase burning down. The interruption accounted for 11% and 7% of the district's 2022 equipment failure SAIFI and ECM (non-storm), respectively.

ii) <u>Historical O&M efforts and expenditures within the Kingston area (to the extent possible) for each of the past 5 years</u>

Central Hudson does not identify O&M efforts and expenditures on a District level. This is done on a System level and is addressed in Section 3 of this report.

iii) <u>Corrective actions to be taken with target dates for completion</u>

1) During 2023, 24 circuits in the Kingston District are scheduled for trimming. These circuits serve 23,968 customers comprising 35% of the district's total customer count. This is scheduled for completion Q4 2023. During 2023, 19 circuits in the Kingston District are scheduled for danger tree removal. These circuits serve 22,529 customers, comprising 33% of the district's total customer count. This is scheduled for completion Q4 2023.

2) Neversink 3091 – Reconductor Sugarloaf Rd – Replace 5kV Aerial cable and create low-voltage loop tie for Denning. The project is scheduled for Q4 2023.

3) Greenfield Rd 3078 – Storm-Harden along Rt 52 and Westwood Ave - Replace ~10 poles and reconductor along Westwood Ave, and outfit ~10 poles with new cross arms and polymer insulators along Rt 52. This is scheduled for completion Q4 2023.

4) Hurley Ave 2092 & 2093 – Close Gap on Joys Ln & Install N.O. Smart Switch – Per Kingston's Distribution Automation Plan, this will improve reliability and operational flexibility. This is scheduled for completion Q4 2023.

5) Saugerties 3002 & 3003 – Polyphase Harry Wells Rd & Install N.O. Smart Switch - Per Kingston's Distribution Automation Plan, this 1.6 mile project will improve reliability and operational flexibility. This is scheduled for completion Q2 2023.

6) Saugerties 3002 – Reconductor Rt 32 in the First Zone – Per Kingston's Distribution Automation Plan, this 0.8 mile project will increase circuit flexibility and reduce CAIDI. This is scheduled for completion Q3 2023.

7) High Falls 3024 – Reconductor/rebuild Kripplebush Rd (Super Loop Ph 1 of 3) - Per Kingston's Distribution Automation Plan, this will storm-harden 2.5 miles of mainline, improving reliability and operational flexibility. This is scheduled for completion Q2 2023.

8) High Falls 3024 – Reconductor/rebuild Kripplebush Rd (Super Loop Ph 2 of 3) - Per Kingston's Distribution Automation Plan, this will storm-harden 3.0 miles of mainline, improving reliability and operational flexibility. This is scheduled for completion Q3 2023.

9) Kerhonkson 3082 – Reconductor Samsonville Rd (Super Loop Ph 1 of 3) - Per Kingston's Distribution Automation Plan, this will storm-harden 2.0 miles of mainline, improving reliability and operational flexibility. This is scheduled for completion Q4 2023.

10) Kerhonkson 3082 – Reconductor Samsonville Rd (Super Loop Ph 2 of 3) - Per Kingston's Distribution Automation Plan, this will storm-harden 2.2 miles of mainline and increase circuit flexibility. This is scheduled for completion Q4 2023.

c) Confirm compliance with corrective actions identified in last year's report if Kingston missed the targets in the previous year.

The Kingston District missed its SAIFI and CAIDI targets in 2022. The following 2022 projects were listed in the 2021 Annual Electric Reliability Report as being expected to improve the future reliability in the Kingston Operating Area. More time will be needed to realize the impact on reliability these projects will have.

1) During 2022, 12 circuits in the Kingston district were trimmed, summing to a total of 344 miles trimmed. Combined, these circuits serve 11,573 customers accounting for 17% of the district's total customer count. Heading into 2023, there are 4 carryover circuits from 2021 currently being worked, with an additional 11 circuits to be worked this year. From the 2022 routine trimming schedule, two circuits are currently being worked with an additional 4 to be worked this year. Additionally, the Danger Tree program identified and successfully removed 251 danger trees across 10 circuits to Storm Harden these circuits.

2) KO Cable Reconductor – A portion of this sub-transmission cable was slated for reconductoring with larger wire to increase the capacity of the circuit to ensure sufficient reserve to the Jansen Avenue Substation and Health Alliance Mary's Ave Hospital. This project, which included a new duct-bank, was completed Q2 2022.

3) Hurley Ave 2094 - Reconductor Lapla Road, Ph 1 of 2 – Reconductor 2.6 miles along Lapla Rd with 1/0 ACSR WR. This project was completed Q3 2022.

4) Hurley Ave 2094 - Reconductor Lapla Road, Ph 2 of 2 – Reconductor 2.6 miles along Lapla Rd with 1/0 ACSR WR. This project was completed Q3 2022.

5) Greenfield Road 3076 & Grimley Rd 3095 - Convert Ulster Heights and Geiger Rd, Ph 2 of 2 – This project sought to convert 3.1 miles to replace aging infrastructure and address low

voltage concerns. The project was split into two phases, the first of which was completed in Q2 2020. The second phase is scheduled for completion Q4 2023.

6) Neversink 3091 – Rebuild Grahamsville On-Road, Ph 2 of 3 - Rebuild 3.2 miles along Rt 55 from the substation to Claryville Rd with 336 ACSR as right-of-way acquisitions allow for. Retire 391 circuit and subsume all 277 customers. Reconfigure circuit exits. This project was completed Q1 2022.

7) Woodstock 3011 - Close Gaps Along High Point Mountain Road - Close gaps along High Point Mountain Road to eliminate off-road circuitry and increase reliability. This project was completed Q2 2022.

8) Woodstock 3011 – Close Gaps Along McMillan Rd – Build 0.5 miles of the 3011L with 1/0 ACSR onto McMillan Rd from off-road. This is scheduled for completion in Q4 2023.

9) Neversink 3091 & 391 – Rebuild Grahamsville On-Road, Ph 1 of 3 – Rebuild 3.2 miles along Rt 55 from the substation to Claryville Rd with 336 ACSR as right-of-way acquisitions allow for. Retire 391 circuit and subsume all 277 customers. Reconfigure circuit exits. This is scheduled for completion in Q2 2023.

10) Neversink 3091 – Rebuild Grahamsville On-Road, Ph 3 of 3 - Rebuild 3.2 miles along Rt 55 from the substation to Claryville Rd w/336 ACSR as right-of-way acquisitions allow for. Retire 391 circuit and subsume all 277 customers. Reconfigure circuit exits. This has been pushed further out in the five-year forecast

11) Saugerties 3003 – Reroute Mainline onto Route 212 – Polyphase 0.9 miles on Route 212 with 336 ACSR subverting Churchland Road and Churchland Lane, eliminating 0.8 miles of risk. This project is scheduled for completion Q1 2023.

12) Greenfield Road 3076 – Rebuild Circuit Exit On-Road – Double circuit on-road for 0.6 miles from Substation to Ulster Heights. Build 0.2 miles on-road along Cape Rd. Remove off-road mainline. This project was completed in Q4 of 2022.

POUGHKEEPSIE OPERATING DISTRICT

a) Detailed assessment of the Poughkeepsie District reliability performance indices (SAIFI & CAIDI) and all applicable cause codes. Assessment should include annual and five-year performance information for each measure and each cause code.

	PSC SAIFI Objective	SAIFI (Without Storms)	PSC CAIDI Objective	CAIDI (Without Storms)
2018	1.20	1.22	2.25	2.23
2019	1.20	0.94	2.25	2.79
2020	1.20	1.19	2.25	2.45
2021	1.20	1.20	2.25	2.75
2022	1.20	1.05	2.25	2.56
5 Year Average		1.12		2.54

Table 7 – 5-Year Poughkeepsie SAIFI & CAIDI Performance Indices

Cause Code	Cause Code Description	SAIFI						CAIDI					
		2018	2019	2020	2021	2022	5-Year Average	2018	2019	2020	2021	2022	5-Year Average
2	Tree Contacts	0.453	0.474	0.465	0.577	0.504	0.495	2.84	3.31	3.03	3.16	2.93	3.06
3	Overloads	0.001	0.003	0.002	0.004	0.002	0.002	4.71	2.08	2.68	4.63	2.79	3.40
4	Operating or Working Errors	0.020	0.000	0.023	0.011	0.012	0.013	1.24	0.72	0.41	0.82	0.47	0.74
5	Apparatus or Equipment Failures	0.309	0.209	0.153	0.225	0.212	0.222	1.57	2.26	2.81	2.63	2.28	2.23
6	Accidents or Events Not Under the Utility's Control	0.271	0.128	0.378	0.263	0.196	0.247	1.92	1.99	1.65	2.11	1.96	1.89
7	Prearranged	0.001	0.002	0.001	0.007	0.009	0.004	2.83	1.43	0.90	1.42	2.35	1.89
8	Customer's Equipment or Failures	0.001	0.001	0.000	0.001	0.001	0.001	3.17	3.19	2.89	7.60	2.04	3.53
9	Lightning	0.051	0.007	0.016	0.017	0.034	0.025	2.72	6.47	1.21	2.41	4.02	3.06
10	Unknown or Unclassified	0.111	0.111	0.152	0.097	0.083	0.111	2.23	2.26	2.76	2.55	2.16	2.43

Table 8 – 5-Year Poughkeepsie SAIFI & CAIDI Performance Indices by Cause Code

b) If SAIFI/CAIDI targets were not met, provide the following:

i) <u>Description of problems that resulted in failure to meet the target</u>

During 2022, the Poughkeepsie Operating District had a SAIFI of 1.05 (excluding "major storm" activity). The 1.05 SAIFI index is lower than the established operating area target of 1.20 by 0.15 and is approximately 6% lower than the 5-year average SAIFI index of 1.12. The district had a CAIDI of 2.56 (excluding "major storm" activity). This index is higher than the established operating area target of 2.25 by 0.26 and is approximately 1% higher than the 5-year average CAIDI index of 2.54. Central Hudson met the corporate target for SAIFI and CAIDI. Individual District targets, however, are not in line with the corporate objectives.

As shown in the tables in Section 5 of this report, of the 70 circuits in the Poughkeepsie Operating District, 57% (40 out of 70) performed at or better than the Electric Service Standard SAIFI level of 1.2. 40% of the Poughkeepsie circuits (28 out of 70) performed better than the Electric Service Standard CAIDI level of 2.25 (135 minutes per interruption).

The Poughkeepsie Operating District non-storm CAIDI objective was exceeded for the following reasons:

1) Tree-related interruptions were the leading cause for customer interruptions in the district during 2022. Outages of this nature accounted for 48% of the overall non-storm SAIFI. During 2022, the non-storm SAIFI and CAIDI for this category increased by 7% and 3%, respectively, in comparison to the five-year averages. The overall district reliability performance is driven by the results from this category. The single event that contributed the most to exceeding the CAIDI target occurred on March 28th as a result of a tree that fell from outside the clearance zone during high winds, breaking three poles. This event interrupted 3,395 customers for 4 ¼ hours. The outage in its entirety lasted approximately 14 ½ hours and accounted for 8% of yearly ECM.

2) Equipment Failures were the second leading cause for customer interruptions in the district during 2022. These outages accounted for 20% of the 2022 non-storm SAIFI. The 2022 non-storm CAIDI for this category was 3% higher than the five-year averages. The single event that contributed most to exceeding the CAIDI target occurred on July 3rd as a result of a failed CT in the TD-6097 circuit breaker cubicle in Manchester Substation. This event interrupted 2,411 customers for 2 ½ hours. The outage in its entirety lasted approximately 3 hours and accounted for 3.4% of yearly ECM.

ii) <u>Historical O&M efforts and expenditures within the Poughkeepsie area (to the extent possible) for each of the past 5 years</u>

Central Hudson does not identify O&M efforts and expenditures on a District level. This is done on a System level and is addressed in Section 3 of this report.

iii) Corrective actions to be taken with target dates for completion

1) 6093 Circuit – Close a 0.5 mile gap on Van Wagner Rd., polyphase and reconductor 1.25 miles of circuitry on Van Wagner Rd. to strengthen ties between the 6061, 6092, and 6093 circuits. This will also allow for 1.1 MVA to be shifted from the 6092 and 6093 to the 6061 circuit. This is currently in progress and scheduled for completion Q2 2023

2) 6095 Circuit – Convert approximately 0.2 miles of circuitry and reconductor 0.4 miles of circuitry along Hooker Ave. This will allow for approximately 2 MVA to be shifted from the heavily loaded 6003 circuit to the 6095 circuit and create an automated FLISR scheme. This is scheduled for completion Q4 2023.

3) 6011 Circuit – Reconductor approximately 1.6 miles of three phase circuitry on South Gate Dr. The existing #4 copper conductor is in poor condition. By reconductoring with 336 ACSR

the circuitry will have a reduced risk of conductor burn down as well as strengthen the operational flexibility within the Rt. 9 commercial corridor. This is scheduled for completion Q4 2023.

4) 6052 Circuit – Eliminate 1 mile of off-road mainline feed and relocate along Smith Rd. The off-road section to be removed is prone to tree-related outages. This is scheduled for completion Q4 2023.

5) Tree trimming of 10 Poughkeepsie District circuits scheduled throughout 2023 will improve the reliability of 11,051 customers as tree-related outages have outage durations that are typically longer than average. This is scheduled for completion Q4 2023. During 2023, 10 circuits in the Poughkeepsie District are scheduled for danger tree removal. These circuits serve 11,025 customers comprising 14% of the district's total customer count. This is scheduled for completion Q4 2023.

c) Confirm compliance with corrective actions identified in last year's report if Poughkeepsie missed the targets in the previous year.

The Poughkeepsie District missed its CAIDI target in 2022. The following 2022 projects were listed in the 2021 Annual Electric Reliability Report as being expected to improve the future reliability in the Poughkeepsie Operating Area. More time will be needed to realize the impact on reliability these projects will have.

1) 6092 Circuit – Eliminate 6092 off-road mainline and redistribute Manchester Substation distribution load (Ph. 1). This was completed in 2022.

2) 7042 Circuit – Relocate and convert approximately 0.5 miles of circuitry on-road. This was completed in 2022.

3) 7051 & 7056 circuits – Eliminate off-road mainline feeds (Ph. 2). This was completed in 2022.

4) 6093 Circuit – Close gap on Van Wagner Rd. This is currently in progress and scheduled for completion Q2 2023.

5) 6095 Circuit – Convert approximately 0.6 miles of circuitry and redistribute load. Deferred to Q4 2023.

6) 6011 Circuit – Reconductor approximately 1.6 miles of circuitry. Deferred to Q4 2023.

7) Tree trimming of 7 Poughkeepsie District circuits scheduled throughout 2022 will improve the reliability of 7,044 customers as tree-related outages have outage durations that are typically longer than average. A total of six circuits were completed during 2022. The remaining one will be completed by Q4 2023.

FISHKILL OPERATING DISTRICT

a) Detailed assessment of the Fishkill District reliability performance indices (SAIFI & CAIDI) and all applicable cause codes. Assessment should include annual and five-year performance information for each measure and each cause code.

	PSC SAIFI Objective	SAIFI (Without Storms)	PSC CAIDI Objective	CAIDI (Without Storms)
2018	1.20	1.45	2.00	1.76
2019	1.20	0.83	2.00	2.17
2020	1.20	0.87	2.00	2.06
2021	1.20	1.07	2.00	2.37
2022	1.20	1.19	2.00	2.20
5 Year Average		1.08		2.09

Table 9 – 5-Year Fishkill SAIFI & CAIDI Performance Indices

Cause Code	Cause Code Description	SAIFI						CAIDI					
		2018	2019	2020	2021	2022	5-Year Average	2018	2019	2020	2021	2022	5-Year Average
2	Tree Contacts	0.408	0.316	0.324	0.545	0.558	0.430	2.97	2.57	2.43	2.79	2.25	2.60
3	Overloads	0.001	0.005	0.001	0.001	0.002	0.002	3.60	2.02	2.24	3.31	2.74	2.49
4	Operating or Working Errors	0.000	0.003	0.059	0.010	0.015	0.017	3.10	0.35	0.11	0.36	0.50	0.22
5	Apparatus or Equipment Failures	0.671	0.149	0.132	0.271	0.287	0.302	0.88	2.45	2.69	1.90	2.51	1.70
6	Accidents or Events Not Under the Utility's Control	0.167	0.213	0.260	0.148	0.203	0.198	1.72	1.60	1.67	1.88	1.57	1.67
7	Prearranged	0.011	0.027	0.012	0.002	0.000	0.010	1.75	2.61	2.82	2.17	1.08	2.45
8	Customer's Equipment or Failures	0.000	0.000	0.000	0.000	0.000	0.000	6.52	2.62	2.92	7.07	2.28	4.23
9	Lightning	0.096	0.016	0.003	0.032	0.000	0.029	2.68	1.25	2.73	1.97	1.75	2.36
10	Unknown or Unclassified	0.095	0.098	0.082	0.057	0.122	0.091	1.90	1.81	2.06	2.33	2.49	2.13

Table 10 – 5-Year Fishkill SAIFI & CAIDI Performance Indices by Cause Code

b) If SAIFI/CAIDI targets were not met, provide the following:

i) <u>Description of problems that resulted in failure to meet the target</u>

During 2022, the Fishkill Operating Area had a SAIFI of 1.19 and a CAIDI of 2.20, excluding major storm activity. The 1.19 SAIFI index met the established operating criteria of 1.20 but was 10% greater than the 5-year average non-storm SAIFI index of 1.08. The 2.20 CAIDI index did not meet the established operating area criteria of 2.00 and is 10% greater than the criteria value. Fishkill's 2022 CAIDI decreased by approximately 7% compared to 2021 however, is 5% greater than the 5-year average CAIDI index of 2.09. Central Hudson met the corporate target for SAIFI and CAIDI. Individual District targets, however, are not in line with the corporate objectives.

As shown in Section 5 of this report, of the 43 circuits in the Fishkill Operating Area, 67% of these circuits (29 out of 43) performed at or better than the Electric Service Standard SAIFI level of 1.2. 49% of the Fishkill circuits (21 out of 43) performed better than the Electric Service Standard CAIDI level of 2.0 (120 minutes per interruption).

The Fishkill Operating District non-storm CAIDI objective was exceeded for the following reasons:

1) Tree-related interruptions were the leading cause for customer interruptions in the district during 2022. Outages of this nature accounted for 47% of the 2022 non-storm SAIFI. In comparison to 2021, SAIFI increased by approximately 2% and CAIDI decreased by 19% for tree-related interruptions. In comparison to the five-year averages the non-storm SAIFI for the category worsened by 23% but the non-storm CAIDI improved by 15%. The overall district reliability performance is driven by the results from this category. The single event that contributed most to exceeding the CAIDI target was due to a tree contact that occurred during a non-coding storm on May 22nd, when a tree from outside the clearance zone fell on the primary on Pye Ln in Wappingers Falls. This event interrupted 2,063 customers for 2 hours and accounted for 3.1% of the district's non-storm ECM performance.

2) Apparatus or Equipment Failures were the second largest driver for customer interruptions in 2022 for Fishkill. Outages as the result of equipment failure accounted for approximately 24% of the 2022 non-storm SAIFI for Fishkill. In comparison to 2021, SAIFI and CAIDI increased by approximately 6% and 32% respectively for equipment failure related interruptions. In comparison to the five-year averages, the non-storm SAIFI for the category improved by 5% but the non-storm CAIDI worsened by 48%. The single event that contributed most to exceeding the CAIDI target occurred on June 16th as a result of a bad pothead terminator at the 8094 riser pole off Montfort Rd. This event interrupted up to 2,412 customers for 2 ¾ hours. The outage in its entirety lasted approximately 4 ½ hours and accounted for 5.5% of yearly ECM.

ii) <u>Historical O&M efforts and expenditures within the Fishkill area (to the extent possible) for each of the past 5 years</u>

Central Hudson does not identify O&M efforts and expenditures on a District level. This is done on a System level and is addressed in Section 3 of this report.

iii) <u>Corrective actions to be taken with target dates for completion</u>

1) 8066 – Reconductor 2.39 miles of three-phase circuitry on Rt 9 to increase capacity of the 8066 circuit and improve reliability. This will help increase operational flexibility and improve long-term reliability of the circuit as a large number of automatic splices will be eliminated from prior repairs as a result of trees having fallen from outside the clearance zone. Reconductoring work should occur following an extensive review of trimming on the circuit and removal of as many identified "danger trees" as possible. This project is currently in construction and is scheduled for completion Q3 2023.

2) 8066 – Install additional distribution automation devices and reconductor approximately 1.4 miles of three-phase circuitry on Old Albany Post Rd to strengthen tie points. This will help improve operational flexibility in areas in the southern portion of the Fishkill territory that frequently have poor reliability history. This project is scheduled for completion Q4 2023.

3) During 2023, 10 circuits in the Fishkill District are scheduled for danger tree removal. These circuits serve 14,654 customers comprising 28% of the district's total customer count. This is scheduled for completion by Q4 2023.

c) Confirm compliance with corrective actions identified in last year's report if Fishkill missed the targets in the previous year.

The Fishkill District missed its CAIDI target in 2022. The following 2022 projects were listed in the 2021 Annual Electric Reliability Report as being expected to improve the future reliability in the Fishkill Operating Area. More time will be needed to realize the impact on reliability these projects will have.

1) 8095 – Rebuild/reconductor 2.4 miles of the 8095 circuit on Beekman Road and Phillips Road with 336 Al conductor to strengthen the tie with the 8093 circuit at pole #156425 and increase the flexibility for future Distribution Automation schemes. This project was completed Q2 2022.

2) 8066 – Convert the 1.3 miles of 4800V circuitry on Old Albany Post to single phase 7.62kV construction and close the 0.6-mile gap in order to form a loop tie on the 8066 circuit that will improve CAIDI for the customers that are prone to lengthy outages. In addition, newer infrastructure and use of covered wire will have a positive impact on SAIFI. This project was completed Q4 2022.

3) 8096 – Reconductor 1.7 miles of three-phase circuitry on Rt 82 to increase capacity of the 8096 circuit. This will help with high and increasing loads, operational flexibility, and will improve long-term reliability of the circuit as a number of automatic splices and porcelain insulators will be eliminated. This project was originally scheduled to begin construction in Q3 2022 and scheduled for completion Q2 2023 but was deferred to 2024.

4) 8066 – Reconductor 2.39 miles of three-phase circuitry on Rt 9 to increase capacity of the 8066 circuit and improve reliability. This will help with high and increasing loads, operational flexibility, and will improve long-term reliability of the circuit as a large number of automatic splices will be eliminated from prior repairs as a result of trees having fallen from outside the clearance zone. Reconductoring work should occur following an extensive review of trimming on the circuit and removal of as many identified "danger trees" as possible. This project is currently in construction and is scheduled for completion in Q2 2023.

5) Tree trimming was completed on 17 different circuits in the Fishkill district covering 260.5 miles of circuitry. This trimming will reduce reliability concerns for 18,241 customers which account for approximately 35% of the customers in the district territory.

NEWBURGH OPERATING DISTRICT

a) Detailed assessment of the Newburgh District reliability performance indices (SAIFI & CAIDI) and all applicable cause codes. Assessment should include annual and five-year performance information for each measure and each cause code.

	PSC SAIFI Objective	SAIFI (Without Storms)	PSC CAIDI Objective	CAIDI (Without Storms)
2018	1.20	1.09	2.00	2.01
2019	1.20	1.23	2.00	2.25
2020	1.20	1.02	2.00	2.40
2021	1.20	1.08	2.00	3.03
2022	1.20	1.25	2.00	1.80
5 Year Average		1.13		2.28

Table 11 – 5-Year Newburgh SAIFI & CAIDI Performance Indices

Cause Code	Cause Code Description	SAIFI						CAIDI					
		2018	2019	2020	2021	2022	5-Year Average	2018	2019	2020	2021	2022	5-Year Average
2	Tree Contacts	0.425	0.372	0.500	0.514	0.446	0.451	2.43	3.00	2.69	3.50	2.22	2.79
3	Overloads	0.001	0.016	0.001	0.004	0.005	0.006	2.00	4.06	3.68	2.83	2.75	3.52
4	Operating or Working Errors	0.004	0.139	0.000	0.023	0.007	0.035	0.79	1.05	0.56	1.12	0.87	1.05
5	Apparatus or Equipment Failures	0.199	0.186	0.102	0.187	0.214	0.178	1.66	2.44	2.26	2.26	2.28	2.17
6	Accidents or Events Not Under the Utility's Control	0.312	0.243	0.250	0.185	0.480	0.294	1.71	1.71	1.78	2.14	1.17	1.60
7	Prearranged	0.004	0.021	0.010	0.000	0.001	0.007	4.58	2.03	1.48	2.41	1.34	2.12
8	Customer's Equipment or Failures	0.002	0.000	0.000	0.000	0.000	0.001	3.57	3.05	2.94	1.97	1.97	3.24
9	Lightning	0.011	0.063	0.009	0.033	0.002	0.023	2.60	1.65	5.24	5.63	1.88	3.14
10	Unknown or Unclassified	0.131	0.191	0.143	0.138	0.092	0.139	1.77	2.24	2.45	3.21	1.95	2.35

Table 12 – 5-Year Newburgh SAIFI & CAIDI Performance Indices by Cause Code

b) If SAIFI/CAIDI targets were not met, provide the following:

i) <u>Description of problems that resulted in failure to meet the target</u>

During 2022, the Newburgh District had a SAIFI of 1.25 and a CAIDI of 1.80 (excluding major storms). The SAIFI value of 1.25 is greater than the established operating area target of 1.2 by approximately 4% and exceeds the 5-year average by 11%. The CAIDI value of 1.80 is 10% lower than the established operating area target of 2.00.

As shown in Section 5 of this report, of the 74 circuits in the Newburgh Operating Area, 59% of these circuits (44 out of 74) performed at or better than the Electric Service Standard SAIFI level of 1.2. 66% of the Newburgh circuits (49 out of 74) performed better than the Electric Service Standard CAIDI level of 2.0 (120 minutes per interruption).

The Newburgh Operating District non-storm SAIFI objective was exceeded primarily for the following reasons:

1) The largest contributor to Newburgh's 2022 non-storm SAIFI was Accidents or Events not Under the Utility's Control. Outages of this nature yielded a SAIFI of 0.480 in 2022 which accounted for approximately 38% the 2022 non-storm SAIFI. This value increased by 160% in comparison to 2021 and was 63% greater than the 5-year average SAIFI of 0.294. The single event that contributed most to exceeding the SAIFI target occurred on October 16th, when a squirrel caused a transformer differential at the Union Avenue substation. Six distribution feeders were de-energized as a result, causing an interruption to 8,281 customers for 24 minutes. The event accounted for 8% of the district's non-storm SAIFI performance.

2) Tree related outages were the second largest contributor to Newburgh's 2022 non-storm SAIFI. Although SAIFI due to tree contact were down 13% in 2022 compared to 2021, tree contacts still accounted for nearly 36% of Newburgh's non-storm SAIFI. The largest event that contributed to tree SAIFI occurred on September 22nd, when a tree from inside the clearance zone fell across three phases of overhead distribution wire. This event resulted in the upstream substation breaker to open, causing an interruption to 1,770 customers for 30 minutes. This event accounted for 8% of the district's tree related SAIFI.

ii) Historical O&M efforts and expenditures within the Newburgh area (to the extent possible) for each of the past 5 years

Central Hudson does not identify O&M efforts and expenditures on a District level. This is done on a System level and is addressed in Section 3 of this report.

iii) <u>Corrective actions to be taken with target dates for completion</u>

1) Sixteen Newburgh District circuits are scheduled for tree trimming and vegetation management during 2023. These circuits serve 9,190 customers comprising 12% of the district's total customer count. The planned trimming is expected to improve each circuit's reliability and in turn the district total. This is scheduled for completion Q4 2023.

2) 4093 – Perform Storm Hardening on Angola Rd (Rt 32 to Mine Hill Rd) to improve the 4093 circuit's reliability performance. This project is scheduled for completion Q4 2023.

3) During 2023, 18 circuits in the Newburgh District are scheduled for danger tree removal. These circuits serve 11,103 customers comprising 14% of the district's total customer count. This is scheduled for completion Q4 2023.

c) Confirm compliance with corrective actions identified in last year's report if Newburgh missed the targets in the previous year.

The Newburgh District missed its SAIFI target in 2022. The following 2022 projects were listed in the 2021 Annual Electric Reliability Report as being expected to improve the future reliability in the Newburgh Operating Area. More time will be needed to realize the impact on reliability these projects will have.

1) 4040 (Phase 3/3) – Create a new circuit to feed Cornwall to improve the reliability performance of the 4041 and 4043 circuits. This project was postponed due to ongoing bridge construction in the area. This Project was completed Q3 of 2022 and the circuit will be placed into service Q2 2023.

2) 5023 – Move approximately 1,500 ft of off-road circuitry on-road along Main St in New Paltz to improve the 5023 circuit's reliability performance. This project was completed in Q4 2022.

3) Thirteen circuits within the Newburgh District received routine trimming in 2022. A total of 297.4 miles were completed across these circuits impacting the reliability of 38,378 customer in the district, comprising 47% of the customers in the district.

3. Reliability Programs

a) List, describe and provide a detailed assessment of distribution reliability programs and investments. Provide program budgets and actual expenditures for each of the past 5 years.

The expenditures listed for the following reliability programs and investments are installation expenditures.

Distribution Line Infrared Surveys

Beginning in 2010, distribution line infrared surveys of the three-phase mainline of all distribution circuits have been conducted annually. Infrared surveys help identify equipment at risk of thermal failure. By identifying these "hot spots," action can be taken to proactively prevent outages due to equipment failure. In 2014, a 3-year contract was awarded, and a subsequent 3-year contract was awarded to complete the surveys at the cost of $17,500 for 2017, $18,125 for 2018, and $18,750 for 2019. A new 3-year contract was awarded to complete summer surveys on the three-phase mainline of all distribution circuits and higher loaded single phase and two-phase circuitry, in addition to winter surveys of winter peaking circuits. The surveys were conducted at the cost of $26,365 for 2020, $26,942 for 2021, and $26,829 for 2022. The number of items found that were deemed "Immediate", "Serious", or "Critical" were 58 in 2018, 76 in 2019, 64 in 2020, 44 in 2021, and 49 in 2022. The majority of repairs have been completed on items deemed "Immediate" and the remaining repairs will be completed before the 2023 summer peak. Repairs made are not considered major capital investment work and are handled through expense on a District level.

3X Report

The 3X report, which is completed on a monthly basis, is designed to acknowledge those protective devices that have operated at least 3 times in a 12-month period for the same or unknown causes. Each month, the Electric Operations Engineers review the 3X report for each of their districts and determine if a plan of action is needed to address repeat outages at specific locations. The overall goal of this report is to improve reliability by decreasing SAIFI. Corrective action is carried out throughout the year, and typically involves installing animal guards or lightning arrestors, or performing spot trimming. This work is not considered major capital investment work and is managed through expense on a District level.

10X Report/Customers Experiencing Multiple Interruptions (CEMI)

In 2008, a program was developed to determine areas with significantly below-average reliability (pockets of customers who may be experiencing poor reliability) on the Central Hudson system. This

program allows us to determine the number of customers that experience a given number of outages in a calendar year. The 10X report was created as a way to determine how many customers on Central Hudson's system experience ten or more outages over a 12-month period. As many 10X projects have been completed, the Company has begun reviewing other areas with a high CEMI for potential mitigation through this program.

This report shows the areas with significantly below-average reliability by plotting them on a map for each given district. It should be noted that the 10X/CEMI report targets areas with significantly below-average reliability in *specific locations* on a circuit. Upgrades or programs only address these specific locations, not the entire circuit. At times it may be found that different areas with significantly below-average reliability may develop over a number of years on the same circuit, and that the same solution can be successfully deployed to different areas of the circuit. Table 13 below is a summary of trimming completed on 10X circuits that had experienced numerous tree outages during the past five years. Expenditures associated with trimming are discussed later in this section of the report.

District	Circuit	Year (s) Identified in 10X Report	Routine Trimmed	Spot Trimming	EAB and Danger Tree-Specific Removal
Catskill	1071	2018	2021		2021
Catskill	1083	2020	2021		2021
Catskill	1091	2019, 2020	2019		2022
Catskill	1092	2020	2019		
Catskill	2005	2018, 2019	2019		2019
Catskill	2006	2017	2019		
Catskill	2042	2017	2019	2018	2019
Catskill	2061	2020	2021		2021
Kingston	1011	2017, 2018, 2019	2022		2019
Kingston	2016	2019	2021		2019, 2021
Kingston	2094	2017, 2018, 2019, 2020, 2021	2022		2019, 2021, 2022
Kingston	3003	2018, 2019	2019		2019
Kingston	3011	2017, 2018, 2020	2019	2018, 2021, 2022	2018, 2021
Kingston	3012	2017, 2018, 2019, 2020	2019	2018, 2022	2018, 2021
Kingston	3013	2017, 2020	2019	2022	2018
Kingston	3014	2017, 2020	2019	2022	2018, 2021
Kingston	3022	2018, 2019	2022		2020, 2022
Kingston	3023	2018, 2019, 2020, 2021	2022		2018, 2021
Kingston	3024	2018, 2019, 2021	2022		2018, 2021
Kingston	3041	2017	2022		
Kingston	3072	2020	2020		2020, 2021
Kingston	3078	2017, 2020, 2021	2022		2021
Kingston	3082	2018, 2019, 2020, 2021	2022		2018, 2021, 2022
Kingston	3091	2017, 2018, 2020, 2021	2022	2021	2018, 2022
Poughkeepsie	6053	2018	2022		
Poughkeepsie	6057	2017, 2018	2022		2019, 2022
Poughkeepsie	6074	2018	2018		
Poughkeepsie	6092	2019	2021		2019, 2021, 2022
Poughkeepsie	7025	2018	2019	2016	2019
Poughkeepsie	7042	2020	2021		2021
Poughkeepsie	7072	2020	2020		2021
Fishkill	8014	2017	2021		2022
Fishkill	8066	2019	2022		2020
Newburgh	4093	2018, 2020	2022		2022
Newburgh	5031	2021	2022		2020
Newburgh	5043	2019	2020		2020

Table 13 – Trimming in response to 10X

The following non-capital/minor unit work was completed as a result of the 10X/CEMI report. This work is not considered major capital investment work, and is handled through expense on a District level:

- In response to the 2017 10X report (carried out in 2018):
  - To improve reliability for the Catskill 2006 and 2042 circuits as well as the Kingston 2093 circuit, the Poughkeepsie 6057 circuit and the Fishkill 8014 circuit, squirrel guards and covered taps were installed on the transformers on the affected circuitry.
  - A gap arrestor was identified as the cause of outages on the Newburgh 5043 circuit and subsequently replaced. Additional arrestors were replaced on the Kingston 2094, 3012, 3024 and 3078 circuits and on the Fishkill 8014 circuit.
- In response to the 2018 10X report (carried out in 2019):
  - To improve reliability for customers on the Kingston 3082 circuit, an additional fuse location was added to reduce the area of exposure for Cherrytown Road.
  - To improve reliability for customers on the Poughkeepsie 6053 and 7072 circuits, squirrel guards and covered tap wire were installed on multiple transformers in affected areas.
  - To improve reliability for customers on the Newburgh 4093 circuit, permanent switching was performed to transfer a portion of Angola Road to the 4041 circuit.
- In response to the 2019 10X report (carried out in 2020):
  - To improve reliability for customers on the Catskill 1081 and 2041 circuits, as well as the Poughkeepsie 6092 circuit, squirrel guards and covered tap wire were installed on multiple transformers in affected areas.
  - To improve reliability for customers on the Catskill 1091 and 2005 circuits, additional fuse locations were added to reduce the areas of exposure.
  - To improve reliability for customers on the Newburgh 5031 circuit, permanent switching was performed to move a normally open loop tie such that customers on the 5031 circuit were fed via a point farther upstream, thus reducing exposure.
- In response to the 2020 10X report (carried out in 2021):
  - To improve reliability for customers on the Catskill 1083, 1092 and 2061 circuits as well as the Newburgh 4093 circuit, squirrel guards and covered tap wire were installed on multiple transformers in affected areas.
  - To improve reliability for customers on the Catskill 1083 circuit and the Kingston 3082 circuit, additional fuse locations were added to reduce the areas of exposure.
  - To improve reliability for customers on the 3091 circuit, a set of cutouts was added to improve switching capability.
  - To improve reliability for customers on the Poughkeepsie 7072 circuit, a gap was closed on Cold Spring Road, improving switching capabilities.
- In response to the 2021 10X report (carried out in 2022):
  - To improve reliability for customers on the Kingston 2016, 2094, 3003, 3013, 3022, and 3082 circuits, the Poughkeepsie 6057, 7025, 7042, and 7072 circuits and the Newburgh 5031 and 5043 circuits, squirrel guards and covered tap wire were installed on multiple transformers in affected areas.
  - To improve reliability for customers on the Poughkeepsie 6053, 6057, and 7025 circuits and the Newburgh 4093 circuit, additional fuse locations were added to reduce the areas of exposure.
  - To improve reliability for customers on the Poughkeepsie 7072 circuit, a set of mid-span spacers was installed to prevent conductor slapping.
  - To improve reliability for customers on the 3091 circuit, several spans were moved on-road on Big Hollow Road in Grahamsville.

For areas that involved infrastructure improvements, a number of projects were completed in response to the 2017/2018/2019/2020/2021 10X/CEMI reports. These projects have not only helped reduce the number of outages for 10X/CEMI customers but have also positively impacted non-10X/CEMI customers residing on the same circuit. The following are Capital Budget projects that have either been scheduled or were completed:

Catskill

1071 Circuit – The 1071 circuit appeared in the 2012 and 2018 10X reports. In order to improve reliability for the areas affected in 2012, a project proposal was submitted in 2014 to rebuild 4.25 miles of single-phase circuitry on-road along Route 51, Sodom Road, and Shady Lane. The estimated cost of this project is $645,000 and it is scheduled for 2023. In addition, the 1071 circuit appeared on the 2017 10X report due to mainline outages along Rt. 81. An additional project was proposed to rebuild the circuitry along this road over a three-year period at an estimated cost of $600,000/year. Phase I of this project was completed in 2021 and Phase 2 was completed in 2022, with the remaining phase deferred to future years for re-evaluation. The 2018 10X areas will also be addressed with the completion of these two projects. This circuit did not appear on the 2019, 2020 or 2021 10X reports.

1091 Circuit – The 1091 circuit appeared in the 2014, 2019 and 2020 10X reports, affecting customers along Route 408 and Kropp Road. In order to resolve the reliability problems in the area, a capital budget project was submitted in 2015 to rebuild 3.5 miles of single-phase circuitry. This project is currently scheduled for 2027 at an estimated cost of $650,000. The 1091 circuit did not appear in the 2017, 2018 or 2021 10X reports.

2005 Circuit – The 2005 circuit appeared in the 2012 and 2015 10X reports, and two projects were completed in 2014 and 2016 in response. A third project was submitted in 2017 to rebuild 3.25 miles of the single-phase line along Ira Vail Road at an estimated cost of $744,000. This project is currently scheduled for completion in 2025 and will also improve reliability for customers identified on the 2018 and 2019 10X reports for Ira Vail Road. One set of hydraulic reclosers was replaced with electronic reclosers in 2017. The 2005 circuit did not appear on the 2017, 2020 or 2021 10X reports.

Kingston

2094 Circuit – In 2017, 2018, 2019, 2020 and 2021, the 2094 circuit appeared on the 10X reports. In order to improve reliability for the Olivebridge area, capital budget project K-2018-01 was completed in 2019 to reconductor Ashokan Road at a total cost of $618,000. K-2018-03 was also completed in 2019 to reconductor Fording Place at a total cost of $490,000. Finally, K-2018-02 was completed in 2022 to reconductor Lapla Road at an estimated cost of $522,000. All three projects brought off-road circuitry on road where feasible and utilize 336 AAC spacer cable with flex brackets or other conductor that is resistant to tree contacts. In addition, a capital budget project was completed in 2018 to rebuild the mainline along Hurley Avenue in the first zone of protection on road at an approximate cost of $300,000. An automatic load transfer team went in-service in 2018 to save 556 customers for upstream outages. Two additional projects were submitted in 2019 to perform storm hardening on Beaverkill Road and Stone Church Road. The Stone Church Road project is estimated at $700,000 and is scheduled for completion in 2026. The Beaverkill Road project has an estimated cost of $875,000 and is scheduled for completion in 2028. One new project was submitted in 2022 to eliminate an off-road feed from Canary Hill and rebuild 0.8 miles of single phase along Hurley Mountain Road with 1/0 ACSR tree-resistant wire. This project has an estimated cost of $263,000 and has been scheduled for completion in 2024.

3011 Circuit – The 3011 circuit appeared in the 2017, 2018 and 2020 10X reports. As a result, two capital projects were submitted for the West Shokan area. One project to eliminate the off-road circuitry by closing gaps along High Point Mountain Road was completed in 2022 at an approximate cost of $337,000. A similar type of project on McMillan Road is slated for completion in 2023 at an estimated cost of $100,000. After these projects are complete, exposure to outages in the area will be reduced. Additionally, an automatic load transfer scheme was placed in service at the beginning of 2019 to transfer customers on the 3011 circuit to the 3013 circuit in the event of an outage in the 3011 circuit first zone. The 3011 circuit did not appear on the 2019 or 2021 10X reports.

3012 Circuit – The 3012 circuit appeared in the 2017, 2018, 2019 and 2020 10X reports. In 2020, a storm hardening pilot project was completed in the first zone to improve reliability for the entire circuit at a total cost of $314,000. Completion of this project is expected to greatly improve reliability on this circuit going forward. In addition, a capital budget project was submitted in 2020 to run one mile of overhead circuitry underground that is particularly prone to tree contacts from outside the clearance zone. This

project is currently scheduled for 2028 at an estimated cost of $1,500,000. The 3012 circuit did not appear on the 2021 10X report.

3024 Circuit – The 3024 circuit appeared in the 2018, 2019 and 2021 10X reports. In 2018, an automatic load transfer team became operational in order to allow 10X customers on the 3024 circuit to be transferred to the 3023 in the event of a source side outage. The 3024 circuit did not appear on the 2017 or 2020 10X reports.

3091 Circuit – The 3091 circuit appeared in the 2017, 2018, 2020 and 2021 10X reports. In order to address poor reliability on this circuit, a project was proposed to rebuild 3.2 miles along Rt. 55 from the Neversink Substation to Claryville Road using 336 ACSR in order to retire difficult-to-access pole plant nearing the end of its useful life. Phase 2 of this project began in 2021 and was completed in 2022. The total 2021 capital investments were $543,000. The total 2022 capital investments were $384,000. Phase 1 of this project is scheduled for completion in 2023. The 3091 circuit did not appear on the 2019 10X report.

Poughkeepsie

6057 Circuit – The 6057 circuit appeared in the 2017 and 2018 10X reports. The affected areas were located in a pocket near the end of the feeder. The causes of the 2017 inclusions in the 10X report have been located and fixed as noted in the section above describing minor upgrades. The 6057 circuit appearance on the 2018 10X report was primarily due to tree contacts which were addressed when the circuit was routine trimmed in 2019. Two sets of Viper electronic reclosers were installed during 2018. The 6057 circuit did not appear on the 2019, 2020 or 2021 10X reports.

6092 Circuit – The 6092 circuit appeared on the 2019 10X report in the area of Rabbit Trail Drive. In 2020, a capital budget project was submitted for which the first phase was to close a 1-mile gap between the 6092 and 6096 circuits on Overlook Drive in order to allow transfer of these customers to the 6096 circuit. This configuration avoids these customers being fed by a two-mile section of mainline that is off-road and experiences frequent interruptions. This phase was completed in 2022 as part of a larger project with a total project capital investments in 2022 of $883,000. The 6092 circuit did not appear on the 2017, 2018, 2020 or 2021 10X reports.

Fishkill

8014 Circuit – The 8014 circuit appeared on the 2017 10X report for outages on Ketchamtown Road. As a result, a capital budget project was submitted in 2018 to reconductor 0.9 miles of single-phase circuitry along this road with covered wire at an estimated cost of $132,000. This project will also relocate off-road sections of circuitry on-road where feasible. This project is currently scheduled for completion in 2026. The 8014 circuit did not appear on the 2018, 2019, 2020 or 2021 10X reports.

8066 Circuit – The 8066 circuit appeared on the 2019 10X report for various spurs in the Continental Village portion of the circuit. As a result, a capital budget project was submitted in 2021 to reconductor 1.4 miles of three-phase circuitry with 336 Al wire and to add three additional sets of electronic reclosers in order to allow for robust distribution automation in this area once the Distribution Management System is fully operational, thus limiting the extent of outages. The project is currently scheduled for completion in 2023 at an estimated cost of $567,000. In addition, a capital budget project was submitted in 2021 to rebuild 0.38 miles of single phase on Phillipse Brook Road in order to improve reliability for these additional customers identified on the 2019 10X report. This project is currently scheduled for completion in 2025 at an estimated cost of $315,000. The 8066 circuit did not appear on the 2017, 2018, 2020 or 2021 10X reports.

Newburgh

5022 Circuit – The 5022 circuit appeared on the 2017 10X report due to outages along North Eltings Corners Road. To address this reliability issue, a capital project was completed in 2018 to relocate the circuitry from off-road to on-road at an estimated cost of $280,000. The 5022 circuit did not appear on the 2018, 2019, 2020 or 2021 10X reports.

Equipment Failure Analysis

An engineering analysis was performed during 2022 to track trends in equipment failures between 2017 and 2021. The following is a summary of the key recommendations that came about via this analysis. These initiatives will continue into 2023:

- Monitor the enhanced thermal scanning program that now includes winter peaking circuits and spur lines with large numbers of customers to catch hot spots on equipment such as splices, overhead bare conductors, connectors, and arrestors. The expanded winter program began in the 2018/2019 season and will continue to be monitored through 2023. The program was expanded again during 2020 to include heavily loaded single phase and two-phase lines. These scans will also be monitored for effectiveness through 2023.

- Continue the evaluation of the use of sheer bolt splices to replace automatic splices. Electric Power Research Institute (EPRI) completed their report on connectors in 2022. This report included testing the strength of sheer bolt splices to see how they compare to automatics. Engineering shall provide samples to the Electric T&D group for evaluation in 2023.

- Remove 35kV porcelain insulators from stock and standardize on only polymer insulators for the 35kV system. This was completed in 2019.

- Apply EPRI's 2020 and 2021 work on arresters that addressed the relationship between temperature and remaining life, as well as explore the sensitivity of different MOV materials to TOV's and identify additional tools that may be available to assess arrester condition. The final report was completed in 2022. Incorporated EPRI's recommendations into thermal scanning program for 2023.

- Evaluate underground cable health assessment technology and targeted repairs versus wholesale replacement. Evaluation will be on-going in 2023 to determine if the program is cost effective.

Circuits Over Design Ratings

As mentioned in Section 1d of this report, the "Circuits Over Design Ratings" report provides a means of monitoring and balancing load growth on a local level and is a proactive program that addresses reliability by allowing for operational flexibility for emergency switching and maintenance. Unless indicated, there are no thermal concerns that drove the development and completion of these investments.

To address specific operational flexibility concerns related to the Circuits Over Design Ratings Reports of the past 5 years, a number of new distribution circuits were installed, infrastructure and equipment upgrades were completed, and circuits were offloaded through shifting tie points with adjacent circuits. Actual expenditures associated with most local load transfers are not tracked, and therefore cannot be included. This work is not considered major capital investment work and is handled through expense on a district level. Details on the 2022 load transfers driven by the 2021 Circuits Over Design Ratings Report can be found in Section 1d of this report. The following is a summary of substation and distribution infrastructure improvement projects, including new distribution circuits.

1. The 4024 circuit appeared in the Circuits Over Design Ratings Report each year from 2013 through 2018. Although there were no thermal concerns, work was completed in 2019 to extend the 4022 circuit to Route 300 and offload around 1.5 MW from the 4024 circuit to provide additional operating flexibility in the area. The final cost to extend one mile of the 4022 circuit (double circuit) and relocate a VIPER recloser was $492,437.

2. The 4041 circuit appeared in the Circuits Over Design Ratings Report each year, from 2012 to 2018, as operating above its design rating. The Cornwall area lacks sufficient operational flexibility due to being located at the edge of Central Hudson's service territory. For this reason, it was determined

that an additional feeder was needed. A new 4040 feeder was constructed as an express feed to the Cornwall area. The total 2016 capital investments were $1.526 million and the total 2019 capital investments were $740,000. There were no expenditures in 2020 as the project was postponed due to ongoing bridge construction in the area. This project is expected to be finished and placed into service by Q2 2023. Once completed, the new 4040 circuit will be available to offload the 4041 circuit.

3. The 5052 circuit appeared in the Circuits Over Design Ratings Report from 2015 to 2020 and the 5053 circuit appeared on the 2019 Circuits Over Design Ratings Report as operating above their design ratings. The Montgomery Substation was rebuilt in 2019 due to infrastructure issues. The total 2018 and 2019 capital investments were $1.042 million and $4.426 million respectively. In conjunction with this rebuild, a project to convert the Montgomery substation's low voltage 572 circuit to a high voltage 5072 circuit was completed at the end of 2019 at a cost of $1.184 million. Although there were no thermal issues associated with the 572 circuit, the 4kV circuit was limited to 1.5 MVA and voltage issues occasionally occurred during the summer months. The 5072 circuit was put into service at the beginning of 2020 and the conversion allowed for additional strong high voltage ties between the 5052, 5053, 5054, and 4021 circuits and increases the circuits' hosting capacity and operational flexibility.

4. The Fishkill Plains 8091, 8092, and 8095 circuits have appeared in the Circuits Over Design Ratings Report every year since 2018. The Wiccopee Substation – which was previously utilized to serve IBM facilities, will be reconfigured to allow for 4 new distribution circuits. Approximately 11 MVA of load from Fishkill Plains and Shenandoah distribution circuits will be transferred to the new Wiccopee feeders, allowing for load redistribution to occur in the East Fishkill area. The total capital investment is expected to be approximately $1.53 million and work is expected to be complete by Q4 2026.

5. The 2015 circuit has appeared in the Circuits Over Design Ratings Report every year dating back to 2019. In 2024, the 2015 circuit will be reconfigured to support the construction of Central Hudson's new Primary Control Center and training facility. Approximately 3.0 MVA of native load will be transferred to the Saugerties 3005 circuit. The total capital expenditures associated with this work is expected to be approximately $100,000.

6. The 6003 circuit has appeared in the Circuits Over Design Ratings Report every year dating back to 2020. In 2023, approximately 0.25 miles of double circuit infrastructure will be constructed shift approximately 1.25 MVA of load from the 6003 circuit to the Manchester 6095 circuit. The total capital investment to support this work is expected to be approximately $395,000.
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7. The 8087 circuit has appeared in the Circuits Over Design Ratings Report every year since 2016 excluding 2017 and 2018. To reduce operational flexibility concerns, 1.29 miles of three-phase line circuitry on the Tioronda 8085 circuit will be converted to 13.2 kV which will allow for approximately 0.75 MVA of 8087 circuit load to be transferred. Work is currently scheduled to start in 2028. Total capital expenditures are expected to be approximately $645,000.

ALT Switch Installations

Automatic Load Transfer (ALT) switch teams transfer pockets of load to alternate feeds for loss of primary feed. Central Hudson has 104 of these teams installed system wide. Over the past 5 years, ALT switch operations have accounted for an average of 6.08% savings in total system SAIFI and 6.46% savings in non-storm system SAIFI. Table 14 below shows the benefits this form of automation has had in regard to non-storm SAIFI saved for specific cause codes that have historically had the largest impact on reliability.

Cause Code	Cause Code Description	5-Year Average SAIFI Savings
2	Tree Contacts	7.91%
5	Apparatus or Equipment Failures	4.72%
6	Accidents or Events Not Under the Utility's Control	4.89%
9	Lightning	6.30%
10	Unknown or Unclassified	5.64%

Table 14 – ALT Switch Program - % SAIFI Saved

The approximate installation cost is $140,000 per new ALT team. Locations are identified each year to be a part of the program. In 2022, two ALT team conversions were completed for two sets of existing electronic reclosers, at a cost of $11,443. A cellular communication ALT solution was implemented in 2022 that resulted in the addition of 26 new ALT teams. With the use of existing equipment only, these new teams were implemented at no cost. Additional teams were installed as part of the Distribution Automation program.

14.4kV Cable Replacement

Central Hudson has approximately 15 miles of 14.4 kV paper and lead cable remaining in use on the sub-transmission system. Several cables are over 60 years old and failures of these cables are typically associated with cracks in the lead shield.

Poughkeepsie 14.4kV

In conjunction with the cable replacement program, plans were developed to retire the antiquated Maryland Ave and Smith Street Substations. Multiple phases to retire these two low voltage substations were scheduled through 2019. The retirement of these two 4.16 kV substations would allow for the elimination of approximately 8 miles of 14.4 kV cable feeds (the PS and MS cables) that serve them. In 2014, the Smith St. Substation and PS cable were retired. The four distribution feeders which in total served approximately 3,500 customers were converted from 4.16 kV to 13.2 kV operation and transferred to adjacent feeders.

In 2019, the Maryland Ave Substation and MS cable were retired. A new mainline circuit was built using the old PH cable (6003 circuit) as a 13.2 kV circuit, converting all spurs to 13.2 kV operation. Approximately 0.9 mainline miles and 0.75 spur miles of the 624 & 621 circuits were built/converted along College Ave, Glenwood Ave, Grand Ave and others in the City of Poughkeepsie. All work was completed in 2019. The total 2017 capital investment for this work was $680,000. The total 2018 capital investment was $844,000. The total 2019 capital investment to complete this work was $334,000.

The majority of the Poughkeepsie network primary PILC cable feeds have been replaced with EPR rubber insulated cables. Two of the few remaining spurs along Market Street have been budgeted for replacement in 2023 and 2024 at a cost of $170,000 in each year.

Newburgh 14.4kV

In 2016, preliminary plans were developed to replace the three 14.4kV underground loop feeds (B, F and R cables) and replace the nearly 100-year-old underground infrastructure between the old Balmville Substation and the Montgomery Street Substation. In 2016, 2017 and 2018, the capital investment was $34,000, $22,000 and $25,000, respectively. This covered contracted transmission design work to repair the existing steel lattice structures in the existing right-of-way exiting the West Balmville Substation, as well as estimating work for the underground design and permitting process to determine costs and feasibility. In 2019, the Electric Construction Standards Engineering group completed additional analysis to reduce costs and determine if there were more cost-effective alternatives to replace the 14.4kV loop feeds. It was determined that the three underground cables could be replaced with a single high-capacity overhead spacer cable circuit, given future upgrades to the fourth 14.4kV loop feed (WN cable). The 14.4kV loop feed upgrades have been divided into five phases. Phase V of the B, F and R infrastructure replacement was completed in 2020 at a total capital cost of $904,000. This included portions of B cable replacement and new infrastructure in front of the Montgomery Street Substation. Phase I of the B cable replacement involving the West Balmville Substation circuit exit has been budgeted in 2023 for a total capital cost of $600,000. Phases II & III continuing the B circuit overhead construction to Montgomery Street Substation have been budgeted in 2024 for a total capital cost of $1,000,000. Phase IV completing the construction has been budgeted in 2025 for a total capital cost of $300,000. The plans to upgrade the WN cable are in development and are preliminarily budgeted to begin in 2025, following the completion of the single high-capacity circuit. This work accounts for approximately 7 miles of the remaining 14.4kV paper and lead cable in service.

Newburgh Secondary Network

In 2018 and 2019, PILC portions of the 404 network feeder were re-routed to facilitate other repairs, resulting in replacement with rubber. In addition to this work, older secondary cable was replaced in two sections of the network system. The total 2018 capital investment in the Newburgh network was approximately $71,000. The total 2019 capital investment was $22,625.

Poughkeepsie Secondary Network

The secondary network infrastructure along Market Street was being evaluated in 2019 for inclusion in the capital budget. Field inspections in 2017 and 2018 verified collapsed tile ducts without any remaining spares to accommodate new cable, as well as pull- boxes and manholes in need of repair. The Electric Construction Standards Engineering group developed a five-phase plan to install all new secondary network infrastructure along Market Street. In 2019, the City of Poughkeepsie announced plans to re-pave Market Street and repurpose it for 2-way traffic. In October 2019, City officials notified Central Hudson that trenching after their project will not be allowed. Central Hudson was therefore required to expedite the five phases of the secondary network infrastructure replacement, working alongside existing gas trenching that was scheduled in that area. What had been designed as Phase 3 (the smallest phase) had already been completed in 2018 due to a cable failure involving a new customer requesting service for a total capital investment of $243,000. The remaining four phases commenced in the winter of 2019 and were completed in 2020. The total 2019 capital investment was approximately $524,000. The total 2020 capital investment was approximately $969,000.

In 2021, proposed building renovations along Academy St necessitated secondary cable upgrades to support the increase in load. Through field inspections, it was also determined that the existing infrastructure was in poor condition and would require repairs. Construction was completed in 2022 to replace lead secondary cables with rubber and install additional cables to accommodate the new load and improve capacity in the surrounding area. The total capital investment was approximately $158,000.

Also in 2021, new apartment buildings were constructed along Crannell St requiring secondary network infrastructure improvements in that area which had previously been a parking lot. To accommodate the new load, duct systems were constructed to connect the existing infrastructure along Catharine St with structures in the Crannell St alley which had previously been supporting the parking lot. New cables were run through this duct system to connect the existing secondary network branches and complete the grid.

This construction provides multiple paths to service not only the new buildings but also those in the surrounding area. The total capital investment was approximately $180,000.

Distribution Automation

Central Hudson currently utilizes Electrical Distribution Design's (EDD) model-based Distributed Engineering Workstation (DEW) software. With this advanced modeling software, Central Hudson is able to realize continuous improvement in distribution system reliability, efficiency, capacity and security as smart grid technologies are implemented over time as a strategic part of capital investment. This software allows for an open architecture that can adapt as technology advances and priorities change. DEW is capable of performing integrated system analyses for planning, design, and operations management.

In 2015, the Distribution Automation program began a transition from pilot to full-scale rollout. In addition to electronic device installation and circuit reconductoring, the project includes deployment of a network communication system of radios with a fiber/microwave backbone, as well as a Distribution Management System. These components form the backbone of the Fault Locating, Isolation, and Service Restoration (FLISR) scheme as well as the VVO/CVR scheme (Volt-VAR Optimization and Conservation Voltage Reduction). In order to track the progress of all three projects, milestones were developed and completed every six months through June 30, 2018. For additional information, please reference Central Hudson's Project Milestones & Testing Report on Distribution Automation, Distribution Management System, and Network Strategy filed September 21, 2015 in Cases 14-E-0318 and 14-G-0319[3].

During 2018, the Distribution Automation project installed 15 switched capacitors, 15 voltage regulator sets and controllers, and 41 sets of electronic reclosers. The installation of these devices followed strategic planning methods established in previous milestones. In 2018, the integration of the Distribution Management System (DMS) completed its last milestone with the successful demonstration of automated Volt-Var Optimization (VVO). The total capital expenditures for 2018 were approximately $2.3 million for Distribution Automation. Installation of these devices from 2019 onwards followed strategic planning methods established in previous milestones. During 2019, the Distribution Automation project installed 11 switched capacitors, 4 voltage regulator sets and controllers, and 26 sets of electronic reclosers. The total capital expenditures for 2019 were approximately $3.2 million. During 2020, the Distribution Automation project installed 7 switched capacitors, 23 voltage regulator sets and controllers, and 33 sets of electronic reclosers. The total capital expenditures for 2020 were approximately $4.4 million. During 2021, the Distribution Automation project installed 16 voltage regulator sets with controllers and 21 sets of electronic reclosers. The total capital expenditures for 2021 were approximately $3.2 million. During 2022 the Distribution Automation project installed 12 sets of electronic reclosers. The total capital expenditures for 2022 were approximately $1.0 million.

Cutout Replacement

In 2002, Central Hudson developed a cutout replacement program to address porcelain cutouts impacting 500 or more customers.

Following the completion of the cutout replacement program, micro-surveys were performed to identify cutouts that may have been missed. Between 2014 and 2022, Central Hudson continued to proactively monitor and address cutout replacements as necessary at the district level at locations that did not meet the threshold for replacement under the initial program. The Company is currently evaluating the potential for additional replacement programs to further reduce porcelain cutouts. However, customers affected by cutout failure have declined in recent years. System-wide, there were 47 interruptions due to porcelain cutout failures during 2022 contributing a total SAIFI of 0.003. This SAIFI value is the lowest recorded over the past five years and represents a 75% decrease compared to the five-year average.

[3] Cases 14-E-0318 and 14-G-0319, Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Central Hudson Gas & Electric Corporation for Electric and Gas Service.

Copper Wire Replacement

There is an abundance of copper primary wire on Central Hudson's distribution system. This conductor is not only antiquated and prone to failure, but frequently undersized for modern operational needs such as for automatic load transfers and Volt/VAR Optimization as part of Distribution Automation. Copper wire is also prone to burndown during recloser operations. The copper wire replacement program was developed to begin to phase out all of the undersized, antiquated, copper conductors. The wire is typically replaced with new, higher capacity ACSR wire. The new conductor is rated for 13.2kV operation, stronger, and can handle additional loading and increased hosting capacity. The total capital expenditures for this program for 2021 and 2022 were $1,034,120, and $569,935, respectively.

Breaker Replacement

Breaker failures are not a common occurrence, but they have the potential to impact a significant number of customers. In 2008, the Breaker Replacement plan was developed as a means to improve the Central Hudson infrastructure and maintain system reliability. Breaker replacements were prioritized based on duty rating, condition assessment and obsolescence. The expenditures for the Breaker Replacement program are shown in Table 15 below.

	2018	2019	2020	2021	2022
Breaker Replacement Program Expenditures ($000)	$2,500	$2,600	$2,600	$3,200	$1,400

Table 15 – Breaker Replacement Program

$1.9 million has been budgeted for 2023 to replace an additional 28 breakers, some of which have already been purchased and designed. A total of 170 breakers were identified and replaced between 2013 and 2022. The need to replace additional breakers is an on-going process and will continue based on real-time field evaluation and condition assessments.

5-Year Capital Budgets and Expenditures

Table 17 below is a summary of 5-year distribution capital budgets and expenditures. The "Total Improvement Blankets" include minor overhead line improvement, infrastructure damage repairs, pole replacements as a result of inspections, and underground line improvement. "Total Limited Term" includes overhead service replacements as well as other overhead minor equipment repairs/replacements. The "Total Relocation Blanket" includes expenditures involved with small highway rebuilds. "Total Specifics" are major capital improvement projects.

	2018		2019		2020		2021		2022	
	Budgeted	Expended	Budgeted	Expended	Budgeted	Expended	Budgeted	Expended	Budgeted	Expended
Total Improvement Blankets	$9,424	$14,616	$7,805	$21,268	$9,459	$24,947	$9,327	$25,528	$9,222	$22,523
Total Limited Term	$0	$1,733	$0	$2,470	$616	$0	$6	$608	$601	$22
Total Relocation Blanket	$202	$23	$207	$79	$0	$130	$0	$96	$852	$67
Total Specifics	$26,133	$16,092	$33,279	$20,106	$27,417	$20,981	$29,098	$14,305	$44,883	$15,042
TOTAL BUDGET GROUP 15	**$35,759**	**$32,464[1]**	**$41,291**	**$43,923**	**$37,492**	**$46,058**	**$38,431**	**$40,537**	**$55,558**	**$37,654**

Table 17 – Distribution 5-Year Budgets and Expenditures ($000)

[1]Restoration efforts as a result of the March 2018 snowstorm and the May 2018 windstorm resulted in decreased capital budget spending due to the lengthy restoration efforts after these events, loss of contract and company personnel to mutual aid, and mitigation of temporary repairs resulting from the restoration process. Additional decrease in 2018 capital budget spending resulted from loss of contract personnel due to ongoing restoration efforts related to Hurricane Maria in Puerto Rico.

Tables 18a and 18b summarize the total Transmission and Substation 5-year budgets and expenditures. These areas are indirectly related to Distribution in that they have an impact on reliability.

	Budgeted	Expended
2018 Total Budget	$23,057	$22,669
2019 Total Budget	$19,340	$24,259[1]
2020 Total Budget	$21,678	$24,587
2021 Total Budget	$18,581	$17,207
2022 Total Budget	$22,586	$16,533

Table 18a – Transmission 5-Year Budgets and Expenditures ($000)

[1]Variation due to 2018 carryover work due to utilization of live-line techniques; incremental/higher cost High Priority Replacement projects and incremental condition based projects all not in original 2019 work plan.

	Budgeted	Expended
2018 Total Budget	$16,151	$15,728
2019 Total Budget	$19,312	$21,128
2020 Total Budget	$19,799	$17,696[1]
2021 Total Budget	$21,612	$20,369
2022 Total Budget	$16,797	$14,352

Table 18b – Substation 5-Year Budgets and Expenditures ($000)

[1]Variation due to Transfer of $1.5 million to Category 12 – Transmission for Storm Hardening projects at the transition substation.

Vegetation Management

Heavy tree cover is natural to the majority of Central Hudson's service territory, and tree-related outages are the Company's top driver of SAIFI performance. Central Hudson's Vegetation Management program is therefore critical to maintaining and improving reliability performance across the system.

After experiencing significant improvement in tree-related SAIFI as a result of the Routine Trimming Program, which began in its current form in 2011, and despite improvement in other areas of reliability, Central Hudson began to see the trend reverse and eventually have a significant impact on Central Hudson's overall SAIFI metric beginning around 2016. This was due in part to the emergence and spread of the Emerald Ash Borer ("EAB"). To combat the negative impact of accelerating tree damage on SAIFI, Central Hudson implemented several plans to improve performance. These included beginning to collect and review tree-related data following breaker lockouts, further reviewing trends related to tree species (particularly ash trees) and establishing an effective process for identifying and removing danger trees.

In parallel with these efforts, Central Hudson also engaged a consultant in 2016 to assess Central Hudson's line clearance program. Some of the consultant's recommendations included: obtaining increased funding to return to a four-year trimming schedule, creating a separate schedule for circuits affected by the residency of protected bat species, and obtaining funding for a widespread removal of danger trees -- the majority of which are ash trees -- along three-phase circuitry in order to reduce the impacts of tree mortality caused by the Emerald Ash Borer and other tree diseases. In Case 17-E-0459[4] Central Hudson requested incremental funding to address the recommendations from the consultant in order to improve the system reliability. This incremental funding request sought to address the following distribution vegetation management items: routine trimming backlog, general danger tree removals, Emerald Ash Borer danger tree removals, off-cycle spot trimming and completion of the original enhanced line clearance areas. Incremental funding was partially granted.[5]

On May 5, 2017, Central Hudson petitioned the Public Service Commission ("Commission") for deferral accounting authority related to incremental funding for additional transmission line clearance and danger tree removal. The Commission ruled on this petition in Case 17-E-0250 on September 28, 2017, granting, in part, deferral accounting and recovery for this purpose. The Commission approved up to $2 million for the removal of danger trees along 262 miles of three-phase circuitry on the twelve highest-priority circuits, which was substantially completed in 2018 with some work carrying over into 2019. As part of Case 17-E-0459 filed June 29, 2018, Central Hudson requested significant additional funding for distribution vegetation management (a total of approximately $26M annual funding). A portion of the additional dollars requested was approved (a total of approximately $20M annual funding). Central Hudson saw a positive impact to tree-related SAIFI as a result of the increased funding in 2019. Tree-related SAIFI showed a significant improvement, coming in at 9% lower compared to 2018 and 8% lower than the 5-year average. Central Hudson saw a significant positive impact to tree-related SAIFI in 2020 on the circuits where danger tree removal was performed; however, poorer performance on the remainder of the system lead to an overall SAIFI increase in the tree contact category. This trend continued into 2021 and potential reliability improvements were overshadowed by tree contact outages from an exceptionally high number of minor storms that did not qualify for Code 1 status. Tree contact outage SAIFI in 2022 was 18% lower compared to 2021. In the Kingston district where much of the danger tree removal work has been focused, tree contact SAIFI was down 36% in 2022 compared to 2021.

Distribution Engineering continues to work in conjunction with Line Clearance to identify the worst performing circuits that should be targeted for danger tree removal. As of the end of 2022, approximately

[4] Case 17-E-0459, Proceeding on Motion of the Commission as to the Rates, Charges, Rules, and Regulations of Central Hudson Gas & Electric Corporation for Electric Service.
[5] Case 17-E-0459, Order Adopting Terms of Joint Proposal and Establishing Electric and Gas Rate Plan (issued and effective June 14, 2018).

145 circuits have been identified and addressed. On the circuits where danger trees were removed between the program's inception in 2018 and the end of 2022, analysis indicates a 17% non-storm SAIFI reduction for tree contact outages, on average, compared to three-year historical averages for those circuits.

Analysis was completed each year from 2018 to 2022 to align danger tree removal with the regular trimming cycle based on historical reliability such that the greatest number of customers could be prevented from experiencing outages while minimizing setup, travel, and other costs. This analysis will continue to guide the line clearance work in 2023 as Central Hudson works through its planned trimming cycle, while also accounting for trimming restrictions due to protected bat species. Expenditures related to Central Hudson's tree trimming programs are listed in section 3e of this report.

Facility Inspection

Central Hudson's facility inspection program has been in place for many years. All of Central Hudson's facility inspection activities comply with the minimum requirements set forth in the New York State Public Service Commission Electric Safety Standards Order issued on January 5, 2005 (Case 04-M-0159), with subsequent revisions issued on July 21, 2005, December 15, 2008, March 22, 2013, January 13, 2015 and January 28, 2021 (collectively referred to herein as the "Safety Standards" or "Order). The purpose of the inspections is to visually evaluate the equipment associated with overhead distribution and transmission facilities, and underground distribution facilities. Prior to the Order, Central Hudson had in place a comprehensive inspection program that in many cases exceeded the minimum requirements set forth in the standards. Inspection frequency for distribution and transmission structures is based on a five-year cycle. The following is a summary of the facility inspection program as reviewed in Central Hudson Gas & Electric's Electric System Planning Guides dated October 2013, and any subsequent updates.

Structure Categories

Central Hudson Gas and Electric has approximately 242,108 individual facilities that require testing for the presence of contact (stray) voltage, and in some cases, facility inspection. These facilities are broken down into the following five main categories: Distribution Overhead, Underground Facilities, Transmission Structures, Streetlights and Traffic Signals and Substations. The three categories that require both inspections and testing for contact voltage are:

- Distribution Overhead – wooden poles, guy wires, metallic risers and all attached devices that are accessible from the ground.

- Underground Facilities – manholes, pull boxes, URD pad-mounted equipment and all devices associated with underground facilities.

- Transmission Structures – all structures, guys, and down leads attached to the structures. Transmission structures support circuit voltages of 69 kilovolts and greater. Facilities that house circuits of lower voltage in addition to the transmission voltage levels are included in this category.

Distribution Overhead

There are approximately 209,725 distribution pole structures in Central Hudson's territory. These consist of primarily wooden poles. The poles support electric power distribution lines and equipment as well as telephone, cable, and other miscellaneous attachments. Those distribution structures that have ground wires, metallic risers, guy wires, or metal control boxes are required to be tested for stray voltage as part of the program. Distribution overhead facilities are included in both the contact (stray) voltage and inspection programs.

Underground Facilities

There are 1,226 system manholes and pull boxes as well as 15,224 URD pad-mounted devices on Central Hudson's system. The manholes and pull boxes are primarily located in Central Hudson's

network areas. Pull boxes are typically provided with a concrete cover in a cast iron frame. Manholes are covered with a cast iron cover, steel grating, or reinforced concrete cover. The pad-mounted devices are associated with our URD (Underground Residential Distribution) system. The pad-mounted devices are installed on concrete or fiberglass bases and are themselves enclosed in metallic or fiberglass cabinets. These locations are included in both the stray voltage and facility inspection programs.

Transmission

Transmission facilities consist of all overhead transmission towers and pole structures with operating voltages of 69 kV or higher. There are a total of 9,070 individual transmission poles/towers in Central Hudson's system. Transmission structures that are either metallic or wood and have down grounds, guys or riser pipes were tested for stray voltage as part of this program. All transmission structures are field inspected as part of Central Hudson's facility inspection program.

Expenditures related to the Facility Inspection Program are listed in Table 19 below.

	2018	2019	2020	2021	2022
Total Budgeted	$853,698	$986,220	$1,076,654	$1,089,729	$1,236,896
Total Expenditures	$840,375	$811,522	$1,072,140	$1,027,304	$1,069,595

Table 19 – 5-Year Facility Inspection Program Expenditures

b) Operations and Maintenance (O&M) budgets and actual expenditures associated with reliability programs for each of the past 5 years

Table 20 below summarizes the total O&M 5-year budgets and expenditures.

		2018	2019	2020	2021	2022
Catskill	Budgeted	$1,447,703	$1,621,945	$2,024,983	$1,949,878	$ 2,326,335
	Actuals	$1,647,397	$1,892,236	$2,019,264	$2,041,376	$ 2,507,085
Construction	Budgeted	$6,077,309	$5,502,307	$4,539,070	$5,943,072	$ 9,515,387
	Actuals	$5,389,608	$6,770,614	$6,415,950	$4,501,287	$ 4,498,551
Fishkill	Budgeted	$1,732,826	$1,738,093	$2,008,849	$2,153,155	$ 2,576,000
	Actuals	$1,692,887	$1,636,251	$2,277,141	$2,323,618	$ 2,947,733
Kingston	Budgeted	$2,321,694	$2,371,935	$3,256,840	$3,807,383	$ 4,254,043
	Actuals	$2,840,548	$3,265,218	$4,010,515	$4,202,479	$ 4,260,477
Newburgh	Budgeted	$2,581,384	$2,950,947	$2,960,635	$3,164,197	$ 3,585,937
	Actuals	$2,951,953	$2,819,944	$3,497,849	$3,582,872	$4,025,122
Poughkeepsie	Budgeted	$2,505,223	$2,638,451	$3,661,199	$3,760,210	$ 4,437,795
	Actuals	$2,119,617	$2,491,940	$3,877,535	$4,181,093	$ 4,796,358
Service Workers	Budgeted	$1,015,488	$1,071,820	$0[1]	$0[1]	$0[1]
	Actuals	$816,877	$797,109	$63,537	$9,297	$ 5,675
Total Budgets		$17,681,627	$17,895,498	$18,451,577	$20,777,895	$ 26,695,497
Total Actuals		$17,458,887	$19,673,312	$22,161,791	$20,842,023	$ 23,041,000

Table 20 – 5-Year O&M Budgets and Expenditures

[1]Dollars budgeted for this category were allocated to each of the individual Operating Districts starting in February 2020.

c) The yearly average and peak field/construction work force numbers by job title for each of the past 5 years

Table 21 is a listing of field/construction job titles along with work force numbers over the past five years. Titles that are new in 2022 are denoted with an asterisk:

	2018		2019		2020		2021		2022	
Title	Peak	Avg.	Peak	Avg.	Peak	Avg.	Peak	Avg.	Peak	Avg
Chief Power Line Technician 2/C LES&T	36.0	35.0	35.0	33.0	38.0	36.1	37.0	35.3	36.0	34.3
Chief Power Line Technician 2/C LES&T – Splicer	3.0	3.0	3.0	3.0	-	-	-	-	-	-
Chief Power Line Technician 1/C - PC	9.0	7.8	10.0	9.3	8.0	7.4	7.0	6.8	7.0	6.3
Power Line Technician 1/C	29.0	25.9	33.0	31.5	40.0	36.3	43.0	39.2	40.0	34.0
Power Line Technician 2/C	30.0	25.8	24.0	19.7	22.0	19.6	29.0	23.6	27.0	23.4
Power Line Technician 3/C	17.0	13.9	26.0	16.1	25.0	21.5	18.0	15.1	16.0	10.8
Power Line Technician 1/C – PC*	-	-	-	-	-	-	-	-	8.0	6.9
Power Line Technician 2/C – PC*	-	-	-	-	-	-	-	-	3.0	2.8
Power Line Technician 3/C – PC*	-	-	-	-	-	-	-	-	3.0	1.3
Service Worker A	32.0	30.1	30.0	29.3	31.0	30.3	32.0	30.2	30.0	29.6
Service Worker B	4.0	0.8	4.0	1.0	-	-	3.0	0.5	2.0	0.4
Splicer 1/C	7.0	7.0	7.0	6.5	7.0	6.3	6.0	6.0	6.0	6.0
Splicer 2/C	0.0	0.0	-	-	-	-	-	-	-	-
Splicer 3/C	0.0	0.0	-	-	-	-	2.0	1.0	3.0	1.5
Chief Line Clearance Technician	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.3
Order Dispatcher	-	-	-	-	2.0	2.0	2.0	2.0	3.0	2.1
T&D Operations Technician*	-	-	-	-	-	-	-	-	1.0	0.3
Utility Workers	3.0	0.8	6.0	2.3	3.0	0.5	5.0	2.7	6.0	3.3
Safety Advocate*	-	-	-	-	-	-	-	-	1.0	0.8
Line Foreman	22.0	21.1	22.0	20.6	21.0	20.0	21.0	19.0	23.0	20.6
Associate Line Foreman	2.0	0.9	6.0	3.9	6.0	4.8	4.0	3.5	4.0	3.3
Supv Operating (Line Clearance)*	-	-	-	-	-	-	-	-	1.0	1.0
Utility Forester	2.0	2.0	3.0	2.9	3.0	3.0	3.0	2.9	4.0	3.8
Associate Utility Forester	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.2
Assistant Utility Forester	0.0	0.0	-	-	-	-	-	-	-	-
Director / Regional Director / Senior Director	6.0	6.0	6.0	6.0	6.0	6.0	8.0	7.3	-	-
Director / Superintendent / Operating Supervisor	5.0	4.8	5.0	5.0	5.0	5.0	5.0	4.8	-	-
Senior Leader Electric T & D Safety & Compliance *	1.0	1.0	1.0	0.1	1.0	1.0	-	-	-	-
Engineer	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
T & D Maintenance Planner	5.0	5.0	6.0	5.0	6.0	6.0	6.0	5.3	7.0	6.7
Mgr Elec Trans & Dist*	-	-	-	-	-	-	-	-	1.0	1.0
Sr Dir - Electric District Ops*	-	-	-	-	-	-	-	-	2.0	1.9
Sr Director - Distribution Maintenance & Transmission*	-	-	-	-	-	-	-	-	1.0	1.0
Dir Elec District Operations*	-	-	-	-	-	-	-	-	4.0	3.6
Assoc Dir Elec District Operations*	-	-	-	-	-	-	-	-	1.0	1.0
Director - Line Clearance*	-	-	-	-	-	-	-	-	1.0	1.0
Director - Distr bution Improvement*	-	-	-	-	-	-	-	-	2.0	1.2
Dir - Work Procedures & Methods*	-	-	-	-	-	-	-	-	1.0	1.0
Supv - T&D Planning*	-	-	-	-	-	-	-	-	1.0	1.0
Total	218.0	195.9	232.0	200.1	229.0	210.8	236.0	210.1	250.0	214.2

Table 21 – 5-Year Field/Construction Work Force Numbers

*New job titles in 2022

d) The yearly average and peak contractor crew numbers used by title/classification for each of the past 5 years

The following is a listing of title/classification of the contractor Line Clearance crews and Line Crews:

Line Clearance Personnel:	Line Crew Personnel
AF - (working) Foreman	Superintendent
JT - Journeyman Trimmer	General Foreman
T3 - Trimmer Class 3	Foreman
T2 - Trimmer Class 2	Chief Power Line Technician
T1 - Trimmer Class 1	Journeyman Power Line Technician
	Apprentice 1st through 7th

Tables 22a and 22b summarize the average and peak Line Clearance and Line contractor FTEs over the past 5 years.

	2018	2019	2020	2021	2022
Average Contractor FTE	171.69	185.37	220.12	220.25	248.74
Peak Contractor FTE	214.00	260.55	551.64	334.33	634.29

Table 22a – 5-Year Average and Peak Contractor Line Clearance FTEs

	2018	2019	2020	2021	2022
Average Contractor FTE	119.57	106.84	101.51	98.10	189.83
Peak Contractor FTE	409.00	207.00	438.00	252.09	658.53

Table 22b – 5-Year Average and Peak Contractor Line FTEs

e) Distribution tree trimming budgets and actual expenditures for each of the past 5 years

Table 23 below is a summary of all Distribution Line clearance expenditures for each year over the past 5 years.

	2018	2019	2020	2021	2022
Total Budgeted (Distribution)	$18,911,839	$19,793,500	$20,029,821	$22,309,295	$24,651,854
Total Expenditures (Distribution)	$19,088,488	$19,706,794	$20,008,407	$22,894,922	$24,031,916
Total Budgeted (Transmission)	$1,750,000	$3,200,000	$2,919,658	$2,896,455	$3,569,721
Total Expenditures (Transmission)	$1,836,930	$3,360,451	$2,919,537	$3,081,700	$3,585,786

Table 23 – 5-Year Distribution Line Clearance Expenditures

4. Power Quality (PQ)

a) Provide PQ information as outlined in Section 4(d) of the service standards

2022 Goals/Objectives/Targets for Power Quality:

The Company will continue its objective to improve power quality at the customer level. Central Hudson views power quality improvement as an opportunity to offer our customers expertise in the form of advisory services, systems, and equipment, which all add value to their electric service.

Responsibility for this objective includes members of the Customer Services Group and the Electric Engineering and Operations Group. These groups continue the function of working with industrial,

commercial, and residential customers to define their power quality needs and to develop practical, cost-effective solutions to respond to these needs.

The work scope is as follows:

1) The Customer Services and the Electric Engineering and Operations Groups will continue to meet with commercial, industrial, and residential customers to define their power quality needs and to develop practical, cost-effective solutions to address their power quality concerns. These meetings will be arranged through the District Directors.

2) Detailed reports will be individually prepared for each customer, summarizing the findings of the power quality assessment, and recommending an action plan to improve the customer's power quality.

Central Hudson will continue to monitor momentary interruptions through its SCADA system, where available, in accordance with the 2004 Standards Order. The Distribution Engineering Section will continue to review in detail the circumstances surrounding all distribution substation breaker operations in order to improve power quality.

b) Power Quality Program – 2022 Activities:

During 2022, the Customer Services and Electric Engineering and Operations Groups continued to meet with residential, commercial, and industrial customers to assess their power quality needs. The team worked with several of these customers to identify and resolve power quality problems, regardless of whether the root cause was the customer's or Central Hudson's equipment. As part of this program, Central Hudson continued to distribute the brochure entitled "Understanding & Avoiding Commercial Power Disturbances."

Central Hudson continues to work with large industrial customers to review and address power quality issues. Historically, Central Hudson has worked with Global Foundries on an ongoing basis to address power quality issues, to communicate and coordinate scheduled maintenance activities, and to work together during switching procedures to minimize customer impact. The Power Quality work has enhanced this relationship by adding additional structure to event reporting and communication.

The parties have maintained an open line of communication during the year to review and discuss disturbances which originated within Central Hudson's service territory and disturbances which were caused by events outside of the Central Hudson's service territory. These reviews served to identify trends, track follow-up activity, and investigate areas for improvement. Central Hudson utilizes event data from local transmission disturbance monitoring to correlate the impact (percent sag, event duration) of system disturbances with local Global Foundries' monitoring.

Central Hudson has worked in the past with IBM/Global Foundries and EPRI on a specific project to address power quality issues. The project included two scopes; the first phase was to perform a power quality investigation of IBM/Global Foundries to determine the susceptibility of current tool sets and identify cost effective design and mitigation strategies, and the second phase was to use this information and information from other investigations to propose modifications to the existing SEMI F47 criteria that will close gaps in the current criteria and develop recommendations for new testing standards. The power quality investigation phase was completed and a number of devices and controls were found to be operating well below the SEMI F47 power quality standard. There were a number of recommendations developed for improvements within the manufacturing facility which would improve the facility's ability to ride through power disturbances both within and outside of the facility. Central Hudson remains an active participant in EPRI's ongoing System Compatibility Requirements for the Semiconductor Industry Project.

In a similar manner, Central Hudson continues to work with IBM Poughkeepsie reviewing power events and meeting to review power quality, upcoming construction and maintenance work, and future site plans.

c) Power Quality Complaints – Data Collection Methodology, Reporting, Requirements and Results:

Background

Pursuant to Section 3, of Attachment 1 to the 2004 Standards Order, the Commission requires all large electric utilities to record the number of power quality complaints received, the number of investigations conducted during the year and the results of the investigations. The results of the investigations must indicate if the origin of the disturbance was the responsibility of the utility or customer and be categorized as follows: momentary interruptions, over voltage condition, under voltage condition, voltage sags and swells, transients, harmonics and noise or unknown.

As stated in Section 5 of the Cases mentioned above, these results must be included in an annual report to the PSC by March 31 of every year along with other specified information regarding electric service standards.

Data Collection Methodology

Power quality complaints are investigated by our field forces. Depending on the nature of the investigation, an order is created to track the investigation from the time the complaint is received to the time the investigation is completed. The employee conducting the investigation will note on the order the nature of the disturbance and the results of the investigation. All information regarding the orders was recorded electronically through Central Hudson's SAP system which replaced CIS in 2021.

Data Reporting

A query in SAP was created to collect data regarding power quality complaint investigations. The query pulls relevant data from all service orders that were created to track the investigations. Query output is then imported in Excel format, at which point the records are scrutinized, sorted, categorized and tallied based on reporting requirements mentioned above. Tables 24a, 24b and 24c provide details of the Power Quality Program for 2022:

2022 Power Quality Program Report

District	PQ Complaints Received	Investigations Conducted
Catskill	16	16
Kingston	32	32
Poughkeepsie	50	50
Fishkill	24	24
Newburgh	33	33
Total:	155	155

Table 24a – Number of PQ Complaints Received and Investigations Conducted by Operating District

District	Central Hudson	Customer	Unknown	Total
Catskill	8	5	3	16
Kingston	11	12	9	32
Poughkeepsie	22	22	6	50
Fishkill	10	6	8	24
Newburgh	15	13	5	33
Total:	66	58	31	155

Table 24b – Origin of Disturbance by Operating District

	Catskill	Kingston	Poughkeepsie	Fishkill	Newburgh	Total
Momentary Interruptions	1	0	0	1	0	2
Over Voltage	3	1	4	2	4	14
Under Voltage	1	7	7	1	7	23
Voltage Sag/Swell	5	9	21	8	11	54
Transients	1	1	1	0	0	3
Harmonics & Noise	0	0	0	0	0	0
Unknown	2	7	11	8	9	37
No Problem	3	7	6	4	2	22
Totals	16	32	50	24	33	155

Table 24c – Disturbance Category by Operating District

5. Circuit Performance

a) Provide a listing of circuits, by operating area, based on SAIFI and CAIDI performance for the calendar year

Please note that the customer counts shown below are for customers served as of 12/31/2022. Circuits retired prior to 12/31/22, that are under construction or that are available for reserve capacity only during 2022 will indicate a customer count of 0.

CATSKILL OPERATING DISTRICT

Circuits Sorted By Individual Circuit SAIFI
(Data excludes Major Storms)

Circuit #	Operating Area	Customers Served	Customers Interrupted	Interrupted Customer Hours	SAIDI (Minutes per Customer)	SAIFI (Interruptions per Customer)	CAIDI (Minutes per Interruption)
2387	Catskill	255	1,324	7,370.70	1,734.28	5.192	334.02
2389	Catskill	1,779	7,762	32,893.40	1,109.39	4.363	254.26
NGRID	Catskill	11	32	108.78	593.36	2.909	203.97
2005	Catskill	2,038	4,732	5,394.50	158.82	2.322	68.40
2043	Catskill	1,400	2,908	4,666.23	199.98	2.077	96.28
2006	Catskill	845	1,603	3,680.02	261.30	1.897	137.74
2081	Catskill	1,220	2,245	4,433.83	218.06	1.840	118.50
2061	Catskill	2,135	3,864	9,213.07	258.92	1.810	143.06
2385	Catskill	2,035	3,639	6,643.82	195.89	1.788	109.54
1071	Catskill	1,083	1,787	3,078.65	170.56	1.650	103.37
1092	Catskill	2,356	3,531	7,624.15	194.16	1.499	129.55
2071	Catskill	1,293	1,931	4,983.83	231.27	1.493	154.86
2001	Catskill	1,715	2,434	6,207.67	217.18	1.419	153.02
1072	Catskill	645	888	1,038.65	96.62	1.377	70.18
1083	Catskill	1,856	2,380	2,173.58	70.27	1.282	54.80
1076	Catskill	1,240	1,272	1,423.33	68.87	1.026	67.14
2082	Catskill	1	1	0.87	52.00	1.000	52.00
1091	Catskill	1,714	1,312	3,308.78	115.83	0.765	151.32
1074	Catskill	905	638	1,894.92	125.63	0.705	178.21
1081	Catskill	1,756	1,145	1,589.98	54.33	0.652	83.32
2041	Catskill	1,697	1,066	2,787.12	98.54	0.628	156.87
2042	Catskill	1,863	1,006	2,311.37	74.44	0.540	137.85
2002	Catskill	1,522	702	1,683.60	66.37	0.461	143.90
2003	Catskill	1,925	559	841.73	26.24	0.290	90.35
2004	Catskill	1,139	323	319.23	16.82	0.284	59.30
1082	Catskill	704	180	279.98	23.86	0.256	93.33
3002L	Catskill	120	22	70.70	35.35	0.183	192.82
1000H	Catskill	1	0	0.00	0.00	0.000	0.00
2072	Catskill	0	0	0.00	0.00	0.000	0.00

Circuits Sorted By Individual Circuit CAIDI
(Data excludes Major Storms)

Circuit #	Operating Area	Customers Served	Customers Interrupted	Interrupted Customer Hours	SAIDI (Minutes per Customer)	SAIFI (Interruptions per Customer)	CAIDI (Minutes per Interruption)
2387	Catskill	255	1,324	7,370.70	1,734.28	5.192	334.02
2389	Catskill	1,779	7,762	32,893.40	1,109.39	4.363	254.26
NGRID	Catskill	11	32	108.78	593.36	2.909	203.97
3002L	Catskill	120	22	70.70	35.35	0.183	192.82
1074	Catskill	905	638	1,894.92	125.63	0.705	178.21
2041	Catskill	1,697	1,066	2,787.12	98.54	0.628	156.87
2071	Catskill	1,293	1,931	4,983.83	231.27	1.493	154.86
2001	Catskill	1,715	2,434	6,207.67	217.18	1.419	153.02
1091	Catskill	1,714	1,312	3,308.78	115.83	0.765	151.32
2002	Catskill	1,522	702	1,683.60	66.37	0.461	143.90
2061	Catskill	2,135	3,864	9,213.07	258.92	1.810	143.06
2042	Catskill	1,863	1,006	2,311.37	74.44	0.540	137.85
2006	Catskill	845	1,603	3,680.02	261.30	1.897	137.74
1092	Catskill	2,356	3,531	7,624.15	194.16	1.499	129.55
2081	Catskill	1,220	2,245	4,433.83	218.06	1.840	118.50
2385	Catskill	2,035	3,639	6,643.82	195.89	1.788	109.54
1071	Catskill	1,083	1,787	3,078.65	170.56	1.650	103.37
2043	Catskill	1,400	2,908	4,666.23	199.98	2.077	96.28
1082	Catskill	704	180	279.98	23.86	0.256	93.33
2003	Catskill	1,925	559	841.73	26.24	0.290	90.35
1081	Catskill	1,756	1,145	1,589.98	54.33	0.652	83.32
1072	Catskill	645	888	1,038.65	96.62	1.377	70.18
2005	Catskill	2,038	4,732	5,394.50	158.82	2.322	68.40
1076	Catskill	1,240	1,272	1,423.33	68.87	1.026	67.14
2004	Catskill	1,139	323	319.23	16.82	0.284	59.30
1083	Catskill	1,856	2,380	2,173.58	70.27	1.282	54.80
2082	Catskill	1	1	0.87	52.00	1.000	52.00
1000H	Catskill	1	0	0.00	0.00	0.000	0.00
2072	Catskill	0	0	0.00	0.00	0.000	0.00

KINGSTON OPERATING DISTRICT

Circuits Sorted By Individual Circuit SAIFI
(Data excludes Major Storms)

Circuit #	Operating Area	Customers Served	Customers Interrupted	Interrupted Customer Hours	SAIDI (Minutes per Customer)	SAIFI (Interruptions per Customer)	CAIDI (Minutes per Interruption)
3091	Kingston	1,997	8,864	36,998.20	1,111.61	4.439	250.44
3076	Kingston	1,353	4,779	9,571.58	424.46	3.532	120.17
3082	Kingston	2,288	6,849	15,578.63	408.53	2.993	136.48
3024	Kingston	2,479	7,008	18,551.70	449.01	2.827	158.83
3072	Kingston	793	2,136	4,636.10	350.78	2.694	130.23
3002	Kingston	2,006	5,371	6,746.60	201.79	2.677	75.37
3011	Kingston	1,799	4,675	14,380.82	479.63	2.599	184.57
5022K	Kingston	42	99	298.15	425.93	2.357	180.70
2094	Kingston	2,525	5,813	13,252.03	314.90	2.302	136.78
2013	Kingston	1,077	2,441	2,274.08	126.69	2.266	55.90
3012	Kingston	3,162	6,433	25,341.38	480.86	2.034	236.36
3022	Kingston	1,629	3,303	7,707.32	283.88	2.028	140.01
3078	Kingston	1,726	3,388	10,381.50	360.89	1.963	183.85
3014	Kingston	1,567	2,699	3,870.02	148.18	1.722	86.03
3071	Kingston	744	1,271	4,446.62	358.60	1.708	209.91
3013	Kingston	1,863	3,144	6,414.15	206.57	1.688	122.41
3042	Kingston	162	261	774.10	286.70	1.611	177.95
5084K	Kingston	642	1,020	2,201.35	205.73	1.589	129.49
2093	Kingston	2,143	3,353	4,906.72	137.38	1.565	87.80
3023	Kingston	1,928	3,013	6,908.98	215.01	1.563	137.58
3001	Kingston	2,156	3,265	3,934.93	109.51	1.514	72.31
2018	Kingston	32	48	47.07	88.25	1.500	58.83
3095	Kingston	536	792	4,783.48	535.46	1.478	362.39
2001K	Kingston	145	211	283.37	117.26	1.455	80.58
2014	Kingston	160	230	154.22	57.83	1.438	40.23
1024	Kingston	2,002	2,701	5,401.70	161.89	1.349	119.99
3083	Kingston	552	711	2,305.07	250.55	1.288	194.52
391	Kingston	120	148	227.95	113.98	1.233	92.41
1023	Kingston	1,243	1,524	2,843.63	137.26	1.226	111.95
121	Kingston	158	191	156.07	59.27	1.209	49.03
3041	Kingston	846	991	2,787.72	197.71	1.171	168.78
3006	Kingston	89	103	94.25	63.54	1.157	54.90
2012	Kingston	498	546	84.87	10.22	1.096	9.33
1013	Kingston	912	996	3,154.98	207.56	1.092	190.06
3096	Kingston	593	619	2,117.80	214.28	1.044	205.28
3NTWK	Kingston	376	376	332.13	53.00	1.000	53.00

Circuits Sorted By Individual Circuit SAIFI (cont.)
(Data excludes Major Storms)

Circuit #	Operating Area	Customers Served	Customers Interrupted	Interrupted Customer Hours	SAIDI (Minutes per Customer)	SAIFI (Interruptions per Customer)	CAIDI (Minutes per Interruption)
122	Kingston	235	235	207.58	53.00	1.000	53.00
123	Kingston	35	35	30.92	53.00	1.000	53.00
1011	Kingston	1,603	1,436	3,064.87	114.72	0.896	128.06
2016	Kingston	2,203	1,956	2,697.35	73.46	0.888	82.74
3003	Kingston	2,343	1,813	4,407.08	112.86	0.774	145.85
396	Kingston	544	418	1,711.00	188.71	0.768	245.60
2091	Kingston	605	457	1,158.17	114.86	0.755	152.06
2015	Kingston	1,975	1,426	1,418.47	43.09	0.722	59.68
1012	Kingston	1,691	1,219	2,246.00	79.69	0.721	110.55
3081	Kingston	1,303	895	2,049.55	94.38	0.687	137.40
1014	Kingston	499	332	727.52	87.48	0.665	131.48
3004	Kingston	1,529	999	1,290.25	50.63	0.653	77.49
3021	Kingston	1,516	962	2,321.50	91.88	0.635	144.79
2011	Kingston	924	568	1,104.65	71.73	0.615	116.69
2017	Kingston	970	569	576.15	35.64	0.587	60.75
1022	Kingston	2,254	1,290	3,230.80	86.00	0.572	150.27
2092	Kingston	1,082	595	1,243.92	68.98	0.550	125.44
1003	Kingston	1,092	286	633.80	34.82	0.262	132.97
112	Kingston	726	166	552.87	45.69	0.229	199.83
1021	Kingston	960	217	259.47	16.22	0.226	71.74
111	Kingston	584	23	69.97	7.19	0.039	182.52
395	Kingston	18	0	0.00	0.00	0.000	0.00
3005	Kingston	15	0	0.00	0.00	0.000	0.00
397	Kingston	11	0	0.00	0.00	0.000	0.00
1002	Kingston	3	0	0.00	0.00	0.000	0.00
3097	Kingston	2	0	0.00	0.00	0.000	0.00
1001	Kingston	1	0	0.00	0.00	0.000	0.00
1004	Kingston	0	0	0.00	0.00	0.000	0.00
300KK	Kingston	0	0	0.00	0.00	0.000	0.00
300KO	Kingston	0	0	0.00	0.00	0.000	0.00

Circuits Sorted By Individual Circuit CAIDI
(Data excludes Major Storms)

Circuit #	Operating Area	Customers Served	Customers Interrupted	Interrupted Customer Hours	SAIDI (Minutes per Customer)	SAIFI (Interruptions per Customer)	CAIDI (Minutes per Interruption)
3095	Kingston	536	792	4,783.48	535.46	1.478	362.39
3091	Kingston	1,997	8,864	36,998.20	1,111.61	4.439	250.44
396	Kingston	544	418	1,711.00	188.71	0.768	245.60
3012	Kingston	3,162	6,433	25,341.38	480.86	2.034	236.36
3071	Kingston	744	1,271	4,446.62	358.60	1.708	209.91
3096	Kingston	593	619	2,117.80	214.28	1.044	205.28
112	Kingston	726	166	552.87	45.69	0.229	199.83
3083	Kingston	552	711	2,305.07	250.55	1.288	194.52
1013	Kingston	912	996	3,154.98	207.56	1.092	190.06
3011	Kingston	1,799	4,675	14,380.82	479.63	2.599	184.57
3078	Kingston	1,726	3,388	10,381.50	360.89	1.963	183.85
111	Kingston	584	23	69.97	7.19	0.039	182.52
5022K	Kingston	42	99	298.15	425.93	2.357	180.70
3042	Kingston	162	261	774.10	286.70	1.611	177.95
3041	Kingston	846	991	2,787.72	197.71	1.171	168.78
3024	Kingston	2,479	7,008	18,551.70	449.01	2.827	158.83
2091	Kingston	605	457	1,158.17	114.86	0.755	152.06
1022	Kingston	2,254	1,290	3,230.80	86.00	0.572	150.27
3003	Kingston	2,343	1,813	4,407.08	112.86	0.774	145.85
3021	Kingston	1,516	962	2,321.50	91.88	0.635	144.79
3022	Kingston	1,629	3,303	7,707.32	283.88	2.028	140.01
3023	Kingston	1,928	3,013	6,908.98	215.01	1.563	137.58
3081	Kingston	1,303	895	2,049.55	94.38	0.687	137.40
2094	Kingston	2,525	5,813	13,252.03	314.90	2.302	136.78
3082	Kingston	2,288	6,849	15,578.63	408.53	2.993	136.48
1003	Kingston	1,092	286	633.80	34.82	0.262	132.97
1014	Kingston	499	332	727.52	87.48	0.665	131.48
3072	Kingston	793	2,136	4,636.10	350.78	2.694	130.23
5084K	Kingston	642	1,020	2,201.35	205.73	1.589	129.49
1011	Kingston	1,603	1,436	3,064.87	114.72	0.896	128.06
2092	Kingston	1,082	595	1,243.92	68.98	0.550	125.44
3013	Kingston	1,863	3,144	6,414.15	206.57	1.688	122.41
3076	Kingston	1,353	4,779	9,571.58	424.46	3.532	120.17
1024	Kingston	2,002	2,701	5,401.70	161.89	1.349	119.99
2011	Kingston	924	568	1,104.65	71.73	0.615	116.69
1023	Kingston	1,243	1,524	2,843.63	137.26	1.226	111.95
1012	Kingston	1,691	1,219	2,246.00	79.69	0.721	110.55
391	Kingston	120	148	227.95	113.98	1.233	92.41

Circuits Sorted By Individual Circuit CAIDI (cont.)
(Data excludes Major Storms)

Circuit #	Operating Area	Customers Served	Customers Interrupted	Interrupted Customer Hours	SAIDI (Minutes per Customer)	SAIFI (Interruptions per Customer)	CAIDI (Minutes per Interruption)
2093	Kingston	2,143	3,353	4,906.72	137.38	1.565	87.80
3014	Kingston	1,567	2,699	3,870.02	148.18	1.722	86.03
2016	Kingston	2,203	1,956	2,697.35	73.46	0.888	82.74
2001K	Kingston	145	211	283.37	117.26	1.455	80.58
3004	Kingston	1,529	999	1,290.25	50.63	0.653	77.49
3002	Kingston	2,006	5,371	6,746.60	201.79	2.677	75.37
3001	Kingston	2,156	3,265	3,934.93	109.51	1.514	72.31
1021	Kingston	960	217	259.47	16.22	0.226	71.74
2017	Kingston	970	569	576.15	35.64	0.587	60.75
2015	Kingston	1,975	1,426	1,418.47	43.09	0.722	59.68
2018	Kingston	32	48	47.07	88.25	1.500	58.83
2013	Kingston	1,077	2,441	2,274.08	126.69	2.266	55.90
3006	Kingston	89	103	94.25	63.54	1.157	54.90
3NTWK	Kingston	376	376	332.13	53.00	1.000	53.00
122	Kingston	235	235	207.58	53.00	1.000	53.00
123	Kingston	35	35	30.92	53.00	1.000	53.00
121	Kingston	158	191	156.07	59.27	1.209	49.03
2014	Kingston	160	230	154.22	57.83	1.438	40.23
2012	Kingston	498	546	84.87	10.22	1.096	9.33
395	Kingston	18	0	0.00	0.00	0.000	0.00
3005	Kingston	15	0	0.00	0.00	0.000	0.00
397	Kingston	11	0	0.00	0.00	0.000	0.00
1002	Kingston	3	0	0.00	0.00	0.000	0.00
3097	Kingston	2	0	0.00	0.00	0.000	0.00
1001	Kingston	1	0	0.00	0.00	0.000	0.00
1004	Kingston	0	0	0.00	0.00	0.000	0.00
300KK	Kingston	0	0	0.00	0.00	0.000	0.00
300KO	Kingston	0	0	0.00	0.00	0.000	0.00

POUGHKEEPSIE OPERATING DISTRICT

Circuits Sorted By Individual Circuit SAIFI
(Data excludes Major Storms)

Circuit #	Operating Area	Customers Served	Customers Interrupted	Interrupted Customer Hours	SAIDI (Minutes per Customer)	SAIFI (Interruptions per Customer)	CAIDI (Minutes per Interruption)
6092	Poughkeepsie	1,498	6,874	17,122.42	685.81	4.589	149.45
7085	Poughkeepsie	666	2,929	4,223.55	380.50	4.398	86.52
7395	Poughkeepsie	1	4	55.08	3,305.00	4.000	826.25
6041	Poughkeepsie	1,030	3,041	7,245.63	422.08	2.952	142.96
7012	Poughkeepsie	1,389	3,730	10,199.17	440.57	2.685	164.06
7056	Poughkeepsie	651	1,552	1,687.02	155.49	2.384	65.22
7081	Poughkeepsie	1,858	4,422	18,132.48	585.55	2.380	246.03
6061	Poughkeepsie	1,095	2,472	7,170.48	392.90	2.258	174.04
6055	Poughkeepsie	1,415	3,083	8,369.30	354.88	2.179	162.88
7095	Poughkeepsie	271	582	2,002.38	443.33	2.148	206.43
7072	Poughkeepsie	1,268	2,580	5,118.23	242.19	2.035	119.03
500MS	Poughkeepsie	1	2	3.20	192.00	2.000	96.00
500PO	Poughkeepsie	1	2	4.63	278.00	2.000	139.00
6052	Poughkeepsie	896	1,777	3,198.08	214.16	1.983	107.98
6056	Poughkeepsie	609	1,055	1,760.70	173.47	1.732	100.13
6097	Poughkeepsie	1,781	2,761	8,536.37	287.58	1.550	185.51
6003	Poughkeepsie	3,134	4,711	16,042.55	307.13	1.503	204.32
6057	Poughkeepsie	1,886	2,754	7,662.18	243.76	1.460	166.93
6073	Poughkeepsie	1,525	2,183	3,883.73	152.80	1.431	106.74
7071	Poughkeepsie	796	1,138	2,636.50	198.73	1.430	139.01
6091	Poughkeepsie	613	856	2,104.48	205.99	1.396	147.51
7053	Poughkeepsie	1,245	1,614	3,887.38	187.34	1.296	144.51
7011	Poughkeepsie	1,651	2,068	5,870.83	213.36	1.253	170.33
6001	Poughkeepsie	1,446	1,767	4,370.60	181.35	1.222	148.41
6093	Poughkeepsie	1,540	1,843	2,209.90	86.10	1.197	71.94
6095	Poughkeepsie	1,054	1,257	2,258.98	128.59	1.193	107.83
6094	Poughkeepsie	869	1,027	1,796.62	124.05	1.182	104.96
7041	Poughkeepsie	1,985	2,111	5,743.42	173.60	1.063	163.24
7062	Poughkeepsie	2,093	2,175	4,488.55	128.67	1.039	123.82
6004	Poughkeepsie	421	427	102.75	14.64	1.014	14.44
500GB	Poughkeepsie	1	1	6.58	395.00	1.000	395.00
500PD	Poughkeepsie	1	1	1.20	72.00	1.000	72.00
6064	Poughkeepsie	138	137	232.90	101.26	0.993	102.00
7025	Poughkeepsie	2,169	2,031	6,915.58	191.30	0.936	204.30
7013	Poughkeepsie	1,121	1,037	2,533.15	135.58	0.925	146.57
7091	Poughkeepsie	1,656	1,530	4,212.35	152.62	0.924	165.19
NYSEG	Poughkeepsie	11	10	17.52	95.55	0.909	105.10
6062	Poughkeepsie	888	769	1,803.07	121.83	0.866	140.68

6075	Poughkeepsie	1,496	1,163	3,355.32	134.57	0.777	173.10

Circuits Sorted By Individual Circuit SAIFI (cont.)
(Data excludes Major Storms)

Circuit #	Operating Area	Customers Served	Customers Interrupted	Interrupted Customer Hours	SAIDI (Minutes per Customer)	SAIFI (Interruptions per Customer)	CAIDI (Minutes per Interruption)
6011	Poughkeepsie	1,131	810	835.02	44.30	0.716	61.85
7023	Poughkeepsie	211	151	442.22	125.75	0.716	175.72
6051	Poughkeepsie	920	651	1,659.90	108.25	0.708	152.99
7051	Poughkeepsie	781	486	1,762.10	135.37	0.622	217.54
7055	Poughkeepsie	1,745	1,055	3,036.82	104.42	0.605	172.71
7061	Poughkeepsie	1,484	848	2,418.37	97.78	0.571	171.11
7092	Poughkeepsie	404	229	1,150.93	170.93	0.567	301.55
6042	Poughkeepsie	1,627	844	2,048.43	75.54	0.519	145.62
6074	Poughkeepsie	1,629	780	2,125.60	78.29	0.479	163.51
6046	Poughkeepsie	2,949	1,396	3,276.70	66.67	0.473	140.83
7052	Poughkeepsie	1,107	507	2,268.53	122.96	0.458	268.47
6008	Poughkeepsie	2,054	882	1,984.73	57.98	0.429	135.02
6063	Poughkeepsie	548	234	681.57	74.62	0.427	174.76
6044	Poughkeepsie	1,008	396	862.57	51.34	0.393	130.69
7042	Poughkeepsie	1,361	532	2,051.12	90.42	0.391	231.33
6068	Poughkeepsie	1,151	374	588.18	30.66	0.325	94.36
7024	Poughkeepsie	2,325	702	2,208.83	57.00	0.302	188.79
6096	Poughkeepsie	2,343	621	1,154.22	29.56	0.265	111.52
7054	Poughkeepsie	1,791	455	987.52	33.08	0.254	130.22
6053	Poughkeepsie	707	170	468.12	39.73	0.240	165.22
6002	Poughkeepsie	3,040	603	1,755.62	34.65	0.198	174.69
6045	Poughkeepsie	734	139	601.17	49.14	0.189	259.50
6065	Poughkeepsie	1,927	359	702.22	21.86	0.186	117.36
6005	Poughkeepsie	313	58	104.27	19.99	0.185	107.86
7058	Poughkeepsie	144	21	130.15	54.23	0.146	371.86
6043	Poughkeepsie	1,020	146	274.10	16.12	0.143	112.64
6066	Poughkeepsie	1,315	105	134.70	6.15	0.080	76.97
5NTWK	Poughkeepsie	960	0	0.00	0.00	0.000	0.00
500PU	Poughkeepsie	2	0	0.00	0.00	0.000	0.00
6006	Poughkeepsie	1	0	0.00	0.00	0.000	0.00
5000W	Poughkeepsie	1	0	0.00	0.00	0.000	0.00
6047	Poughkeepsie	0	0	0.00	0.00	0.000	0.00
6048	Poughkeepsie	0	0	0.00	0.00	0.000	0.00
6067	Poughkeepsie	0	0	0.00	0.00	0.000	0.00
7022	Poughkeepsie	0	0	0.00	0.00	0.000	0.00
7057	Poughkeepsie	0	0	0.00	0.00	0.000	0.00
500PK	Poughkeepsie	0	0	0.00	0.00	0.000	0.00

Circuits Sorted By Individual Circuit CAIDI
(Data excludes Major Storms)

Circuit #	Operating Area	Customers Served	Customers Interrupted	Interrupted Customer Hours	SAIDI (Minutes per Customer)	SAIFI (Interruptions per Customer)	CAIDI (Minutes per Interruption)
7395	Poughkeepsie	1	4	55.08	3,305.00	4.000	826.25
500GB	Poughkeepsie	1	1	6.58	395.00	1.000	395.00
7058	Poughkeepsie	144	21	130.15	54.23	0.146	371.86
7092	Poughkeepsie	404	229	1,150.93	170.93	0.567	301.55
7052	Poughkeepsie	1,107	507	2,268.53	122.96	0.458	268.47
6045	Poughkeepsie	734	139	601.17	49.14	0.189	259.50
7081	Poughkeepsie	1,858	4,422	18,132.48	585.55	2.380	246.03
7042	Poughkeepsie	1,361	532	2,051.12	90.42	0.391	231.33
7051	Poughkeepsie	781	486	1,762.10	135.37	0.622	217.54
7095	Poughkeepsie	271	582	2,002.38	443.33	2.148	206.43
6003	Poughkeepsie	3,134	4,711	16,042.55	307.13	1.503	204.32
7025	Poughkeepsie	2,169	2,031	6,915.58	191.30	0.936	204.30
7024	Poughkeepsie	2,325	702	2,208.83	57.00	0.302	188.79
6097	Poughkeepsie	1,781	2,761	8,536.37	287.58	1.550	185.51
7023	Poughkeepsie	211	151	442.22	125.75	0.716	175.72
6063	Poughkeepsie	548	234	681.57	74.62	0.427	174.76
6002	Poughkeepsie	3,040	603	1,755.62	34.65	0.198	174.69
6061	Poughkeepsie	1,095	2,472	7,170.48	392.90	2.258	174.04
6075	Poughkeepsie	1,496	1,163	3,355.32	134.57	0.777	173.10
7055	Poughkeepsie	1,745	1,055	3,036.82	104.42	0.605	172.71
7061	Poughkeepsie	1,484	848	2,418.37	97.78	0.571	171.11
7011	Poughkeepsie	1,651	2,068	5,870.83	213.36	1.253	170.33
6057	Poughkeepsie	1,886	2,754	7,662.18	243.76	1.460	166.93
6053	Poughkeepsie	707	170	468.12	39.73	0.240	165.22
7091	Poughkeepsie	1,656	1,530	4,212.35	152.62	0.924	165.19
7012	Poughkeepsie	1,389	3,730	10,199.17	440.57	2.685	164.06
6074	Poughkeepsie	1,629	780	2,125.60	78.29	0.479	163.51
7041	Poughkeepsie	1,985	2,111	5,743.42	173.60	1.063	163.24
6055	Poughkeepsie	1,415	3,083	8,369.30	354.88	2.179	162.88
6051	Poughkeepsie	920	651	1,659.90	108.25	0.708	152.99
6092	Poughkeepsie	1,498	6,874	17,122.42	685.81	4.589	149.45
6001	Poughkeepsie	1,446	1,767	4,370.60	181.35	1.222	148.41
6091	Poughkeepsie	613	856	2,104.48	205.99	1.396	147.51
7013	Poughkeepsie	1,121	1,037	2,533.15	135.58	0.925	146.57
6042	Poughkeepsie	1,627	844	2,048.43	75.54	0.519	145.62
7053	Poughkeepsie	1,245	1,614	3,887.38	187.34	1.296	144.51
6041	Poughkeepsie	1,030	3,041	7,245.63	422.08	2.952	142.96
6046	Poughkeepsie	2,949	1,396	3,276.70	66.67	0.473	140.83
6062	Poughkeepsie	888	769	1,803.07	121.83	0.866	140.68
7071	Poughkeepsie	796	1,138	2,636.50	198.73	1.430	139.01

Circuits Sorted By Individual Circuit CAIDI (cont.)
(Data excludes Major Storms)

Circuit #	Operating Area	Customers Served	Customers Interrupted	Interrupted Customer Hours	SAIDI (Minutes per Customer)	SAIFI (Interruptions per Customer)	CAIDI (Minutes per Interruption)
500PO	Poughkeepsie	1	2	4.63	278.00	2.000	139.00
6008	Poughkeepsie	2,054	882	1,984.73	57.98	0.429	135.02
6044	Poughkeepsie	1,008	396	862.57	51.34	0.393	130.69
7054	Poughkeepsie	1,791	455	987.52	33.08	0.254	130.22
7062	Poughkeepsie	2,093	2,175	4,488.55	128.67	1.039	123.82
7072	Poughkeepsie	1,268	2,580	5,118.23	242.19	2.035	119.03
6065	Poughkeepsie	1,927	359	702.22	21.86	0.186	117.36
6043	Poughkeepsie	1,020	146	274.10	16.12	0.143	112.64
6096	Poughkeepsie	2,343	621	1,154.22	29.56	0.265	111.52
6052	Poughkeepsie	896	1,777	3,198.08	214.16	1.983	107.98
6005	Poughkeepsie	313	58	104.27	19.99	0.185	107.86
6095	Poughkeepsie	1,054	1,257	2,258.98	128.59	1.193	107.83
6073	Poughkeepsie	1,525	2,183	3,883.73	152.80	1.431	106.74
NYSEG	Poughkeepsie	11	10	17.52	95.55	0.909	105.10
6094	Poughkeepsie	869	1,027	1,796.62	124.05	1.182	104.96
6064	Poughkeepsie	138	137	232.90	101.26	0.993	102.00
6056	Poughkeepsie	609	1,055	1,760.70	173.47	1.732	100.13
500MS	Poughkeepsie	1	2	3.20	192.00	2.000	96.00
6068	Poughkeepsie	1,151	374	588.18	30.66	0.325	94.36
7085	Poughkeepsie	666	2,929	4,223.55	380.50	4.398	86.52
6066	Poughkeepsie	1,315	105	134.70	6.15	0.080	76.97
500PD	Poughkeepsie	1	1	1.20	72.00	1.000	72.00
6093	Poughkeepsie	1,540	1,843	2,209.90	86.10	1.197	71.94
7056	Poughkeepsie	651	1,552	1,687.02	155.49	2.384	65.22
6011	Poughkeepsie	1,131	810	835.02	44.30	0.716	61.85
6004	Poughkeepsie	421	427	102.75	14.64	1.014	14.44
5NTWK	Poughkeepsie	960	0	0.00	0.00	0.000	0.00
500PU	Poughkeepsie	2	0	0.00	0.00	0.000	0.00
6006	Poughkeepsie	1	0	0.00	0.00	0.000	0.00
5000W	Poughkeepsie	1	0	0.00	0.00	0.000	0.00
6047	Poughkeepsie	0	0	0.00	0.00	0.000	0.00
6048	Poughkeepsie	0	0	0.00	0.00	0.000	0.00
6067	Poughkeepsie	0	0	0.00	0.00	0.000	0.00
7022	Poughkeepsie	0	0	0.00	0.00	0.000	0.00
7057	Poughkeepsie	0	0	0.00	0.00	0.000	0.00
500PK	Poughkeepsie	0	0	0.00	0.00	0.000	0.00

FISHKILL OPERATING DISTRICT

Circuits Sorted By Individual Circuit SAIFI
(Data excludes Major Storms)

Circuit #	Operating Area	Customers Served	Customers Interrupted	Interrupted Customer Hours	SAIDI (Minutes per Customer)	SAIFI (Interruptions per Customer)	CAIDI (Minutes per Interruption)
8018	Fishkill	4	52	352.62	5,289.25	13.000	406.87
8066	Fishkill	1,550	7,534	13,368.33	517.48	4.861	106.46
8063	Fishkill	1,554	4,110	9,699.30	374.49	2.645	141.60
8044	Fishkill	717	1,861	3,765.65	315.12	2.596	121.41
8024	Fishkill	1,162	2,885	7,758.25	400.60	2.483	161.35
8022	Fishkill	659	1,496	3,625.45	330.09	2.270	145.41
8096	Fishkill	1,038	2,005	5,046.82	291.72	1.932	151.03
8072	Fishkill	1,581	3,001	5,297.82	201.06	1.898	105.92
8086	Fishkill	1,095	1,891	3,844.85	210.68	1.727	121.99
8056	Fishkill	1,368	1,977	5,127.47	224.89	1.445	155.61
8094	Fishkill	2,443	3,506	11,191.15	274.85	1.435	191.52
8065	Fishkill	1,526	2,138	2,860.10	112.45	1.401	80.26
8092	Fishkill	2,089	2,788	6,326.25	181.70	1.335	136.15
8071	Fishkill	2,056	2,615	5,355.30	156.28	1.272	122.87
8093	Fishkill	1,848	2,239	10,084.93	327.43	1.212	270.25
8013	Fishkill	1,094	1,264	2,510.12	137.67	1.155	119.15
8051	Fishkill	1,191	1,369	3,306.28	166.56	1.149	144.91
8011	Fishkill	815	915	1,563.83	115.13	1.123	102.55
8014	Fishkill	2,017	2,231	3,564.23	106.03	1.106	95.86
8055	Fishkill	1,216	1,276	252.48	12.46	1.049	11.87
8085	Fishkill	1,133	1,093	1,593.23	84.37	0.965	87.46
8087	Fishkill	3,209	2,794	4,789.45	89.55	0.871	102.85
8043	Fishkill	1,582	1,321	3,097.90	117.49	0.835	140.71
8021	Fishkill	462	328	590.13	76.64	0.710	107.95
8095	Fishkill	2,051	1,240	2,290.55	67.01	0.605	110.83
8046	Fishkill	2,126	1,269	3,245.05	91.58	0.597	153.43
8023	Fishkill	1,156	679	1,203.03	62.44	0.587	106.31
8052	Fishkill	2,057	1,114	3,418.95	99.73	0.542	184.14
8015	Fishkill	1,656	864	1,232.67	44.66	0.522	85.60
8017	Fishkill	2,451	1,268	2,359.22	57.75	0.517	111.63
8045	Fishkill	1,399	683	1,457.88	62.53	0.488	128.07
8062	Fishkill	1,273	452	1,575.42	74.25	0.355	209.13
8012	Fishkill	356	121	436.60	73.58	0.340	216.50
8054	Fishkill	430	109	251.90	35.15	0.253	138.66
8016	Fishkill	923	232	874.78	56.87	0.251	226.24
8091	Fishkill	2,067	409	1,139.27	33.07	0.198	167.13
8061	Fishkill	114	4	3.27	1.72	0.035	49.00
8025	Fishkill	31	0	0.00	0.00	0.000	0.00
8031	Fishkill	1	0	0.00	0.00	0.000	0.00

Circuits Sorted By Individual Circuit SAIFI (cont.)
(Data excludes Major Storms)

Circuit #	Operating Area	Customers Served	Customers Interrupted	Interrupted Customer Hours	SAIDI (Minutes per Customer)	SAIFI (Interruptions per Customer)	CAIDI (Minutes per Interruption)
8041	Fishkill	1	0	0.00	0.00	0.000	0.00
8064	Fishkill	1	0	0.00	0.00	0.000	0.00
8068	Fishkill	1	0	0.00	0.00	0.000	0.00
700DC	Fishkill	1	0	0.00	0.00	0.000	0.00

Circuits Sorted By Individual Circuit CAIDI
(Data excludes Major Storms)

Circuit #	Operating Area	Customers Served	Customers Interrupted	Interrupted Customer Hours	SAIDI (Minutes per Customer)	SAIFI (Interruptions per Customer)	CAIDI (Minutes per Interruption)
8018	Fishkill	4	52	352.62	5,289.25	13.000	406.87
8093	Fishkill	1,848	2,239	10,084.93	327.43	1.212	270.25
8016	Fishkill	923	232	874.78	56.87	0.251	226.24
8012	Fishkill	356	121	436.60	73.58	0.340	216.50
8062	Fishkill	1,273	452	1,575.42	74.25	0.355	209.13
8094	Fishkill	2,443	3,506	11,191.15	274.85	1.435	191.52
8052	Fishkill	2,057	1,114	3,418.95	99.73	0.542	184.14
8091	Fishkill	2,067	409	1,139.27	33.07	0.198	167.13
8024	Fishkill	1,162	2,885	7,758.25	400.60	2.483	161.35
8056	Fishkill	1,368	1,977	5,127.47	224.89	1.445	155.61
8046	Fishkill	2,126	1,269	3,245.05	91.58	0.597	153.43
8096	Fishkill	1,038	2,005	5,046.82	291.72	1.932	151.03
8022	Fishkill	659	1,496	3,625.45	330.09	2.270	145.41
8051	Fishkill	1,191	1,369	3,306.28	166.56	1.149	144.91
8063	Fishkill	1,554	4,110	9,699.30	374.49	2.645	141.60
8043	Fishkill	1,582	1,321	3,097.90	117.49	0.835	140.71
8054	Fishkill	430	109	251.90	35.15	0.253	138.66
8092	Fishkill	2,089	2,788	6,326.25	181.70	1.335	136.15
8045	Fishkill	1,399	683	1,457.88	62.53	0.488	128.07
8071	Fishkill	2,056	2,615	5,355.30	156.28	1.272	122.87
8086	Fishkill	1,095	1,891	3,844.85	210.68	1.727	121.99
8044	Fishkill	717	1,861	3,765.65	315.12	2.596	121.41
8013	Fishkill	1,094	1,264	2,510.12	137.67	1.155	119.15
8017	Fishkill	2,451	1,268	2,359.22	57.75	0.517	111.63
8095	Fishkill	2,051	1,240	2,290.55	67.01	0.605	110.83
8021	Fishkill	462	328	590.13	76.64	0.710	107.95
8066	Fishkill	1,550	7,534	13,368.33	517.48	4.861	106.46
8023	Fishkill	1,156	679	1,203.03	62.44	0.587	106.31
8072	Fishkill	1,581	3,001	5,297.82	201.06	1.898	105.92
8087	Fishkill	3,209	2,794	4,789.45	89.55	0.871	102.85
8011	Fishkill	815	915	1,563.83	115.13	1.123	102.55
8014	Fishkill	2,017	2,231	3,564.23	106.03	1.106	95.86
8085	Fishkill	1,133	1,093	1,593.23	84.37	0.965	87.46
8015	Fishkill	1,656	864	1,232.67	44.66	0.522	85.60
8065	Fishkill	1,526	2,138	2,860.10	112.45	1.401	80.26
8061	Fishkill	114	4	3.27	1.72	0.035	49.00
8055	Fishkill	1,216	1,276	252.48	12.46	1.049	11.87
8025	Fishkill	31	0	0.00	0.00	0.000	0.00
8031	Fishkill	1	0	0.00	0.00	0.000	0.00
8041	Fishkill	1	0	0.00	0.00	0.000	0.00
8064	Fishkill	1	0	0.00	0.00	0.000	0.00

Circuits Sorted By Individual Circuit CAIDI (cont.)
(Data excludes Major Storms)

Circuit #	Operating Area	Customers Served	Customers Interrupted	Interrupted Customer Hours	SAIDI (Minutes per Customer)	SAIFI (Interruptions per Customer)	CAIDI (Minutes per Interruption)
8068	Fishkill	1	0	0.00	0.00	0.000	0.00
700DC	Fishkill	1	0	0.00	0.00	0.000	0.00
700TR	Fishkill	1	0	0.00	0.00	0.000	0.00

NEWBURGH OPERATING DISTRICT

Circuits Sorted By Individual Circuit SAIFI
(Data excludes Major Storms)

Circuit #	Operating Area	Customers Served	Customers Interrupted	Interrupted Customer Hours	SAIDI (Minutes per Customer)	SAIFI (Interruptions per Customer)	CAIDI (Minutes per Interruption)
4021	Newburgh	6	247	328.82	3,288.17	41.167	79.87
4001	Newburgh	1	29	66.70	4,002.00	29.000	138.00
4053	Newburgh	1,806	7,206	5,730.08	190.37	3.990	47.71
4003	Newburgh	8	29	65.25	489.38	3.625	135.00
4093	Newburgh	1,118	3,378	10,936.70	586.94	3.021	194.26
4052	Newburgh	2,278	6,329	8,812.33	232.11	2.778	83.54
4043	Newburgh	2,648	7,342	12,346.03	279.74	2.773	100.89
5051	Newburgh	1,194	3,005	5,790.80	290.99	2.517	115.62
4095	Newburgh	1,493	3,383	4,624.15	185.83	2.266	82.01
4041	Newburgh	2,096	4,355	4,161.63	119.13	2.078	57.34
5052	Newburgh	2,375	4,694	8,700.80	219.81	1.976	111.22
4022	Newburgh	1,718	3,341	5,270.82	184.08	1.945	94.66
4091	Newburgh	571	1,078	1,413.98	148.58	1.888	78.70
4024	Newburgh	187	351	459.87	147.55	1.877	78.61
4046	Newburgh	531	950	1,170.83	132.30	1.789	73.95
5022	Newburgh	844	1,508	2,645.22	188.05	1.787	105.25
4014	Newburgh	676	1,135	1,724.65	153.08	1.679	91.17
5031	Newburgh	2,125	3,517	12,326.02	348.03	1.655	210.28
4023	Newburgh	2,017	3,284	6,709.48	199.59	1.628	122.58
4011	Newburgh	1,770	2,792	3,572.43	121.10	1.577	76.77
5004	Newburgh	1,653	2,597	3,172.23	115.14	1.571	73.29
5013	Newburgh	1,725	2,708	10,359.92	360.34	1.570	229.54
4045	Newburgh	732	1,110	2,769.15	226.98	1.516	149.68
4044	Newburgh	1,635	2,443	2,673.63	98.11	1.494	65.66
5081	Newburgh	2,082	3,007	5,673.37	163.50	1.444	113.20
4026	Newburgh	572	778	1,705.97	178.95	1.360	131.57
5043	Newburgh	2,176	2,893	5,196.05	143.27	1.330	107.76
5042	Newburgh	552	681	1,206.37	131.13	1.234	106.29
5034	Newburgh	213	262	2,228.68	627.80	1.230	510.39
4051	Newburgh	1,824	2,236	1,600.85	52.66	1.226	42.96
4027	Newburgh	172	209	340.50	118.78	1.215	97.75
4015	Newburgh	1,198	1,404	1,265.65	63.39	1.172	54.09
4055	Newburgh	824	909	427.95	31.16	1.103	28.25
5021	Newburgh	1,658	1,750	2,462.12	89.10	1.055	84.42
406	Newburgh	549	549	1,945.58	212.63	1.000	212.63
4025	Newburgh	53	53	93.63	106.00	1.000	106.00
4096	Newburgh	239	234	452.40	113.57	0.979	116.00
5003	Newburgh	1,586	1,473	1,998.78	75.62	0.929	81.42
4092	Newburgh	268	243	951.55	213.03	0.907	234.95
5083	Newburgh	1,632	1,469	1,758.30	64.64	0.900	71.82
5073	Newburgh	486	434	696.42	85.98	0.893	96.28

Circuits Sorted By Individual Circuit SAIFI (cont.)
(Data excludes Major Storms)

Circuit #	Operating Area	Customers Served	Customers Interrupted	Interrupted Customer Hours	SAIDI (Minutes per Customer)	SAIFI (Interruptions per Customer)	CAIDI (Minutes per Interruption)
4012	Newburgh	1,549	1,357	1,800.93	69.76	0.876	79.63
5084	Newburgh	757	652	1,619.02	128.32	0.861	148.99
407	Newburgh	234	198	361.35	92.65	0.846	109.50
5054	Newburgh	336	260	701.18	125.21	0.774	161.81
5023	Newburgh	2,184	1,642	6,770.50	186.00	0.752	247.40
403	Newburgh	1,063	749	780.92	44.08	0.705	62.56
4097	Newburgh	1,835	1,247	2,019.75	66.04	0.680	97.18
5011	Newburgh	1,366	928	1,785.70	78.43	0.679	115.45
4013	Newburgh	2,174	1,392	2,673.48	73.79	0.640	115.24
5002	Newburgh	783	489	994.80	76.23	0.625	122.06
5012	Newburgh	1,899	1,085	1,490.17	47.08	0.571	82.41
5024	Newburgh	1,386	702	2,068.12	89.53	0.506	176.76
4042	Newburgh	1,906	916	2,377.62	74.85	0.481	155.74
5001	Newburgh	1,894	765	1,606.25	50.88	0.404	125.98
5071	Newburgh	1,719	655	2,157.52	75.31	0.381	197.64
4002	Newburgh	301	108	242.13	48.27	0.359	134.52
5033	Newburgh	723	215	1,008.63	83.70	0.297	281.48
5041	Newburgh	2,108	626	1,915.23	54.51	0.297	183.57
4054	Newburgh	3,246	890	1,701.68	31.45	0.274	114.72
5082	Newburgh	1,836	454	871.00	28.46	0.247	115.11
4047	Newburgh	1,089	219	941.17	51.85	0.201	257.85
5030	Newburgh	37	7	28.98	47.00	0.189	248.43
4094	Newburgh	1,038	55	105.38	6.09	0.053	114.96
5072	Newburgh	547	4	10.10	1.11	0.007	151.50
410	Newburgh	901	2	2.60	0.17	0.002	78.00
8NTWK	Newburgh	339	0	0.00	0.00	0.000	0.00
402	Newburgh	206	0	0.00	0.00	0.000	0.00
5025	Newburgh	174	0	0.00	0.00	0.000	0.00
5053	Newburgh	79	0	0.00	0.00	0.000	0.00
800WN	Newburgh	3	0	0.00	0.00	0.000	0.00
5005	Newburgh	1	0	0.00	0.00	0.000	0.00
800NB	Newburgh	1	0	0.00	0.00	0.000	0.00
4098	Newburgh	1	0	0.00	0.00	0.000	0.00
5006	Newburgh	0	0	0.00	0.00	0.000	0.00
800B	Newburgh	0	0	0.00	0.00	0.000	0.00
800UN	Newburgh	0	0	0.00	0.00	0.000	0.00
5085	Newburgh	0	0	0.00	0.00	0.000	0.00
5032	Newburgh	0	0	0.00	0.00	0.000	0.00
404	Newburgh	0	0	0.00	0.00	0.000	0.00

Circuits Sorted By Individual Circuit CAIDI
(Data excludes Major Storms)

Circuit #	Operating Area	Customers Served	Customers Interrupted	Interrupted Customer Hours	SAIDI (Minutes per Customer)	SAIFI (Interruptions per Customer)	CAIDI (Minutes per Interruption)
5034	Newburgh	213	262	2,228.68	627.80	1.230	510.39
5033	Newburgh	723	215	1,008.63	83.70	0.297	281.48
4047	Newburgh	1,089	219	941.17	51.85	0.201	257.85
5030	Newburgh	37	7	28.98	47.00	0.189	248.43
5023	Newburgh	2,184	1,642	6,770.50	186.00	0.752	247.40
4092	Newburgh	268	243	951.55	213.03	0.907	234.95
5013	Newburgh	1,725	2,708	10,359.92	360.34	1.570	229.54
406	Newburgh	549	549	1,945.58	212.63	1.000	212.63
5031	Newburgh	2,125	3,517	12,326.02	348.03	1.655	210.28
5071	Newburgh	1,719	655	2,157.52	75.31	0.381	197.64
4093	Newburgh	1,118	3,378	10,936.70	586.94	3.021	194.26
5041	Newburgh	2,108	626	1,915.23	54.51	0.297	183.57
5024	Newburgh	1,386	702	2,068.12	89.53	0.506	176.76
5054	Newburgh	336	260	701.18	125.21	0.774	161.81
4042	Newburgh	1,906	916	2,377.62	74.85	0.481	155.74
5072	Newburgh	547	4	10.10	1.11	0.007	151.50
4045	Newburgh	732	1,110	2,769.15	226.98	1.516	149.68
5084	Newburgh	757	652	1,619.02	128.32	0.861	148.99
4001	Newburgh	1	29	66.70	4,002.00	29.000	138.00
4003	Newburgh	8	29	65.25	489.38	3.625	135.00
4002	Newburgh	301	108	242.13	48.27	0.359	134.52
4026	Newburgh	572	778	1,705.97	178.95	1.360	131.57
5001	Newburgh	1,894	765	1,606.25	50.88	0.404	125.98
4023	Newburgh	2,017	3,284	6,709.48	199.59	1.628	122.58
5002	Newburgh	783	489	994.80	76.23	0.625	122.06
4096	Newburgh	239	234	452.40	113.57	0.979	116.00
5051	Newburgh	1,194	3,005	5,790.80	290.99	2.517	115.62
5011	Newburgh	1,366	928	1,785.70	78.43	0.679	115.45
4013	Newburgh	2,174	1,392	2,673.48	73.79	0.640	115.24
5082	Newburgh	1,836	454	871.00	28.46	0.247	115.11
4094	Newburgh	1,038	55	105.38	6.09	0.053	114.96
4054	Newburgh	3,246	890	1,701.68	31.45	0.274	114.72
5081	Newburgh	2,082	3,007	5,673.37	163.50	1.444	113.20
5052	Newburgh	2,375	4,694	8,700.80	219.81	1.976	111.22
407	Newburgh	234	198	361.35	92.65	0.846	109.50
5043	Newburgh	2,176	2,893	5,196.05	143.27	1.330	107.76
5042	Newburgh	552	681	1,206.37	131.13	1.234	106.29
4025	Newburgh	53	53	93.63	106.00	1.000	106.00
5022	Newburgh	844	1,508	2,645.22	188.05	1.787	105.25
4043	Newburgh	2,648	7,342	12,346.03	279.74	2.773	100.89
4027	Newburgh	172	209	340.50	118.78	1.215	97.75
4097	Newburgh	1,835	1,247	2,019.75	66.04	0.680	97.18
5073	Newburgh	486	434	696.42	85.98	0.893	96.28
4022	Newburgh	1,718	3,341	5,270.82	184.08	1.945	94.66

Circuits Sorted By Individual Circuit CAIDI (cont.)
(Data excludes Major Storms)

Circuit #	Operating Area	Customers Served	Customers Interrupted	Interrupted Customer Hours	SAIDI (Minutes per Customer)	SAIFI (Interruptions per Customer)	CAIDI (Minutes per Interruption)
4014	Newburgh	676	1,135	1,724.65	153.08	1.679	91.17
5021	Newburgh	1,658	1,750	2,462.12	89.10	1.055	84.42
4052	Newburgh	2,278	6,329	8,812.33	232.11	2.778	83.54
5012	Newburgh	1,899	1,085	1,490.17	47.08	0.571	82.41
4095	Newburgh	1,493	3,383	4,624.15	185.83	2.266	82.01
5003	Newburgh	1,586	1,473	1,998.78	75.62	0.929	81.42
4021	Newburgh	6	247	328.82	3,288.17	41.167	79.87
4012	Newburgh	1,549	1,357	1,800.93	69.76	0.876	79.63
4091	Newburgh	571	1,078	1,413.98	148.58	1.888	78.70
4024	Newburgh	187	351	459.87	147.55	1.877	78.61
410	Newburgh	901	2	2.60	0.17	0.002	78.00
4011	Newburgh	1,770	2,792	3,572.43	121.10	1.577	76.77
4046	Newburgh	531	950	1,170.83	132.30	1.789	73.95
5004	Newburgh	1,653	2,597	3,172.23	115.14	1.571	73.29
5083	Newburgh	1,632	1,469	1,758.30	64.64	0.900	71.82
4044	Newburgh	1,635	2,443	2,673.63	98.11	1.494	65.66
403	Newburgh	1,063	749	780.92	44.08	0.705	62.56
4041	Newburgh	2,096	4,355	4,161.63	119.13	2.078	57.34
4015	Newburgh	1,198	1,404	1,265.65	63.39	1.172	54.09
4053	Newburgh	1,806	7,206	5,730.08	190.37	3.990	47.71
4051	Newburgh	1,824	2,236	1,600.85	52.66	1.226	42.96
4055	Newburgh	824	909	427.95	31.16	1.103	28.25
8NTWK	Newburgh	339	0	0.00	0.00	0.000	0.00
402	Newburgh	206	0	0.00	0.00	0.000	0.00
5025	Newburgh	174	0	0.00	0.00	0.000	0.00
5053	Newburgh	79	0	0.00	0.00	0.000	0.00
800WN	Newburgh	3	0	0.00	0.00	0.000	0.00
5005	Newburgh	1	0	0.00	0.00	0.000	0.00
800NB	Newburgh	1	0	0.00	0.00	0.000	0.00
4098	Newburgh	1	0	0.00	0.00	0.000	0.00
5006	Newburgh	0	0	0.00	0.00	0.000	0.00
800B	Newburgh	0	0	0.00	0.00	0.000	0.00
800UN	Newburgh	0	0	0.00	0.00	0.000	0.00
5085	Newburgh	0	0	0.00	0.00	0.000	0.00
5032	Newburgh	0	0	0.00	0.00	0.000	0.00
404	Newburgh	0	0	0.00	0.00	0.000	0.00

b) Provide an analysis of the worst performing circuits. The analysis must cover a minimum of 5% of the circuits and include a description of the methodology used to identify the worst performing circuits

Through a State-wide Order for Standards on Reliability of Electric Service, the Public Service Commission requires that "each company shall develop and maintain a program for analyzing its worst-performing circuits during the course of each year…the companies shall analyze a minimum of five percent of its circuits as part of its circuit review program each year." The 19 circuits listed below represent approximately 5.0% of Central Hudson's electric distribution circuits.

The 2022 list included the worst 5% of circuits based on non-storm system SAIFI, and the worst 5% of circuits based on non-storm system ECM. In order to maintain a balance between addressing reoccurring problems (using 5-year averages) and new problems (looking at current year values), the following weighting is used to calculate the worst circuits: previous year, 50% weight; previous year – 2, 25% weight; previous year – 3, 15% weight; previous year – 4, 5% weight; previous year – 5, 5% weight. Table 26a is a list of the worst 5% of circuits based on System SAIFI. Table 26b is a list of the worst 5% of circuits based on System ECM. Table 26c is the combined worst 5% of circuits based on both System SAIFI and System ECM. Attachment #1 of this report is an analysis of each circuit listed in Table 26c.

District	Circuit #	Weighted System SAIFI
Kingston	3091	0.031
Kingston	3012	0.031
Kingston	3082	0.025
Kingston	3024	0.022
Catskill	2389	0.021
Kingston	2094	0.020
Kingston	3011	0.018
Poughkeepsie	6092	0.017
Kingston	3078	0.017
Fishkill	8066	0.017
Newburgh	4093	0.016
Kingston	3023	0.015
Newburgh	4043	0.015
Catskill	2385	0.015
Kingston	3002	0.014

Table 26a –Worst 5% based on System SAIFI

District	Circuit #	Weighted System ECM
Kingston	3091	7.637
Kingston	3012	5.740
Catskill	2389	4.500
Kingston	3082	4.102
Kingston	3024	3.590
Kingston	3011	3.276
Newburgh	5031	3.201
Kingston	3078	2.829
Kingston	2094	2.717
Newburgh	4093	2.684
Poughkeepsie	6092	2.471
Poughkeepsie	6003	2.281
Poughkeepsie	6057	2.260
Poughkeepsie	7081	2.257
Kingston	3023	2.225

Table 26b – Worst 5% based on System ECM

Catskill	Kingston	Poughkeepsie	Fishkill	Newburgh
2385	2094	6003	8066	4043
2389	3002	6057		4093
	3011	6092		5031
	3012	7081		
	3023			
	3024			
	3078			
	3082			
	3091			

Table 26c – 2022 Worst Circuit List

6. Circuit Performance (Network)

a) Listing of network feeders (primary voltage) by operating area based upon the number of open automatics for the calendar year

Central Hudson has a total of nine (9) network feeders that serve less than 1% of its customers. None of these primary feeders experienced a fault that resulted in a negative impact to the Secondary Network customer reliability.

b) Analysis of the worst performing feeders. The analysis must cover a minimum of 5% of the feeders and include a description of the methodology used to identify the worst performing feeders

Central Hudson does not perform a “worst feeder analysis” on its Network Feeders due to the relatively small size of the network and very small percentage of customers fed from each network.

- END -