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COMMISSION



April 13, 2021

Ms. Talina Mathews
Commissioner
Kentucky Public Service Commission
P.O. Box 615
Frankfort, Kentucky 40602-0615

RE: Administrative Case No. 2011-00450

Dear Ms. Mathews,

Enclosed are the original and one (1) electronic copy of the 2020 Distribution Reliability Report, for Owen Electric Cooperative, as requested in the revisions to the aforementioned order.

Should you have any questions or need further information, please contact our office at 1-800-372-7612.

Sincerely,

A handwritten signature in blue ink, appearing to read "Andrew Long". The signature is stylized and cursive.

Andrew Long
System Engineer

Enclosures

KENTUCKY PUBLIC SERVICE COMMISSION

Electric Distribution Utility Annual Reliability Report

SECTION 1: CONTACT INFORMATION

UTILITY NAME	Owen Electric Cooperative
REPORT PREPARED BY	Drew Long
E-MAIL ADDRESS OF PREPARER	along@owenelectric.com
PHONE NUMBER OF PREPARER	(502) 563-3522

SECTION 2: REPORT YEAR

CALENDAR YEAR OF REPORT	2020
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SECTION 3: MAJOR EVENT DAYS

T_{MED}	7.529
FIRST DATE USED TO DETERMINE T_{MED}	1-Jan-2015
LAST DATE USED TO DETERMINE T_{MED}	31-Dec-2019
NUMBER OF MED IN REPORT YEAR	3

NOTE: Per IEEE 1366 T_{MED} should be calculated using the daily SAIDI values for the five prior years. If five years of data are not available, then utilities should use what is available until five years are accumulated.

SECTION 4: SYSTEM RELIABILITY INFORMATION AND RESULTS

System-wide Information	
TOTAL CUSTOMERS	63,142
TOTAL CIRCUITS	129
Excluding MED	
5 YEAR AVERAGE	REPORTING YEAR
SAIDI	98.30
SAIFI	1.16
Including MED	
5 YEAR AVERAGE	REPORTING YEAR
SAIDI	211.61
SAIFI	1.50

Notes:

- 1) All duration indices (SAIDI) are to be reported in units of minutes.
- 2) Reports are due on the first business day of May of each year
- 3) Reports cover the calendar year ending in the December before the reports are due.
- 4) IEEE 1366 (latest version) is used to define SAIDI, SAIFI, and T_{MED}

Electric Distribution Utility Annual Reliability Report

Circuit # 1

5.1.1	SUBSTATION NAME AND NUMBER	BRISTOW II(56)
5.1.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Kenton
5.1.3	CIRCUIT NAME AND NUMBER	BRISTOW II(56), Circuit 7, 5607
5.1.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.1.5	TOTAL CIRCUIT LENGTH (MILES)	5.1
5.1.6	CUSTOMER COUNT FOR THIS CIRCUIT	510
5.1.7	DATE OF LAST CIRCUIT TRIM (VM)	2020

5.1.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	0.00%	0.00%
Equipment/Installation	0.40%	0.10%
Member/Public	51.10%	82.46%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	44.09%	11.05%
Unknown	2.51%	1.26%
Weather	0.00%	0.00%
Age/Deterioration	1.90%	5.13%
R.O.W. Preventable	0.00%	0.00%

5.1.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.155
5.1.10	REPORTING YEAR (SAIDI)	1.754
5.1.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.004
5.1.12	REPORTING YEAR (SAIFI)	0.016

5.1.13 CORRECTIVE ACTION PLAN:

An auto accident breaking a double circuit pole was the main contributor to SAIDI and SAIFI, with the second largest contributor being a scheduled outage to replace equipment.

Action Plan

None at this time. This circuit is short, industrial, and traditionally reliable. The traditional reliability should resume without the scheduled maintenance and member caused outage. This circuit also had circuit trimming completed in 2020 to further reduce chances of outages.

Circuit # 2

5.2.1	SUBSTATION NAME AND NUMBER	RICHARDSON II(55)
5.2.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Kenton
5.2.3	CIRCUIT NAME AND NUMBER	RICHARDSON II(55), Circuit 7, 5507
5.2.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.2.5	TOTAL CIRCUIT LENGTH (MILES)	9.2
5.2.6	CUSTOMER COUNT FOR THIS CIRCUIT	617
5.2.7	DATE OF LAST CIRCUIT TRIM (VM)	2017

5.2.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	55.56%	34.39%
Equipment/Installation	41.03%	56.78%
Member/Public	0.00%	0.00%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	0.00%	0.00%
Unknown	3.42%	8.83%
Weather	0.00%	0.00%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.00%	0.00%

5.2.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.699
5.2.10	REPORTING YEAR (SAIDI)	0.988
5.2.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.009
5.2.12	REPORTING YEAR (SAIFI)	0.013

5.2.13 CORRECTIVE ACTION PLAN:

There were 5 total outages throughout the year on this feeder, all single phase outages, with none affecting more than 48 members at one time. Most of the outages are attributed to birds, but the longest outage was due to construction having to change out a damaged pole.

Action Plan

This feeder recently had the OCR's replaced to Electronic Reclosers, which helps minimize members affected. The scale of these outages show that this has been a benefit.

Circuit # 3

5.3.1	SUBSTATION NAME AND NUMBER	DURO II(54)
5.3.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Kenton
5.3.3	CIRCUIT NAME AND NUMBER	DURO II(54), Circuit 2, 5402
5.3.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.3.5	TOTAL CIRCUIT LENGTH (MILES)	12.5
5.3.6	CUSTOMER COUNT FOR THIS CIRCUIT	617
5.3.7	DATE OF LAST CIRCUIT TRIM (VM)	2017

5.3.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	92.09%	64.82%
Birds/Animals	1.34%	1.10%
Equipment/Installation	0.00%	0.00%
Member/Public	1.19%	1.43%
R.O.W. Unpreventable	2.69%	16.17%
Scheduled	0.00%	0.00%
Unknown	0.00%	0.00%
Weather	2.69%	16.48%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.00%	0.00%

5.3.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.355
5.3.10	REPORTING YEAR (SAIDI)	0.451
5.3.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.005
5.3.12	REPORTING YEAR (SAIFI)	0.011

5.3.13 CORRECTIVE ACTION PLAN:

This feeder had 6 outages overall, but the largest contributor was a failure of the substation voltage regulator which was causing unacceptably high voltage to the members. The members had to be isolated until the regulator could be replaced and service restored.

Action Plan:
None at this time.

Circuit # 4

5.4.1	SUBSTATION NAME AND NUMBER	SMITH II(52)
5.4.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Boone
5.4.3	CIRCUIT NAME AND NUMBER	SMITH II(52), Circuit 2, 5202
5.4.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.4.5	TOTAL CIRCUIT LENGTH (MILES)	4.1
5.4.6	CUSTOMER COUNT FOR THIS CIRCUIT	247
5.4.7	DATE OF LAST CIRCUIT TRIM (VM)	2017

5.4.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	0.00%	0.00%
Equipment/Installation	100.00%	100.00%
Member/Public	0.00%	0.00%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	0.00%	0.00%
Unknown	0.00%	0.00%
Weather	0.00%	0.00%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.00%	0.00%

5.4.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.190
5.4.10	REPORTING YEAR (SAIDI)	0.109
5.4.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.003
5.4.12	REPORTING YEAR (SAIFI)	0.004

5.4.13 CORRECTIVE ACTION PLAN:

This is a reliable circuit that is fairly short at only nearly 4 miles of total circuit length. This feeder had one outage for the reporting periods, but removed all members on the circuit from service for nearly 30 minutes. The ultimate cause was a failed lightning arrester.

Action Plan
Continue two year circuit inspection to potentially find failing equipment.

Circuit # 5

5.5.1	SUBSTATION NAME AND NUMBER	LONG LICK(29)
5.5.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Scott
5.5.3	CIRCUIT NAME AND NUMBER	LONG LICK(29), Circuit 4, 2904
5.5.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.5.5	TOTAL CIRCUIT LENGTH (MILES)	15.0
5.5.6	CUSTOMER COUNT FOR THIS CIRCUIT	735
5.5.7	DATE OF LAST CIRCUIT TRIM (VM)	2017

5.5.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	0.00%	0.00%
Equipment/Installation	0.00%	0.00%
Member/Public	0.00%	0.00%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	0.00%	0.00%
Unknown	2.52%	0.60%
Weather	0.00%	0.00%
Age/Deterioration	97.48%	99.40%
R.O.W. Preventable	0.00%	0.00%

5.5.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.348
5.5.10	REPORTING YEAR (SAIDI)	3.298
5.5.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.006
5.5.12	REPORTING YEAR (SAIFI)	0.012

5.5.13 CORRECTIVE ACTION PLAN:

Two outages occurred on this circuit for the reporting period. One was minimal and sectionalized to a large degree. The second outage caused a 5 hour outage for the entirety of the circuit. A section of underground failed causing a longer than normal restore time and due to location, backfeeding was not available

Action Plan:

Right of Way is due to be cut in 2021, which will minimize overhead outages, additionally aged conductor is changed out as needed.

Circuit # 6

5.6.1	SUBSTATION NAME AND NUMBER	LONG LICK(29)
5.6.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Scott
5.6.3	CIRCUIT NAME AND NUMBER	LONG LICK(29), Circuit 3, 2903
5.6.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.6.5	TOTAL CIRCUIT LENGTH (MILES)	74.4
5.6.6	CUSTOMER COUNT FOR THIS CIRCUIT	644
5.6.7	DATE OF LAST CIRCUIT TRIM (VM)	2017

5.6.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	5.90%	14.74%
Equipment/Installation	0.00%	0.00%
Member/Public	0.18%	0.31%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	0.00%	0.00%
Unknown	1.40%	3.11%
Weather	8.40%	42.20%
Age/Deterioration	83.93%	39.24%
R.O.W. Preventable	0.18%	0.40%

5.6.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.451
5.6.10	REPORTING YEAR (SAIDI)	1.083
5.6.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.004
5.6.12	REPORTING YEAR (SAIFI)	0.026

5.6.13 CORRECTIVE ACTION PLAN:

Several outages occurred, but the largest was an outage caused by a failed insulator just outside of the sub. The outage was able to be isolated and backfed with everyone back on in under 30 minutes, but nearly 1400 members were out during that time. Due to the location, no additional sectionalizing would have been beneficial. Several other outages caused by right of way and weather also occurred

Action Plan:

Circuit Trim planned for 2021 to help remove potential right of way outages.

Circuit # 7

5.7.1	SUBSTATION NAME AND NUMBER	BELLEVIEW(27)
5.7.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Boone
5.7.3	CIRCUIT NAME AND NUMBER	BELLEVIEW(27), Circuit 3, 2703
5.7.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.7.5	TOTAL CIRCUIT LENGTH (MILES)	18.4
5.7.6	CUSTOMER COUNT FOR THIS CIRCUIT	164
5.7.7	DATE OF LAST CIRCUIT TRIM (VM)	2019

5.7.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	20.00%	17.91%
Equipment/Installation	0.00%	0.00%
Member/Public	0.00%	0.00%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	0.29%	0.19%
Unknown	0.00%	0.00%
Weather	30.43%	46.60%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	49.28%	35.30%

5.7.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.608
5.7.10	REPORTING YEAR (SAIDI)	0.404
5.7.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.004
5.7.12	REPORTING YEAR (SAIFI)	0.005

5.7.13 CORRECTIVE ACTION PLAN:

Several small outages occurred throughout the year, mainly weather and tree related. There was one feeder outage, but the rest were sectionalized to relatively small outages.

Action Plan

A circuit spary is scheduled to occur in 2021 to help reduce right of way growth and outages.

Circuit # 8

5.8.1	SUBSTATION NAME AND NUMBER	RICHWOOD(26)
5.8.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Boone
5.8.3	CIRCUIT NAME AND NUMBER	RICHWOOD(26), Circuit 5, 2605
5.8.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.8.5	TOTAL CIRCUIT LENGTH (MILES)	11.0
5.8.6	CUSTOMER COUNT FOR THIS CIRCUIT	615
5.8.7	DATE OF LAST CIRCUIT TRIM (VM)	2019

5.8.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	0.00%	0.00%
Equipment/Installation	37.30%	44.59%
Member/Public	62.70%	55.41%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	0.00%	0.00%
Unknown	0.00%	0.00%
Weather	0.00%	0.00%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.00%	0.00%

5.8.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.175
5.8.10	REPORTING YEAR (SAIDI)	0.113
5.8.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.001
5.8.12	REPORTING YEAR (SAIFI)	0.003

5.8.13 CORRECTIVE ACTION PLAN:

This is a suburban feeder feeding one of the larger subdivisions, served by both overhead wire and underground cable. There were two outages for this period, but the main contributor was due to an unplanned outage from a contractor working on the line, no injuries were reported. This is the same outage that is mentioned in the outage for Richwood 2601 as the two circuits were tied together for work during this time.

Action Plan:

A right of way circuit trim is planned to be completed in 2021 to help remove potential R.O.W. issues.

Circuit # 9

5.9.1	SUBSTATION NAME AND NUMBER	RICHWOOD(26)
5.9.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Boone
5.9.3	CIRCUIT NAME AND NUMBER	RICHWOOD(26), Circuit 4, 2604
5.9.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.9.5	TOTAL CIRCUIT LENGTH (MILES)	15.9
5.9.6	CUSTOMER COUNT FOR THIS CIRCUIT	459
5.9.7	DATE OF LAST CIRCUIT TRIM (VM)	2019

5.9.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	40.43%	18.26%
Equipment/Installation	0.00%	0.00%
Member/Public	0.00%	0.00%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	0.00%	0.00%
Unknown	6.38%	2.13%
Weather	19.68%	11.74%
Age/Deterioration	13.83%	46.88%
R.O.W. Preventable	19.68%	20.99%

5.9.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.213
5.9.10	REPORTING YEAR (SAIDI)	0.329
5.9.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.004
5.9.12	REPORTING YEAR (SAIFI)	0.003

5.9.13 CORRECTIVE ACTION PLAN:

There were eight reportable outages for this circuit, it is another suburban feeder, with significant underground portions. There were no large outages, the biggest affecting 37 members at a time, but a few outages did span longer than an hour in restoration time. Some of those allowed for backfeeding while the outage was restored. Most of the outages occurred due to weather, trees, birds and animals.

Action Plan:

A circuit trim is planned in 2021 to help minimize potential right of way issues.

Circuit # 10

5.10.1	SUBSTATION NAME AND NUMBER	RICHWOOD(26)
5.10.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Boone
5.10.3	CIRCUIT NAME AND NUMBER	RICHWOOD(26), Circuit 1, 2601
5.10.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.10.5	TOTAL CIRCUIT LENGTH (MILES)	14.5
5.10.6	CUSTOMER COUNT FOR THIS CIRCUIT	756
5.10.7	DATE OF LAST CIRCUIT TRIM (VM)	2019

5.10.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	0.00%	0.00%
Equipment/Installation	0.00%	0.00%
Member/Public	86.09%	85.34%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	13.91%	14.66%
Unknown	0.00%	0.00%
Weather	0.00%	0.00%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.00%	0.00%

5.10.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.060
5.10.10	REPORTING YEAR (SAIDI)	0.523
5.10.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.003
5.10.12	REPORTING YEAR (SAIFI)	0.014

5.10.13 CORRECTIVE ACTION PLAN:

This is a typically reliable circuit with most of the circuit underground. There were only two outages this reporting period, the first was scheduled to replace a compromised jumper and the second was an outage due to a contractor working on the line. This is the same outage as mentioned in Richwood 2605 as the two circuits were tied together for work during this time

Action Plan:

The overhead portion is scheduled to be trimmed in 2021, nothing additionally is planned.

Circuit # 11

5.11.1	SUBSTATION NAME AND NUMBER	STERLING(25)
5.11.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Gallatin
5.11.3	CIRCUIT NAME AND NUMBER	STERLING(25), Circuit 3, 2503
5.11.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.11.5	TOTAL CIRCUIT LENGTH (MILES)	31.2
5.11.6	CUSTOMER COUNT FOR THIS CIRCUIT	316
5.11.7	DATE OF LAST CIRCUIT TRIM (VM)	2018

5.11.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	18.85%	10.18%
Equipment/Installation	0.00%	0.00%
Member/Public	0.00%	0.00%
R.O.W. Unpreventable	0.18%	0.06%
Scheduled	0.00%	0.00%
Unknown	0.18%	0.11%
Weather	11.28%	17.66%
Age/Deterioration	10.17%	23.32%
R.O.W. Preventable	59.33%	48.68%

5.11.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.833
5.11.10	REPORTING YEAR (SAIDI)	1.045
5.11.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.008
5.11.12	REPORTING YEAR (SAIFI)	0.009

5.11.13 CORRECTIVE ACTION PLAN:

This circuit had numerous outages, but trees were the biggest issue with several outages caused by R.O.W trees, especially ash trees

Action Plan:

The three phase portion of this circuit was trimmed in 2020 to help reduce the larger R.O.W outages.

Circuit # 12

5.12.1	SUBSTATION NAME AND NUMBER	BURLINGTON(24)
5.12.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Boone
5.12.3	CIRCUIT NAME AND NUMBER	BURLINGTON(24), Circuit 4, 2404
5.12.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.12.5	TOTAL CIRCUIT LENGTH (MILES)	15.9
5.12.6	CUSTOMER COUNT FOR THIS CIRCUIT	408
5.12.7	DATE OF LAST CIRCUIT TRIM (VM)	2018

5.12.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	10.61%	5.34%
Equipment/Installation	0.00%	0.00%
Member/Public	40.78%	46.73%
R.O.W. Unpreventable	6.15%	2.71%
Scheduled	0.00%	0.00%
Unknown	0.00%	0.00%
Weather	35.75%	40.63%
Age/Deterioration	0.56%	1.78%
R.O.W. Preventable	6.15%	2.81%

5.12.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.623
5.12.10	REPORTING YEAR (SAIDI)	0.682
5.12.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.006
5.12.12	REPORTING YEAR (SAIFI)	0.006

5.12.13 CORRECTIVE ACTION PLAN:

Fifteen outages occurred for this reporting period on this circuit. The SAIDI and SIAFI are very similar to the rolling 5 year average. Most of the outages were small, affecting less than 50 members at a time, with several outages only affecting one or two members.

Action Plan:

The three phase portions of the circuit were trimmed in 2020 to help reduce R.O.W outages.

Circuit # 13

5.13.1	SUBSTATION NAME AND NUMBER	BURLINGTON(24)
5.13.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Boone
5.13.3	CIRCUIT NAME AND NUMBER	BURLINGTON(24), Circuit 3, 2403
5.13.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.13.5	TOTAL CIRCUIT LENGTH (MILES)	13.5
5.13.6	CUSTOMER COUNT FOR THIS CIRCUIT	498
5.13.7	DATE OF LAST CIRCUIT TRIM (VM)	2018

5.13.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	8.82%	6.62%
Equipment/Installation	0.00%	0.00%
Member/Public	0.00%	0.00%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	0.00%	0.00%
Unknown	1.56%	0.90%
Weather	86.16%	89.22%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	3.46%	3.26%

5.13.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.490
5.13.10	REPORTING YEAR (SAIDI)	0.536
5.13.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.007
5.13.12	REPORTING YEAR (SAIFI)	0.009

5.13.13 CORRECTIVE ACTION PLAN:

There were six smaller outages on this feeder affecting less than an average of 15 members per outage, there was however, one large outage that opened the substation recloser affecting nearly 500 members, causing a one hour outage. This was due to high wind event. Overall this is a fairly short, mostly reliable feeder.

Action Plan:

The three phase on this circuit was trimmed in 2020 to help reduce tree caused outages.

Circuit # 14

5.14.1	SUBSTATION NAME AND NUMBER	HEBRON(22)
5.14.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Boone
5.14.3	CIRCUIT NAME AND NUMBER	HEBRON(22), Circuit 4, 2204
5.14.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.14.5	TOTAL CIRCUIT LENGTH (MILES)	31.7
5.14.6	CUSTOMER COUNT FOR THIS CIRCUIT	725
5.14.7	DATE OF LAST CIRCUIT TRIM (VM)	2019

5.14.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	16.01%	4.99%
Equipment/Installation	0.22%	0.10%
Member/Public	3.73%	3.87%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	16.89%	3.94%
Unknown	7.02%	3.15%
Weather	39.04%	68.09%
Age/Deterioration	12.50%	7.61%
R.O.W. Preventable	4.61%	8.27%

5.14.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	1.147
5.14.10	REPORTING YEAR (SAIDI)	1.400
5.14.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.013
5.14.12	REPORTING YEAR (SAIFI)	0.007

5.14.13 CORRECTIVE ACTION PLAN:

While the SAIFI was less than the five year rolling average the SAIDI was slightly more, mainly attributed to weather, which caused the falling of trees.

Action Plan:

Right of way trimming is planned for 2021 to reduce the number of R.O.W outages.

Circuit # 15

5.15.1	SUBSTATION NAME AND NUMBER	HEBRON(22)
5.15.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Boone
5.15.3	CIRCUIT NAME AND NUMBER	HEBRON(22), Circuit 3, 2203
5.15.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.15.5	TOTAL CIRCUIT LENGTH (MILES)	27.8
5.15.6	CUSTOMER COUNT FOR THIS CIRCUIT	1581
5.15.7	DATE OF LAST CIRCUIT TRIM (VM)	2015

5.15.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	1.89%	6.00%
Equipment/Installation	0.00%	0.00%
Member/Public	96.29%	81.48%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	1.10%	9.77%
Unknown	0.55%	1.31%
Weather	0.00%	0.00%
Age/Deterioration	0.18%	1.44%
R.O.W. Preventable	0.00%	0.00%

5.15.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.558
5.15.10	REPORTING YEAR (SAIDI)	0.522
5.15.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.012
5.15.12	REPORTING YEAR (SAIFI)	0.026

5.15.13 CORRECTIVE ACTION PLAN:

This feeder overall is pretty densely populated and is typically reliable. This years SAIDI is less than the 5 year average, and the SAIFI is just above. There was one large outage that caused the feeder breaker to open, caused by the public, but was restored in 17 minutes. The next largest outage affected 13 members and the majority of the remaining outages affected a member or two at a time.

Action Plan:

Circuit trimming is planned in 2021 to remove possible R.O.W issues.

Circuit # 16

5.16.1	SUBSTATION NAME AND NUMBER	NOEL(21)
5.16.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Grant
5.16.3	CIRCUIT NAME AND NUMBER	NOEL(21), Circuit 4, 2104
5.16.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.16.5	TOTAL CIRCUIT LENGTH (MILES)	37.7
5.16.6	CUSTOMER COUNT FOR THIS CIRCUIT	496
5.16.7	DATE OF LAST CIRCUIT TRIM (VM)	2017

5.16.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	2.24%	0.60%
Equipment/Installation	0.16%	0.10%
Member/Public	80.64%	86.26%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	12.80%	10.46%
Unknown	0.00%	0.00%
Weather	4.16%	2.58%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.00%	0.00%

5.16.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.404
5.16.10	REPORTING YEAR (SAIDI)	1.245
5.16.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.007
5.16.12	REPORTING YEAR (SAIFI)	0.012

5.16.13 CORRECTIVE ACTION PLAN:

There were numerous outages on this feeder, the vast majority being only one or two members at a time, mostly do to lightning events blowing arrestors at transformers. The main cause was a car striking a pole, opening the feeder breaker.

Action Plan:

There are no additional plans as the current sectionalizing and arrestor deployment is minimizing the affected members during lightning events.

Circuit # 17

5.17.1	SUBSTATION NAME AND NUMBER	NOEL(21)
5.17.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Grant
5.17.3	CIRCUIT NAME AND NUMBER	NOEL(21), Circuit 3, 2103
5.17.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.17.5	TOTAL CIRCUIT LENGTH (MILES)	59.7
5.17.6	CUSTOMER COUNT FOR THIS CIRCUIT	1153
5.17.7	DATE OF LAST CIRCUIT TRIM (VM)	2019

5.17.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	0.27%	0.23%
Equipment/Installation	0.14%	0.14%
Member/Public	12.45%	18.30%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	0.34%	1.06%
Unknown	0.07%	0.06%
Weather	8.10%	10.98%
Age/Deterioration	78.57%	69.17%
R.O.W. Preventable	0.07%	0.06%

5.17.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.908
5.17.10	REPORTING YEAR (SAIDI)	1.488
5.17.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.010
5.17.12	REPORTING YEAR (SAIFI)	0.023

5.17.13 CORRECTIVE ACTION PLAN:

While there were several outages, the main contributors to the SAIDI and SAIFI was a feeder outage, caused by a failed insulator outside of the substation. The other outages were mainly single member outages, caused by birds or lightning.

Action Plan:

Continue two year line inspection to try and find potentially failing equipment, before it fails.

Circuit # 18

5.18.1	SUBSTATION NAME AND NUMBER	DOWNING(20)
5.18.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Boone
5.18.3	CIRCUIT NAME AND NUMBER	DOWNING(20), Circuit 1, 2001
5.18.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.18.5	TOTAL CIRCUIT LENGTH (MILES)	17.7
5.18.6	CUSTOMER COUNT FOR THIS CIRCUIT	1232
5.18.7	DATE OF LAST CIRCUIT TRIM (VM)	2019

5.18.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	0.00%	0.00%
Equipment/Installation	0.11%	0.04%
Member/Public	0.03%	0.12%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	0.00%	0.00%
Unknown	33.36%	7.48%
Weather	33.28%	29.53%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	33.23%	62.83%

5.18.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	1.360
5.18.10	REPORTING YEAR (SAIDI)	4.030
5.18.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.024
5.18.12	REPORTING YEAR (SAIFI)	0.059

5.18.13 CORRECTIVE ACTION PLAN:

This feeder had three feeder outages, two of which were sustained for over an hour. This caused SAIDI to perform worse than the five year average. These outages were mostly caused by R.O.W. issues, either indirectly through storm activity, or directly by falling trees.

Action Plan:

In 2020 the circuit was sprayed to help reduce the growth in the right of way to help reduce potential right of way issues. In addition a system improvement is planned to improve access along this feeder to help reduce outage restoration times.

Circuit # 19

5.28.5	SUBSTATION NAME AND NUMBER	RICHARDSON(19)
5.19.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Kenton
5.19.3	CIRCUIT NAME AND NUMBER	RICHARDSON(19), Circuit 3, 1903
5.19.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.19.5	TOTAL CIRCUIT LENGTH (MILES)	18.7
5.19.6	CUSTOMER COUNT FOR THIS CIRCUIT	975
5.19.7	DATE OF LAST CIRCUIT TRIM (VM)	2017

5.19.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	0.03%	0.03%
Equipment/Installation	24.27%	23.05%
Member/Public	0.00%	0.00%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	0.15%	0.17%
Unknown	1.20%	1.30%
Weather	24.74%	38.98%
Age/Deterioration	24.62%	19.98%
R.O.W. Preventable	24.99%	16.50%

5.19.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.815
5.19.10	REPORTING YEAR (SAIDI)	3.665
5.19.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.014
5.19.12	REPORTING YEAR (SAIFI)	0.063

5.19.13 CORRECTIVE ACTION PLAN:

This feeder had four separate feeder outages which were the largest contributors to SAIDI and SAIFI, and they all had different cause codes.

Action Plan:

New sectionalizing plan in 2021 to help minimize feeder outages.

Circuit # 20

5.20.1	SUBSTATION NAME AND NUMBER	RICHARDSON(19)
5.20.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Kenton
5.20.3	CIRCUIT NAME AND NUMBER	RICHARDSON(19), Circuit 2, 1902
5.20.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.20.5	TOTAL CIRCUIT LENGTH (MILES)	18.2
5.20.6	CUSTOMER COUNT FOR THIS CIRCUIT	1226
5.20.7	DATE OF LAST CIRCUIT TRIM (VM)	2017

5.20.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	0.87%	0.12%
Equipment/Installation	2.29%	0.38%
Member/Public	0.00%	0.00%
R.O.W. Unpreventable	50.90%	85.88%
Scheduled	1.07%	0.14%
Unknown	2.29%	0.54%
Weather	42.45%	12.88%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.14%	0.06%

5.20.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.430
5.20.10	REPORTING YEAR (SAIDI)	1.206
5.20.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.005
5.20.12	REPORTING YEAR (SAIFI)	0.021

5.20.13 CORRECTIVE ACTION PLAN:

This feeder is mainly suburban with a fairly high density. There was one main outage that contributed to the increased SAIDI and SAIFI over the rolling 5 year average. It was one feeder outage that caused a 1 hour service interruption

Action Plan:

Overall circuit is reliable and has significant portions underground, no planned action at this time

Circuit # 21

5.21.1	SUBSTATION NAME AND NUMBER	GALLATIN(18)
5.21.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Gallatin
5.21.3	CIRCUIT NAME AND NUMBER	GALLATIN(18), Circuit 3, 1803
5.21.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.21.5	TOTAL CIRCUIT LENGTH (MILES)	59.8
5.21.6	CUSTOMER COUNT FOR THIS CIRCUIT	766
5.21.7	DATE OF LAST CIRCUIT TRIM (VM)	2017

5.21.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	10.53%	7.30%
Equipment/Installation	3.79%	4.07%
Member/Public	0.65%	0.28%
R.O.W. Unpreventable	5.69%	6.44%
Scheduled	0.00%	0.00%
Unknown	0.93%	0.55%
Weather	30.75%	24.61%
Age/Deterioration	31.15%	42.03%
R.O.W. Preventable	16.51%	14.72%

5.21.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	3.969
5.21.10	REPORTING YEAR (SAIDI)	3.364
5.21.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.035
5.21.12	REPORTING YEAR (SAIFI)	0.039

5.21.13 CORRECTIVE ACTION PLAN:

This circuit has a similar SAIDI and SAIFI profile for the five year rolling average, but is slightly over in overall SAIFI. This feeder has several single phase taps, travels through right of way, and is fairly long, which leads to multiple outages. The majority of outages are small, showing an effective sectionalizing plan overall.

Action Plan:

Upgraded sectionalizing plan in 2020 to further reduce affected members in outage situations. 2021 will include a circuit trim to help reduce number of R.O.W. outages

Circuit # 22

5.22.1	SUBSTATION NAME AND NUMBER	DURO(17)
5.22.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Kenton
5.22.3	CIRCUIT NAME AND NUMBER	DURO(17), Circuit 6, 1706
5.22.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.22.5	TOTAL CIRCUIT LENGTH (MILES)	11.7
5.22.6	CUSTOMER COUNT FOR THIS CIRCUIT	424
5.22.7	DATE OF LAST CIRCUIT TRIM (VM)	2017

5.22.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	25.57%	9.38%
Equipment/Installation	0.00%	0.00%
Member/Public	0.00%	0.00%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	0.00%	0.00%
Unknown	0.00%	0.00%
Weather	74.43%	90.62%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.00%	0.00%

5.22.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.273
5.22.10	REPORTING YEAR (SAIDI)	2.185
5.22.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.004
5.22.12	REPORTING YEAR (SAIFI)	0.027

5.22.13 CORRECTIVE ACTION PLAN:

This is a short feeder that is traditionally reliable with minimal right of way. It did have four feeder outages this year, though they were fairly short in duration. Weather was the biggest contributor

Action Plan:

Continue with 2 year line inspection to potentially find trouble spots before they occur.

Circuit # 23

5.23.1	SUBSTATION NAME AND NUMBER	SMOOT(16)
5.23.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Boone
5.23.3	CIRCUIT NAME AND NUMBER	SMOOT(16), Circuit 2, 1602
5.23.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.23.5	TOTAL CIRCUIT LENGTH (MILES)	19.8
5.23.6	CUSTOMER COUNT FOR THIS CIRCUIT	1509
5.23.7	DATE OF LAST CIRCUIT TRIM (VM)	2017

5.23.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	4.07%	6.21%
Equipment/Installation	0.00%	0.00%
Member/Public	93.79%	88.81%
R.O.W. Unpreventable	0.25%	0.71%
Scheduled	0.00%	0.00%
Unknown	1.61%	3.29%
Weather	0.06%	0.10%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.22%	0.88%

5.23.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.932
5.23.10	REPORTING YEAR (SAIDI)	1.601
5.23.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.023
5.23.12	REPORTING YEAR (SAIFI)	0.051

5.23.13 CORRECTIVE ACTION PLAN:

This feeder has underground and overhead portions with a members in a suburban environment. The SAIDI and SAIFI were mostly affected by two separate events, both caused by member car crashes removing the feeder temporarily from service.

Action Plan:

None at this time.

Circuit # 24

5.24.1	SUBSTATION NAME AND NUMBER	KEITH(13)
5.24.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Owen
5.24.3	CIRCUIT NAME AND NUMBER	KEITH(13), Circuit 4, 1304
5.24.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.24.5	TOTAL CIRCUIT LENGTH (MILES)	54.6
5.24.6	CUSTOMER COUNT FOR THIS CIRCUIT	612
5.24.7	DATE OF LAST CIRCUIT TRIM (VM)	2019

5.24.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	2.46%	1.72%
Equipment/Installation	52.68%	15.93%
Member/Public	0.00%	0.00%
R.O.W. Unpreventable	0.88%	0.63%
Scheduled	1.13%	1.46%
Unknown	0.00%	0.00%
Weather	1.51%	3.69%
Age/Deterioration	40.77%	76.08%
R.O.W. Preventable	0.57%	0.50%

5.24.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.519
5.24.10	REPORTING YEAR (SAIDI)	1.752
5.24.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.007
5.24.12	REPORTING YEAR (SAIFI)	0.025

5.24.13 CORRECTIVE ACTION PLAN:

This feeder had several outages, but the main contributors to SAIDI and SAIFI were two separate feeder outages, both due to equipment problems.

Action Plan:

Continue two year inspection program to potentially find issues that may fail.

Circuit # 25

5.25.1	SUBSTATION NAME AND NUMBER	BIG BONE(12)
5.25.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Boone
5.25.3	CIRCUIT NAME AND NUMBER	BIG BONE(12), Circuit 2, 1202
5.25.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.25.5	TOTAL CIRCUIT LENGTH (MILES)	17.3
5.25.6	CUSTOMER COUNT FOR THIS CIRCUIT	204
5.25.7	DATE OF LAST CIRCUIT TRIM (VM)	2020

5.25.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	1.35%	0.15%
Equipment/Installation	12.84%	1.06%
Member/Public	0.00%	0.00%
R.O.W. Unpreventable	12.50%	7.28%
Scheduled	0.00%	0.00%
Unknown	1.01%	0.19%
Weather	45.27%	39.19%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	27.03%	52.12%

5.25.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.185
5.25.10	REPORTING YEAR (SAIDI)	0.957
5.25.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.001
5.25.12	REPORTING YEAR (SAIFI)	0.005

5.25.13 CORRECTIVE ACTION PLAN:

This feeder had numerous outages, trees being the biggest cause overall.

Action Plan:

In 2020 the circuit was trimmed in order to help reduce R.O.W. outages.

Circuit # 26

5.26.1	SUBSTATION NAME AND NUMBER	CARSON(11)
5.26.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Gallatin
5.26.3	CIRCUIT NAME AND NUMBER	CARSON(11), Circuit 3, 1103
5.26.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.26.5	TOTAL CIRCUIT LENGTH (MILES)	83.4
5.26.6	CUSTOMER COUNT FOR THIS CIRCUIT	826
5.26.7	DATE OF LAST CIRCUIT TRIM (VM)	2019

5.26.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	2.38%	0.94%
Equipment/Installation	3.90%	0.94%
Member/Public	0.37%	0.56%
R.O.W. Unpreventable	2.87%	2.46%
Scheduled	0.12%	0.18%
Unknown	3.11%	1.79%
Weather	31.85%	39.21%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	55.40%	53.94%

5.26.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	1.892
5.26.10	REPORTING YEAR (SAIDI)	3.029
5.26.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.015
5.26.12	REPORTING YEAR (SAIFI)	0.026

5.26.13 CORRECTIVE ACTION PLAN:

Eight outages overall, with all but one being under 15 members. The one three phase outage, which is the main contributor to both SAIDI and SAIFI, was a R.O.W. caused outage, opening the feeder recloser for a half hour while the line was restored.

Action Plan:

In 2020 the circuit was sprayed to help prevent future R.O.W. outages.

Circuit # 27

5.27.1	SUBSTATION NAME AND NUMBER	CARSON(11)
5.27.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Gallatin
5.27.3	CIRCUIT NAME AND NUMBER	CARSON(11), Circuit 2, 1102
5.27.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.27.5	TOTAL CIRCUIT LENGTH (MILES)	57.6
5.27.6	CUSTOMER COUNT FOR THIS CIRCUIT	592
5.27.7	DATE OF LAST CIRCUIT TRIM (VM)	#N/A

5.27.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	2.31%	1.04%
Equipment/Installation	30.08%	26.82%
Member/Public	8.81%	6.27%
R.O.W. Unpreventable	0.38%	0.16%
Scheduled	3.80%	2.78%
Unknown	0.14%	0.09%
Weather	24.45%	48.52%
Age/Deterioration	0.14%	0.14%
R.O.W. Preventable	29.88%	14.18%

5.27.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	4.508
5.27.10	REPORTING YEAR (SAIDI)	5.064
5.27.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.025
5.27.12	REPORTING YEAR (SAIFI)	0.033

5.27.13 CORRECTIVE ACTION PLAN:

This feeder had numerous outages from a variety of cause codes. There were three multi-phase outages that were a large contributor to SAIDI and SIAFI.

Action Plan:

Redo sectionalizing in 2021 to help minimize effect of outages on members and help to reduce duration of outage.

Circuit # 28

5.28.1	SUBSTATION NAME AND NUMBER	TURKEYFOOT(10)
5.28.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Kenton
5.28.3	CIRCUIT NAME AND NUMBER	TURKEYFOOT(10), Circuit 6, 1006
5.28.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.28.5	TOTAL CIRCUIT LENGTH (MILES)	4.7
5.28.6	CUSTOMER COUNT FOR THIS CIRCUIT	402
5.28.7	DATE OF LAST CIRCUIT TRIM (VM)	2020

5.28.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	100.00%	100.00%
Equipment/Installation	0.00%	0.00%
Member/Public	0.00%	0.00%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	0.00%	0.00%
Unknown	0.00%	0.00%
Weather	0.00%	0.00%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.00%	0.00%

5.28.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.094
5.28.10	REPORTING YEAR (SAIDI)	0.136
5.28.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.002
5.28.12	REPORTING YEAR (SAIFI)	0.006

5.28.13 CORRECTIVE ACTION PLAN:

This is overall a very reliable feeder. Only one outage occurred on this feeder in 2020. An animal caused the substation feeder breaker to open removing all members on this feeder from service temporarily.

Action Plan:

None at this time.

Circuit # 29

5.29.1	SUBSTATION NAME AND NUMBER	TURKEYFOOT(10)
5.29.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Kenton
5.29.3	CIRCUIT NAME AND NUMBER	TURKEYFOOT(10), Circuit 4, 1004
5.29.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.29.5	TOTAL CIRCUIT LENGTH (MILES)	10.6
5.29.6	CUSTOMER COUNT FOR THIS CIRCUIT	971
5.29.7	DATE OF LAST CIRCUIT TRIM (VM)	2020

5.29.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	4.08%	1.56%
Equipment/Installation	0.00%	0.00%
Member/Public	17.76%	6.00%
R.O.W. Unpreventable	6.12%	2.51%
Scheduled	0.00%	0.00%
Unknown	2.24%	1.44%
Weather	1.43%	0.45%
Age/Deterioration	2.04%	0.55%
R.O.W. Preventable	66.33%	87.49%

5.29.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.560
5.29.10	REPORTING YEAR (SAIDI)	1.286
5.29.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.008
5.29.12	REPORTING YEAR (SAIFI)	0.008

5.29.13 CORRECTIVE ACTION PLAN:

There were several outages on this feeder during the course of 2020. Two outages removed 258 members for service for over an hour. Trees were the biggest contributor to both SAIDI and SAIFI

Action Plan:

In 2020 this circuit was trimmed to help reduce the number of right of way caused outages.

Circuit # 30

5.30.1	SUBSTATION NAME AND NUMBER	TURKEYFOOT(10)
5.30.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Kenton
5.30.3	CIRCUIT NAME AND NUMBER	TURKEYFOOT(10), Circuit 1, 1001
5.30.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.30.5	TOTAL CIRCUIT LENGTH (MILES)	4.1
5.30.6	CUSTOMER COUNT FOR THIS CIRCUIT	287
5.30.7	DATE OF LAST CIRCUIT TRIM (VM)	2020

5.30.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	0.00%	0.00%
Equipment/Installation	0.00%	0.00%
Member/Public	0.00%	0.00%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	70.59%	66.09%
Unknown	29.41%	33.91%
Weather	0.00%	0.00%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.00%	0.00%

5.30.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.022
5.30.10	REPORTING YEAR (SAIDI)	0.029
5.30.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.001
5.30.12	REPORTING YEAR (SAIFI)	0.002

5.30.13 CORRECTIVE ACTION PLAN:

Overall this feeder remains reliable. There were three outages on this circuit, the largest affected 74 members, with the longest outage lasting less than 15 minutes. Two of the outages were planned maintenance outages.

Action Plan:

None at this Time.

Circuit # 31

5.31.1	SUBSTATION NAME AND NUMBER	BROMLEY(6)
5.31.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Owen
5.31.3	CIRCUIT NAME AND NUMBER	BROMLEY(6), Circuit 3, 0603
5.31.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.31.5	TOTAL CIRCUIT LENGTH (MILES)	116.1
5.31.6	CUSTOMER COUNT FOR THIS CIRCUIT	613
5.31.7	DATE OF LAST CIRCUIT TRIM (VM)	2019

5.31.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	1.95%	2.47%
Equipment/Installation	47.93%	1.76%
Member/Public	0.00%	0.00%
R.O.W. Unpreventable	3.20%	4.44%
Scheduled	9.13%	0.92%
Unknown	0.47%	0.40%
Weather	33.72%	84.99%
Age/Deterioration	1.25%	1.81%
R.O.W. Preventable	2.34%	3.21%

5.31.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	2.086
5.31.10	REPORTING YEAR (SAIDI)	1.655
5.31.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.013
5.31.12	REPORTING YEAR (SAIFI)	0.020

5.31.13 CORRECTIVE ACTION PLAN:

This is a long rural feeder that has to travel through right of way. There are many taps feeding minimal members. There are numerous outages, the majority affecting less than 5 members at a time. Outage durations tend to be close to an hour due to length of travel required.

Action Plan:

Sectionalizing plan implementation is being finished, new three phase was also strung which will help with reliability and duration of outages.

Circuit # 32

5.32.1	SUBSTATION NAME AND NUMBER	BROMLEY(6)
5.32.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Owen
5.32.3	CIRCUIT NAME AND NUMBER	BROMLEY(6), Circuit 2, 0602
5.32.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.32.5	TOTAL CIRCUIT LENGTH (MILES)	53.6
5.32.6	CUSTOMER COUNT FOR THIS CIRCUIT	463
5.32.7	DATE OF LAST CIRCUIT TRIM (VM)	2019

5.32.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	6.26%	4.43%
Equipment/Installation	2.13%	4.11%
Member/Public	11.69%	25.86%
R.O.W. Unpreventable	4.60%	6.08%
Scheduled	0.59%	0.57%
Unknown	1.06%	0.80%
Weather	70.48%	54.82%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	3.19%	3.33%

5.32.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.283
5.32.10	REPORTING YEAR (SAIDI)	0.860
5.32.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.004
5.32.12	REPORTING YEAR (SAIFI)	0.013

5.32.13 CORRECTIVE ACTION PLAN:

This is a rural feeder that had numerous outages, by a variety of causes. Most of the outages were contained in number of members affected, with only two three phase outages and only one of those being the feeder breaker. The outage duration is extended on several outages due to length of feeder and access to lines.

Action Plan:

Circuit was sprayed in 2020 to help minimize the growth of problem right of way.

Circuit # 33

5.33.1	SUBSTATION NAME AND NUMBER	WILLIAMSTOWN(5)
5.33.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Grant
5.33.3	CIRCUIT NAME AND NUMBER	WILLIAMSTOWN(5), Circuit 7, 0507
5.33.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.33.5	TOTAL CIRCUIT LENGTH (MILES)	57.2
5.33.6	CUSTOMER COUNT FOR THIS CIRCUIT	978
5.33.7	DATE OF LAST CIRCUIT TRIM (VM)	2017

5.33.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	1.55%	1.32%
Equipment/Installation	1.25%	2.16%
Member/Public	0.43%	0.33%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	1.38%	4.60%
Unknown	42.94%	20.19%
Weather	49.78%	65.35%
Age/Deterioration	0.43%	0.42%
R.O.W. Preventable	2.24%	5.62%

5.33.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.525
5.33.10	REPORTING YEAR (SAIDI)	2.071
5.33.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.010
5.33.12	REPORTING YEAR (SAIFI)	0.037

5.33.13 CORRECTIVE ACTION PLAN:

There were numerous outages on this feeder, most being under 10 members affected. There were two feeder outages however, that contributed the majority to SAIDI and SAIFI. They both were mostly tied to weather events

Action Plan:

In 2021 the circuit will be sprayed to help minimize problem right of way growth.

Circuit # 34

5.34.1	SUBSTATION NAME AND NUMBER	WILLIAMSTOWN(5)
5.34.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Grant
5.34.3	CIRCUIT NAME AND NUMBER	WILLIAMSTOWN(5), Circuit 6, 0506
5.34.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.34.5	TOTAL CIRCUIT LENGTH (MILES)	54.2
5.34.6	CUSTOMER COUNT FOR THIS CIRCUIT	657
5.34.7	DATE OF LAST CIRCUIT TRIM (VM)	2017

5.34.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	5.42%	4.94%
Equipment/Installation	0.45%	1.04%
Member/Public	0.00%	0.00%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	1.96%	0.48%
Unknown	56.33%	60.52%
Weather	31.48%	30.41%
Age/Deterioration	4.07%	2.29%
R.O.W. Preventable	0.30%	0.31%

5.34.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	1.097
5.34.10	REPORTING YEAR (SAIDI)	1.332
5.34.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.014
5.34.12	REPORTING YEAR (SAIFI)	0.011

5.34.13 CORRECTIVE ACTION PLAN:

Twenty four outages occurred on this feeder in 2020. There were several small outages caused by lightning and a weather event opened the feeder OCR being a major contributor to SAIDI and SAIFI

Action Plan:

New coordination scheme implemented at the end of 2020 to help increase overall reliability and reduce number and duration of members affected by outages.

Circuit # 35

5.35.1	SUBSTATION NAME AND NUMBER	WILLIAMSTOWN(5)
5.35.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Grant
5.35.3	CIRCUIT NAME AND NUMBER	WILLIAMSTOWN(5), Circuit 4, 0504
5.35.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.35.5	TOTAL CIRCUIT LENGTH (MILES)	35.0
5.35.6	CUSTOMER COUNT FOR THIS CIRCUIT	304
5.35.7	DATE OF LAST CIRCUIT TRIM (VM)	2018

5.35.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	2.14%	3.63%
Equipment/Installation	2.14%	7.89%
Member/Public	14.21%	29.50%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	0.00%	0.00%
Unknown	0.00%	0.00%
Weather	0.00%	0.00%
Age/Deterioration	81.50%	58.97%
R.O.W. Preventable	0.00%	0.00%

5.35.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.193
5.35.10	REPORTING YEAR (SAIDI)	0.188
5.35.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.002
5.35.12	REPORTING YEAR (SAIFI)	0.006

5.35.13 CORRECTIVE ACTION PLAN:

This feeder had 10 outages, with one being a three phase outage that caused the feeder breaker to open. Six of the remaining outages were one member outages and the remaining outages were also small in scale. Overall the sectionalizing has been effective on this feeder. A bad insulator is ultimately what caused the largest contribution to this years SAIDI and SAIFI for this feeder.

Action Plan:

Continue two year line inspection to try to find potential issues.

Circuit # 36

5.36.1	SUBSTATION NAME AND NUMBER	WILLIAMSTOWN(5)
5.36.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Grant
5.36.3	CIRCUIT NAME AND NUMBER	WILLIAMSTOWN(5), Circuit 3, 0503
5.36.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.36.5	TOTAL CIRCUIT LENGTH (MILES)	73.7
5.36.6	CUSTOMER COUNT FOR THIS CIRCUIT	662
5.36.7	DATE OF LAST CIRCUIT TRIM (VM)	2018

5.36.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	0.74%	0.36%
Equipment/Installation	60.32%	42.02%
Member/Public	0.28%	0.15%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	11.43%	3.91%
Unknown	0.00%	0.00%
Weather	2.79%	1.55%
Age/Deterioration	24.44%	52.01%
R.O.W. Preventable	0.00%	0.00%

5.36.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.697
5.36.10	REPORTING YEAR (SAIDI)	2.077
5.36.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.012
5.36.12	REPORTING YEAR (SAIFI)	0.017

5.36.13 CORRECTIVE ACTION PLAN:

This feeder is mostly rural and fairly long with several taps of the main three phase. This feeder had numerous outages, but most were contained to only a few members. There was one piece of faulty equipment which was the main contributor to SAIDI and SAIFI

Action Plan:

Additional sectionalizing was done in the last half of 2020 to help reduce the size and impact of potential outages.

Circuit # 37

5.37.1	SUBSTATION NAME AND NUMBER	WILLIAMSTOWN(5)
5.37.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Grant
5.37.3	CIRCUIT NAME AND NUMBER	WILLIAMSTOWN(5), Circuit 2, 0502
5.37.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.37.5	TOTAL CIRCUIT LENGTH (MILES)	66.4
5.37.6	CUSTOMER COUNT FOR THIS CIRCUIT	610
5.37.7	DATE OF LAST CIRCUIT TRIM (VM)	2017

5.37.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	45.35%	38.11%
Equipment/Installation	0.88%	0.46%
Member/Public	0.00%	0.00%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	0.00%	0.00%
Unknown	45.65%	54.59%
Weather	4.57%	3.70%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	3.24%	2.05%

5.37.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.425
5.37.10	REPORTING YEAR (SAIDI)	2.018
5.37.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.006
5.37.12	REPORTING YEAR (SAIFI)	0.021

5.37.13 CORRECTIVE ACTION PLAN:

Thirteen outages occurred during 2020. One large event was due to a squirrel tracking across multiple phases causing the feeder breaker to open. The rest of the outages were fairly small and short in duration.

Action Plan:

The three phase was trimmed in 2020 to help reduce outages.

Circuit # 38

5.38.1	SUBSTATION NAME AND NUMBER	MUNK(4)
5.38.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Gallatin
5.38.3	CIRCUIT NAME AND NUMBER	MUNK(4), Circuit 5, 0405
5.38.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.38.5	TOTAL CIRCUIT LENGTH (MILES)	1.8
5.38.6	CUSTOMER COUNT FOR THIS CIRCUIT	17
5.38.7	DATE OF LAST CIRCUIT TRIM (VM)	2017

5.38.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	0.00%	0.00%
Equipment/Installation	40.00%	56.66%
Member/Public	0.00%	0.00%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	0.00%	0.00%
Unknown	0.00%	0.00%
Weather	60.00%	43.34%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.00%	0.00%

5.38.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	1.550
5.38.10	REPORTING YEAR (SAIDI)	0.880
5.38.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.011
5.38.12	REPORTING YEAR (SAIFI)	0.016

5.38.13 CORRECTIVE ACTION PLAN:

This is a very short feeder with few members. There were three outages, and each had less than two members. One of the three outages required replacing equipment which took over two hours

Action Plan:
None at this time

Circuit # 39

5.39.1	SUBSTATION NAME AND NUMBER	GRANTSLICK(3)
5.39.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Campbell
5.39.3	CIRCUIT NAME AND NUMBER	GRANTSLICK(3), Circuit 4, 0304
5.39.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.39.5	TOTAL CIRCUIT LENGTH (MILES)	62.0
5.39.6	CUSTOMER COUNT FOR THIS CIRCUIT	602
5.39.7	DATE OF LAST CIRCUIT TRIM (VM)	2017

5.39.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	5.62%	11.67%
Equipment/Installation	61.63%	27.92%
Member/Public	4.46%	19.74%
R.O.W. Unpreventable	12.50%	14.46%
Scheduled	0.00%	0.00%
Unknown	12.79%	18.86%
Weather	2.91%	7.25%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.10%	0.12%

5.39.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.682
5.39.10	REPORTING YEAR (SAIDI)	0.505
5.39.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.008
5.39.12	REPORTING YEAR (SAIFI)	0.016

5.39.13 CORRECTIVE ACTION PLAN:

There were numerous outages throughout the year on this feeder, but only one was three phase, which was required to install equipment. This feeder is rural, and has significant amounts of right of way. Overall the vast majority of the outages were sectionalized to few members, saving SAIDI and SAIFI.

Action Plan:

Had 3 phase right of way trimmed in 2019 to reduce potential tree caused outages.

Circuit # 40

5.40.1	SUBSTATION NAME AND NUMBER	GRANTSLICK(3)
5.40.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Campbell
5.40.3	CIRCUIT NAME AND NUMBER	GRANTSLICK(3), Circuit 2, 0302
5.40.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.40.5	TOTAL CIRCUIT LENGTH (MILES)	41.9
5.40.6	CUSTOMER COUNT FOR THIS CIRCUIT	537
5.40.7	DATE OF LAST CIRCUIT TRIM (VM)	2017

5.40.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	5.82%	9.20%
Equipment/Installation	4.00%	4.63%
Member/Public	61.64%	37.71%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	0.00%	0.00%
Unknown	9.13%	9.78%
Weather	13.36%	30.74%
Age/Deterioration	0.11%	0.15%
R.O.W. Preventable	5.94%	7.80%

5.40.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.893
5.40.10	REPORTING YEAR (SAIDI)	0.599
5.40.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.009
5.40.12	REPORTING YEAR (SAIFI)	0.014

5.40.13 CORRECTIVE ACTION PLAN:

Numerous outages on this feeder, but only one three phase event, which opened the feeder breaker, that event was caused by a public accident. That outage was the main contributor to SAIDI and SAIFI, the other outages were well sectionalized and mostly short in duration

Action Plan:

Spraying the right of way in 2021 to help minimize future R.O.W. outages

Circuit # 41

5.41.1	SUBSTATION NAME AND NUMBER	BANKLICK(2)
5.41.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Kenton
5.41.3	CIRCUIT NAME AND NUMBER	BANKLICK(2), Circuit 5, 0205
5.41.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.41.5	TOTAL CIRCUIT LENGTH (MILES)	12.2
5.41.6	CUSTOMER COUNT FOR THIS CIRCUIT	201
5.41.7	DATE OF LAST CIRCUIT TRIM (VM)	2019

5.41.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	23.46%	7.35%
Equipment/Installation	0.00%	0.00%
Member/Public	14.53%	27.39%
R.O.W. Unpreventable	13.41%	4.76%
Scheduled	0.00%	0.00%
Unknown	27.37%	21.71%
Weather	21.23%	38.79%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.00%	0.00%

5.41.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.109
5.41.10	REPORTING YEAR (SAIDI)	0.392
5.41.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.005
5.41.12	REPORTING YEAR (SAIFI)	0.003

5.41.13 CORRECTIVE ACTION PLAN:

Several outages occurred, but they were all single phase outages, affecting 45 consumers at most. Overall this feeder sectionalizing worked well.

Action Plan:

The right of way was sprayed in 2020 to help reduce future right of way caused outages

Circuit # 42

5.42.1	SUBSTATION NAME AND NUMBER	BOONE(1)
5.42.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Boone
5.42.3	CIRCUIT NAME AND NUMBER	BOONE(1), Circuit 3, 0103
5.42.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	See Coop.
5.42.5	TOTAL CIRCUIT LENGTH (MILES)	16.7
5.42.6	CUSTOMER COUNT FOR THIS CIRCUIT	841
5.42.7	DATE OF LAST CIRCUIT TRIM (VM)	2019

5.42.23 LIST OF OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS REPRESENTED BY EACH CAUSE

Outage Cause	SAIFI Contribution	SAIDI Contribution
Power Supplier	0.00%	0.00%
Birds/Animals	8.35%	8.63%
Equipment/Installation	26.48%	23.32%
Member/Public	3.05%	1.56%
R.O.W. Unpreventable	3.05%	8.93%
Scheduled	0.00%	0.00%
Unknown	0.20%	0.22%
Weather	58.86%	57.35%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.00%	0.00%

5.42.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.331
5.42.10	REPORTING YEAR (SAIDI)	0.442
5.42.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.006
5.42.12	REPORTING YEAR (SAIFI)	0.008

5.42.13 CORRECTIVE ACTION PLAN:

This feeder is mainly a long three phase with many shorter single phase taps and a few longer taps. There were several outages, but most were sectionalized to a small number of members. The main contributor to SAIDI and SAIFI were weather related outages.

Action Plan:

Spray right of way in 2021 to reduce potential right of way outages.

KENTUCKY PUBLIC SERVICE COMMISSION

Electric Distribution Utility Annual Reliability Report

Additional pages may be attached as necessary

SECTION 6: VEGETATION MANAGEMENT PLAN REVIEW

INCLUDE CURRENT VEGETATION MANAGEMENT PLAN

Additional pages may be attached as necessary

OEC's vegetation management program is both a proactive and reactive 6 year cycle. At its core is a 6 year trim cycle that involves the scheduled feeders being trimmed from start to finish. 2 years following the trimming a low volume herbicide treatment of the entire feeder is completed. 3 years following the trimming a "hotspot" crew will go over the feeder to trim any "cycle buster" trees.

The reactive portion of our program revolves around the ability of lineman to report trouble areas and then scheduling our tree trimming contractors address those areas. Additionally the 6 year cycle can be adjusted to accommodate feeders that may require trimming more regularly or have a particularly high number of outages. Outage reports by feeder are reviewed annually and the trim schedule can be adjusted accordingly to address problem feeders.

KENTUCKY PUBLIC SERVICE COMMISSION

SECTION 7: UTILITY COMMENTS

During the course of 2020 OEC continued to support several initiatives designed to minimize the extent of outages and speed in the restoration of outages caused by weather. OEC has implemented an ongoing over-current protection review of each feeder. A five year plan was in place in 2018 to review all feeders sectionalizing plans.

A three year plan was put in place in 2018 to replace all hydraulic reclosers on the feeder to electronic, this was mostly complete by the end of 2020.

We continue to operate two self healing sites to provide backup power to critical Sanitation District plants.

OEC continues working on future plans to address other feeders with plans for a new substation that will shorten the feeder lengths and provide improvements in reliability. Until these substations can be implemented, initiatives such as feeder hardening, focused ROW clearing, and increased sectionalizing will continue to be considered.