

# KENTUCKY PUBLIC SERVICE COMMISSION

## Electric Distribution Utility Annual Reliability Report

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### SECTION 1: CONTACT INFORMATION

UTILITY NAME	Owen Electric Cooperative
REPORT PREPARED BY	Drew Long
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### SECTION 2: REPORT YEAR

CALENDAR YEAR OF REPORT	2023
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### SECTION 3: MAJOR EVENT DAYS

$T_{MED}$	8.199
FIRST DATE USED TO DETERMINE $T_{MED}$	1-Jan-2018
LAST DATE USED TO DETERMINE $T_{MED}$	31-Dec-2022
NUMBER OF MED IN REPORT YEAR	3

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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.

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### SECTION 4: SYSTEM RELIABILITY INFORMATION AND RESULTS

System-wide Information			
TOTAL CUSTOMERS	<u>65,993</u>	TOTAL CIRCUITS	<u>127</u>
Excluding MED			
5 YEAR AVERAGE		REPORTING YEAR	
SAIDI	<u>118.09</u>	SAIDI	<u>101.12</u>
SAIFI	<u>1.15</u>	SAIFI	<u>1.17</u>
Including MED			
5 YEAR AVERAGE		REPORTING YEAR	
SAIDI	<u>172.01</u>	SAIDI	<u>226.10</u>
SAIFI	<u>1.46</u>	SAIFI	<u>1.62</u>

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 8, 5608
5.1.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Williams Woods
5.1.5	TOTAL CIRCUIT LENGTH (MILES)	10.0
5.1.6	CUSTOMER COUNT FOR THIS CIRCUIT	751
5.1.7	DATE OF LAST CIRCUIT TRIM (VM)	2022

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	0.06%	0.04%
Equipment/Installation	0.00%	0.00%
Member/Public	25.01%	14.91%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	0.03%	0.14%
Unknown	25.07%	26.31%
Weather	24.85%	8.98%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	24.98%	49.63%

5.1.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.116
5.1.10	REPORTING YEAR (SAIDI)	2.610
5.1.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.003
5.1.12	REPORTING YEAR (SAIFI)	0.047

5.1.13 CORRECTIVE ACTION PLAN:

Relatively short, dense feeder, with typically low SAIDI and SAIFI. This year there were three feeder outages in relatively short succession. The problem was identified and resolved after the third outage and the rest of the year showed no outages over 2 members at a time.

**Action Plan**

Problem span was found and fixed, returning this feeder to its typical reliability.

**Circuit # 2**

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5.2.1	SUBSTATION NAME AND NUMBER	BRISTOW II(56)
5.2.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Kenton
5.2.3	CIRCUIT NAME AND NUMBER	BRISTOW II(56), Circuit 5, 5605
5.2.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Toebben Dr.
5.2.5	TOTAL CIRCUIT LENGTH (MILES)	5.1
5.2.6	CUSTOMER COUNT FOR THIS CIRCUIT	64
5.2.7	DATE OF LAST CIRCUIT TRIM (VM)	2021

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	11.11%	2.03%
Equipment/Installation	0.00%	0.00%
Member/Public	88.89%	97.97%
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%

5.2.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.027
5.2.10	REPORTING YEAR (SAIDI)	0.034
5.2.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.000
5.2.12	REPORTING YEAR (SAIFI)	0.000

5.2.13 CORRECTIVE ACTION PLAN:

Two outages occurred on this reliable, short feeder. The significant outage was due to a low joint use line attached to the power pole, being struck by a trash truck, removing power for several hours while repairs were made.

**Action Plan**  
Continuing Joint use audits with various attachers and consultants to try and reduce the overall negative reliability effect they have on the power system.

**Circuit # 3**

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5.3.1	SUBSTATION NAME AND NUMBER	RICHARDSON II(55)
5.3.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Kenton
5.3.3	CIRCUIT NAME AND NUMBER	RICHARDSON II(55), Circuit 7, 5507
5.3.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Far Hill Dr.
5.3.5	TOTAL CIRCUIT LENGTH (MILES)	9.4
5.3.6	CUSTOMER COUNT FOR THIS CIRCUIT	643
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

<b>Outage Cause</b>	<b>SAIFI Contribution</b>	<b>SAIDI Contribution</b>
Power Supplier	0.00%	0.00%
Birds/Animals	65.56%	51.40%
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	34.44%	48.60%
Weather	0.00%	0.00%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.00%	0.00%

5.3.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.410
5.3.10	REPORTING YEAR (SAIDI)	0.137
5.3.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.003
5.3.12	REPORTING YEAR (SAIFI)	0.003

5.3.13 CORRECTIVE ACTION PLAN:

Overall this feeder had a better SAIDI and nearly identical SAIFI to the 5 year average. There were six outages, with the largest affecting only 10% of the feeder at a time.

**Action Plan:**

Animal Guards are continuing to be used where appropriate on the system. The size of the outages indicated a well sectionalized feeder, minimizing outage effects on the members.

**Circuit # 4**

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5.4.1	SUBSTATION NAME AND NUMBER	RICHARDSON II(55)
5.4.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Kenton
5.4.3	CIRCUIT NAME AND NUMBER	RICHARDSON II(55), Circuit 5, 5505
5.4.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Sugar Camp
5.4.5	TOTAL CIRCUIT LENGTH (MILES)	7.5
5.4.6	CUSTOMER COUNT FOR THIS CIRCUIT	454
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

<b>Outage Cause</b>	<b>SAIFI Contribution</b>	<b>SAIDI Contribution</b>
Power Supplier	0.00%	0.00%
Birds/Animals	2.67%	0.97%
Equipment/Installation	0.76%	0.51%
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	87.98%	95.01%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	8.59%	3.52%

5.4.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.745
5.4.10	REPORTING YEAR (SAIDI)	0.989
5.4.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.011
5.4.12	REPORTING YEAR (SAIFI)	0.008

5.4.13 CORRECTIVE ACTION PLAN:

Relatively short, dense feeder. A significant wind storm occurred in March causing a couple hour outage, leading to the increased SAIDI for the year.

**Action Plan**

Right of Way to be cut in 2024.

### Circuit # 5

5.5.1	SUBSTATION NAME AND NUMBER	DURO II(54)
5.5.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Kenton
5.5.3	CIRCUIT NAME AND NUMBER	DURO II(54), Circuit 2, 5402
5.5.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Maher Rd
5.5.5	TOTAL CIRCUIT LENGTH (MILES)	12.2
5.5.6	CUSTOMER COUNT FOR THIS CIRCUIT	618
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	6.86%	8.03%
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	4.12%	3.57%
Weather	84.36%	82.18%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	4.66%	6.22%

5.5.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.395
5.5.10	REPORTING YEAR (SAIDI)	0.567
5.5.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.007
5.5.12	REPORTING YEAR (SAIFI)	0.011

5.5.13 CORRECTIVE ACTION PLAN:

Though there were several outages on this feeder, only one outage affected more than 20 members simultaneously. That outage was a feeder outage due to a weather event.

**Action Plan:**

Majority of feeder is underground, no real other opportunities to add sectionalizing to overhead portion of the feeder. No additional action to be taken at this time.

**Circuit # 6**

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5.6.1	SUBSTATION NAME AND NUMBER	SMOOT II(53)
5.6.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Boone
5.6.3	CIRCUIT NAME AND NUMBER	SMOOT II(53), Circuit 6, 5306
5.6.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Promonotory
5.6.5	TOTAL CIRCUIT LENGTH (MILES)	13.0
5.6.6	CUSTOMER COUNT FOR THIS CIRCUIT	808
5.6.7	DATE OF LAST CIRCUIT TRIM (VM)	2022

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

<b>Outage Cause</b>	<b>SAIFI Contribution</b>	<b>SAIDI Contribution</b>
Power Supplier	0.00%	0.00%
Birds/Animals	1.35%	1.13%
Equipment/Installation	98.65%	98.87%
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%

5.6.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.229
5.6.10	REPORTING YEAR (SAIDI)	0.132
5.6.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.002
5.6.12	REPORTING YEAR (SAIFI)	0.002

5.6.13 CORRECTIVE ACTION PLAN:

There were four outages on this feeder for the year; three being, two single member outages, and an 8 member outage. The final outage was a failed fuse in a switch cabinet leading to an extended outage while the circuit was diagnosed.

**Action Plan:**

Continue to cyclically evaluate all feeders on the system to help ensure protection is sized adequately for load and coordination.

**Circuit # 7**

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5.7.1	SUBSTATION NAME AND NUMBER	SMITH II(52)
5.7.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Boone
5.7.3	CIRCUIT NAME AND NUMBER	SMITH II(52), Circuit 2, 5202
5.7.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Dolwick Dr.
5.7.5	TOTAL CIRCUIT LENGTH (MILES)	4.0
5.7.6	CUSTOMER COUNT FOR THIS CIRCUIT	252
5.7.7	DATE OF LAST CIRCUIT TRIM (VM)	2020

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

<b>Outage Cause</b>	<b>SAIFI Contribution</b>	<b>SAIDI Contribution</b>
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%

5.7.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.180
5.7.10	REPORTING YEAR (SAIDI)	0.224
5.7.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.003
5.7.12	REPORTING YEAR (SAIFI)	0.004

5.7.13 CORRECTIVE ACTION PLAN:

There was only a single outage for this circuit for the year.

**Action Plan:**  
None at this time.



**Circuit # 8**

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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 4, 2604
5.8.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Hicks Pike
5.8.5	TOTAL CIRCUIT LENGTH (MILES)	15.9
5.8.6	CUSTOMER COUNT FOR THIS CIRCUIT	460
5.8.7	DATE OF LAST CIRCUIT TRIM (VM)	2021

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

<b>Outage Cause</b>	<b>SAIFI Contribution</b>	<b>SAIDI Contribution</b>
Power Supplier	0.00%	0.00%
Birds/Animals	48.44%	46.28%
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	38.44%	35.12%
Weather	11.88%	16.72%
Age/Deterioration	1.25%	1.89%
R.O.W. Preventable	0.00%	0.00%

5.8.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.487
5.8.10	REPORTING YEAR (SAIDI)	0.330
5.8.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.004
5.8.12	REPORTING YEAR (SAIFI)	0.005

5.8.13 CORRECTIVE ACTION PLAN:

There were several outages on this feeder, of various types, though no three phase outages. Overall the SAIDI was better than the five year average and the SAIFI was slightly higher.

**Action Plan:**

This circuit received a right of way spray to help with vegetation growth in 2023. No other plans at this time.

**Circuit # 9**

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5.9.1	SUBSTATION NAME AND NUMBER	STERLING(25)
5.9.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Gallatin
5.9.3	CIRCUIT NAME AND NUMBER	STERLING(25), Circuit 3, 2503
5.9.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Southfork Rd.
5.9.5	TOTAL CIRCUIT LENGTH (MILES)	31.0
5.9.6	CUSTOMER COUNT FOR THIS CIRCUIT	331
5.9.7	DATE OF LAST CIRCUIT TRIM (VM)	2018

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

<b>Outage Cause</b>	<b>SAIFI Contribution</b>	<b>SAIDI Contribution</b>
Power Supplier	0.00%	0.00%
Birds/Animals	16.60%	14.04%
Equipment/Installation	0.00%	0.00%
Member/Public	0.00%	0.00%
R.O.W. Unpreventable	14.04%	10.98%
Scheduled	0.00%	0.00%
Unknown	0.28%	0.12%
Weather	63.69%	67.56%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	5.39%	7.30%

5.9.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	1.185
5.9.10	REPORTING YEAR (SAIDI)	1.052
5.9.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.007
5.9.12	REPORTING YEAR (SAIFI)	0.011

5.9.13 CORRECTIVE ACTION PLAN:

Several outages, though only 1 three phase outage. which was the main contributor to SAIDI and SAIFI for the year. Bad weather caused a three phase outage lasting for two hours.

**Action Plan:**

Circuit Trim planned for 2024.

### Circuit # 10

5.10.1	SUBSTATION NAME AND NUMBER	BURLINGTON(24)
5.10.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Boone
5.10.3	CIRCUIT NAME AND NUMBER	BURLINGTON(24), Circuit 5, 2405
5.10.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Kingsgate Crossing
5.10.5	TOTAL CIRCUIT LENGTH (MILES)	7.1
5.10.6	CUSTOMER COUNT FOR THIS CIRCUIT	532
5.10.7	DATE OF LAST CIRCUIT TRIM (VM)	2018

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	99.26%	99.71%
Birds/Animals	0.74%	0.29%
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%

5.10.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.251
5.10.10	REPORTING YEAR (SAIDI)	0.851
5.10.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.004
5.10.12	REPORTING YEAR (SAIFI)	0.008

5.10.13 CORRECTIVE ACTION PLAN:

There were only two outages on this feeder for the year, one of which was a three phase outage and was the main contributor to the SAIDI and SAIFI for the year.

**Action Plan:**

The large outage for this year was a power supplier caused outage, the feeder was otherwise reliable, no plans at this time.

**Circuit # 11**

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5.11.1	SUBSTATION NAME AND NUMBER	BURLINGTON(24)
5.11.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Boone
5.11.3	CIRCUIT NAME AND NUMBER	BURLINGTON(24), Circuit 4, 2404
5.11.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Possom Path
5.11.5	TOTAL CIRCUIT LENGTH (MILES)	15.8
5.11.6	CUSTOMER COUNT FOR THIS CIRCUIT	413
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

<b>Outage Cause</b>	<b>SAIFI Contribution</b>	<b>SAIDI Contribution</b>
Power Supplier	30.17%	35.22%
Birds/Animals	1.43%	0.89%
Equipment/Installation	0.00%	0.00%
Member/Public	0.00%	0.00%
R.O.W. Unpreventable	0.14%	0.14%
Scheduled	0.00%	0.00%
Unknown	33.17%	25.76%
Weather	32.45%	33.53%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	2.64%	4.46%

5.11.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.564
5.11.10	REPORTING YEAR (SAIDI)	1.911
5.11.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.007
5.11.12	REPORTING YEAR (SAIFI)	0.021

5.11.13 CORRECTIVE ACTION PLAN:

There were several outages of various types on this feeder that put the SAIDI and SAIFI over their usual five year average.

**Action Plan:**  
Review sectionalizing plan to determine if number of large 3 phase outages can be mitigated.

**Circuit # 12**

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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 3, 2403
5.12.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Conrad Ln.
5.12.5	TOTAL CIRCUIT LENGTH (MILES)	13.6
5.12.6	CUSTOMER COUNT FOR THIS CIRCUIT	496
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

<b>Outage Cause</b>	<b>SAIFI Contribution</b>	<b>SAIDI Contribution</b>
Power Supplier	44.29%	45.52%
Birds/Animals	1.95%	1.06%
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	1.59%	1.26%
Weather	52.17%	52.16%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.00%	0.00%

5.12.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	1.020
5.12.10	REPORTING YEAR (SAIDI)	1.764
5.12.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.010
5.12.12	REPORTING YEAR (SAIFI)	0.017

5.12.13 CORRECTIVE ACTION PLAN:

There were several small outages on this feeder, but two main three phase outages caused the majority of the SAIDI and SAIFI for the year. One was power supplier caused, the other occurred during a weather event.

**Action Plan:**

None at this time.

**Circuit # 13**

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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 2, 2402
5.13.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Hanover Park
5.13.5	TOTAL CIRCUIT LENGTH (MILES)	10.9
5.13.6	CUSTOMER COUNT FOR THIS CIRCUIT	768
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

<b>Outage Cause</b>	<b>SAIFI Contribution</b>	<b>SAIDI Contribution</b>
Power Supplier	49.84%	72.78%
Birds/Animals	0.00%	0.00%
Equipment/Installation	49.71%	25.34%
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	0.45%	1.88%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.00%	0.00%

5.13.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.306
5.13.10	REPORTING YEAR (SAIDI)	1.697
5.13.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.005
5.13.12	REPORTING YEAR (SAIFI)	0.023

5.13.13 CORRECTIVE ACTION PLAN:

The power supplier caused outage was the most significant cause of both SAIDI and SAIFI for the year. There were only three outages on the feeder for the year.

**Action Plan:**  
The power supplier corrected the problem, there is no further action planned at this time.

**Circuit # 14**

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5.14.1	SUBSTATION NAME AND NUMBER	BAVARIAN(23)
5.14.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Boone
5.14.3	CIRCUIT NAME AND NUMBER	BAVARIAN(23), Circuit 2, 2302
5.14.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Poole Rd
5.14.5	TOTAL CIRCUIT LENGTH (MILES)	37.0
5.14.6	CUSTOMER COUNT FOR THIS CIRCUIT	448
5.14.7	DATE OF LAST CIRCUIT TRIM (VM)	2018

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

<b>Outage Cause</b>	<b>SAIFI Contribution</b>	<b>SAIDI Contribution</b>
Power Supplier	0.00%	0.00%
Birds/Animals	33.69%	34.21%
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	32.55%	34.80%
Weather	33.26%	30.37%
Age/Deterioration	0.07%	0.14%
R.O.W. Preventable	0.43%	0.48%

5.14.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.864
5.14.10	REPORTING YEAR (SAIDI)	1.019
5.14.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.010
5.14.12	REPORTING YEAR (SAIFI)	0.021

5.14.13 CORRECTIVE ACTION PLAN:

This feeder had several outages a few of which were three 3-phase outages. An animal was a major cause of SAIDI and SAIFI for this year. This feeder also was recently reconfigured changing its overall exposure level.

**Action Plan:**

Continue to implement animal guards where appropriate.

### 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 4, 2204
5.15.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Williams Rd
5.15.5	TOTAL CIRCUIT LENGTH (MILES)	32.3
5.15.6	CUSTOMER COUNT FOR THIS CIRCUIT	772
5.15.7	DATE OF LAST CIRCUIT TRIM (VM)	2019

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	12.42%	16.56%
Equipment/Installation	0.00%	0.00%
Member/Public	0.00%	0.00%
R.O.W. Unpreventable	0.19%	0.36%
Scheduled	0.00%	0.00%
Unknown	78.01%	62.42%
Weather	8.53%	19.10%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.85%	1.57%

5.15.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	1.337
5.15.10	REPORTING YEAR (SAIDI)	0.850
5.15.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.012
5.15.12	REPORTING YEAR (SAIFI)	0.016

5.15.13 CORRECTIVE ACTION PLAN:

There were numerous outages for the year, the vast majority being small single phase outages. This feeder has some higher density subdivisions, with several miles of overhead as exposure as well. The SAIDI was much improved compared to the five year average.

**Action Plan:**

Though there were numerous outages, they were nearly all contained to just a few members at a time. This feeder is sectionalized and there are no other plans at this time.



**Circuit # 16**

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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)	Warsaw Rd
5.16.5	TOTAL CIRCUIT LENGTH (MILES)	38.5
5.16.6	CUSTOMER COUNT FOR THIS CIRCUIT	512
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	12.99%	11.37%
Equipment/Installation	5.10%	5.69%
Member/Public	0.46%	0.64%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	0.00%	0.00%
Unknown	0.00%	0.00%
Weather	25.06%	33.35%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	56.38%	48.94%

5.16.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.445
5.16.10	REPORTING YEAR (SAIDI)	0.508
5.16.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.004
5.16.12	REPORTING YEAR (SAIFI)	0.007

5.16.13 CORRECTIVE ACTION PLAN:

Several outages on this feeder, mainly contained to just a few members. Right of Way did cause the biggest issue for the feeder this year.

**Action Plan:**

Circuit Trim is planned for 2024

**Circuit # 17**

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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)	Sherman-Mt Zion Rd
5.17.5	TOTAL CIRCUIT LENGTH (MILES)	61.0
5.17.6	CUSTOMER COUNT FOR THIS CIRCUIT	1196
5.17.7	DATE OF LAST CIRCUIT TRIM (VM)	2018

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	3.85%	2.04%
Equipment/Installation	0.12%	0.05%
Member/Public	88.16%	93.33%
R.O.W. Unpreventable	0.93%	0.44%
Scheduled	0.00%	0.00%
Unknown	4.72%	2.71%
Weather	0.47%	0.40%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	1.75%	1.03%

5.17.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	2.624
5.17.10	REPORTING YEAR (SAIDI)	3.495
5.17.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.026
5.17.12	REPORTING YEAR (SAIFI)	0.026

5.17.13 CORRECTIVE ACTION PLAN:

This feeder has numerous members, and is one of the longer distribution feeders on the system. There were numerous outages, but were mainly contained to just a few members for relatively short durations. The main contributor however was a car hitting a pole off the road, causing a large extended outage.

**Action Plan:**

A sectionalizing study is planned for 2024.

**Circuit # 18**

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5.18.1	SUBSTATION NAME AND NUMBER	NOEL(21)
5.18.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Grant
5.18.3	CIRCUIT NAME AND NUMBER	NOEL(21), Circuit 2, 2102
5.18.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Kendall Rd.
5.18.5	TOTAL CIRCUIT LENGTH (MILES)	84.5
5.18.6	CUSTOMER COUNT FOR THIS CIRCUIT	811
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	2.03%	0.93%
Equipment/Installation	0.30%	0.07%
Member/Public	9.64%	6.67%
R.O.W. Unpreventable	8.53%	18.78%
Scheduled	2.54%	2.79%
Unknown	3.05%	0.83%
Weather	61.32%	56.19%
Age/Deterioration	0.10%	0.07%
R.O.W. Preventable	12.49%	13.67%

5.18.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	1.477
5.18.10	REPORTING YEAR (SAIDI)	1.821
5.18.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.014
5.18.12	REPORTING YEAR (SAIFI)	0.015

5.18.13 CORRECTIVE ACTION PLAN:

This circuit is one of the longer circuits on the system, through large portions of right of way. Due to the length there were numerous outages on the feeder, but most were contained to a few members at a time.

**Action Plan:**  
Look to review coordination to minimize feeder outage potential.

**Circuit # 19**

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5.28.5	SUBSTATION NAME AND NUMBER	DOWNING(20)
5.19.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Boone
5.19.3	CIRCUIT NAME AND NUMBER	DOWNING(20), Circuit 1, 2001
5.19.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Parlor Grove
5.19.5	TOTAL CIRCUIT LENGTH (MILES)	17.8
5.19.6	CUSTOMER COUNT FOR THIS CIRCUIT	1256
5.19.7	DATE OF LAST CIRCUIT TRIM (VM)	2020

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	0.40%	0.38%
Equipment/Installation	3.26%	6.67%
Member/Public	1.19%	0.72%
R.O.W. Unpreventable	47.21%	51.00%
Scheduled	1.30%	0.20%
Unknown	0.18%	0.18%
Weather	46.45%	40.85%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.00%	0.00%

5.19.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	1.672
5.19.10	REPORTING YEAR (SAIDI)	2.682
5.19.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.028
5.19.12	REPORTING YEAR (SAIFI)	0.042

5.19.13 CORRECTIVE ACTION PLAN:

There were several outages on this feeder, though the vast majority were contained to just a few members for relatively short durations. Overall, this feeder is relatively dense with large portions underground. Ultimately one large extended outage is what drove the majority of the SAIDI and SAIFI for this year.

**Action Plan:**  
This feeder is minimizing the impact of outages on the members due to its sectionalizing. There are no further plans at this time.

**Circuit # 20**

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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 3, 1903
5.20.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Sherbourne
5.20.5	TOTAL CIRCUIT LENGTH (MILES)	19.3
5.20.6	CUSTOMER COUNT FOR THIS CIRCUIT	1045
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

<b>Outage Cause</b>	<b>SAIFI Contribution</b>	<b>SAIDI Contribution</b>
Power Supplier	0.00%	0.00%
Birds/Animals	2.25%	1.09%
Equipment/Installation	1.64%	0.86%
Member/Public	0.00%	0.00%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	0.26%	0.23%
Unknown	0.52%	0.26%
Weather	95.16%	97.53%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.17%	0.03%

5.20.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	1.428
5.20.10	REPORTING YEAR (SAIDI)	2.289
5.20.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.030
5.20.12	REPORTING YEAR (SAIFI)	0.018

5.20.13 CORRECTIVE ACTION PLAN:

This feeder serves several subdivisions. There are large portions of underground, but still some overhead through right of way as well. There were several outages, all but one were small single phase outages, mostly affecting a couple of members at a time.

**Action Plan:**

A circuit trim is planned for 2024.

**Circuit # 21**

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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 4, 1804
5.21.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Montgomery Rd.
5.21.5	TOTAL CIRCUIT LENGTH (MILES)	6.9
5.21.6	CUSTOMER COUNT FOR THIS CIRCUIT	51
5.21.7	DATE OF LAST CIRCUIT TRIM (VM)	2021

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

<b>Outage Cause</b>	<b>SAIFI Contribution</b>	<b>SAIDI Contribution</b>
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%

5.21.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.031
5.21.10	REPORTING YEAR (SAIDI)	0.031
5.21.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.000
5.21.12	REPORTING YEAR (SAIFI)	0.001

5.21.13 CORRECTIVE ACTION PLAN:

This feeder is very reliable, it is short and rarely loses power. For this period there was one outage.

**Action Plan:**

Feeder is overall reliable, continue using bird and animal guards where appropriate.

**Circuit # 22**

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5.22.1	SUBSTATION NAME AND NUMBER	GALLATIN(18)
5.22.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Gallatin
5.22.3	CIRCUIT NAME AND NUMBER	GALLATIN(18), Circuit 3, 1803
5.22.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Johnson Rd.
5.22.5	TOTAL CIRCUIT LENGTH (MILES)	66.8
5.22.6	CUSTOMER COUNT FOR THIS CIRCUIT	793
5.22.7	DATE OF LAST CIRCUIT TRIM (VM)	2021

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	21.51%	19.59%
Equipment/Installation	0.25%	0.21%
Member/Public	0.39%	0.61%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	0.10%	0.21%
Unknown	0.39%	0.35%
Weather	77.37%	79.02%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.00%	0.00%

5.22.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	4.139
5.22.10	REPORTING YEAR (SAIDI)	6.893
5.22.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.037
5.22.12	REPORTING YEAR (SAIFI)	0.091

5.22.13 CORRECTIVE ACTION PLAN:

This is a fairly long circuit, with alot of right of way. There were numerous outages of all types and sizes.

**Action Plan:**  
 Look into reviewing the coordination on this circuit as this feeder does have higher than average SAIDI.

### 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 3, 1603
5.23.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Sentry Dr.
5.23.5	TOTAL CIRCUIT LENGTH (MILES)	4.1
5.23.6	CUSTOMER COUNT FOR THIS CIRCUIT	303
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	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%

5.23.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.130
5.23.10	REPORTING YEAR (SAIDI)	0.111
5.23.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.003
5.23.12	REPORTING YEAR (SAIFI)	0.005

5.23.13 CORRECTIVE ACTION PLAN:

This is a short dense feeder, that typically has few outages. That trend also continued this year with only two outages on the feeder.

**Action Plan:**

A circuit trim is scheduled for 2024.



### Circuit # 24

5.24.1	SUBSTATION NAME AND NUMBER	SMITH(15)
5.24.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Boone
5.24.3	CIRCUIT NAME AND NUMBER	SMITH(15), Circuit 6, 1506
5.24.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Point Pleasant
5.24.5	TOTAL CIRCUIT LENGTH (MILES)	8.7
5.24.6	CUSTOMER COUNT FOR THIS CIRCUIT	105
5.24.7	DATE OF LAST CIRCUIT TRIM (VM)	2020

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	8.66%	5.88%
Equipment/Installation	49.82%	86.90%
Member/Public	39.35%	4.48%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	2.17%	2.74%
Unknown	0.00%	0.00%
Weather	0.00%	0.00%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.00%	0.00%

5.24.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.064
5.24.10	REPORTING YEAR (SAIDI)	0.332
5.24.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.001
5.24.12	REPORTING YEAR (SAIFI)	0.004

5.24.13 CORRECTIVE ACTION PLAN:

This feeder serves residential and commercial/industrial sites. Overall there is a large portion of underground, and few opportunities to sectionalize the feeder.

**Action Plan:**

Currently there are plans to add an additional substation to the area, which would potentially allow for additional backfeeds to help mitigate the duration of potential outages.

**Circuit # 25**

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5.25.1	SUBSTATION NAME AND NUMBER	BRISTOW(14)
5.25.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Kenton
5.25.3	CIRCUIT NAME AND NUMBER	BRISTOW(14), Circuit 2, 1402
5.25.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Hogreffe Rd.
5.25.5	TOTAL CIRCUIT LENGTH (MILES)	6.8
5.25.6	CUSTOMER COUNT FOR THIS CIRCUIT	401
5.25.7	DATE OF LAST CIRCUIT TRIM (VM)	2022

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	0.00%	0.00%
Equipment/Installation	0.00%	0.00%
Member/Public	50.00%	65.59%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	0.00%	0.00%
Unknown	0.00%	0.00%
Weather	50.00%	34.41%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.00%	0.00%

5.25.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.153
5.25.10	REPORTING YEAR (SAIDI)	0.386
5.25.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.004
5.25.12	REPORTING YEAR (SAIFI)	0.003

5.25.13 CORRECTIVE ACTION PLAN:

This is a short feeder with a high density of members. Large portions are underground and is historically a reliable circuit. Only three outages occurred for this year, the largest cause being a truck that hit a pole.

**Action Plan:**

None at this time.

**Circuit # 26**

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5.26.1	SUBSTATION NAME AND NUMBER	KEITH(13)
5.26.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Owen
5.26.3	CIRCUIT NAME AND NUMBER	KEITH(13), Circuit 4, 1304
5.26.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Cedar Hill
5.26.5	TOTAL CIRCUIT LENGTH (MILES)	56.7
5.26.6	CUSTOMER COUNT FOR THIS CIRCUIT	631
5.26.7	DATE OF LAST CIRCUIT TRIM (VM)	2016

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

<b>Outage Cause</b>	<b>SAIFI Contribution</b>	<b>SAIDI Contribution</b>
Power Supplier	47.19%	0.89%
Birds/Animals	49.41%	94.36%
Equipment/Installation	0.37%	0.58%
Member/Public	0.30%	0.24%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	0.00%	0.00%
Unknown	1.11%	1.40%
Weather	1.63%	2.53%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.00%	0.00%

5.26.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.963
5.26.10	REPORTING YEAR (SAIDI)	1.086
5.26.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.012
5.26.12	REPORTING YEAR (SAIFI)	0.020

5.26.13 CORRECTIVE ACTION PLAN:

This feeder is one of the longer feeders on the system. Overall, there were numerous outages, but only 3 were three phase, one being caused by the power supplier. The other large contributor was an animal on the three phase.

**Action Plan:**  
Continue to implement animal guards where appropriate.

**Circuit # 27**

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5.27.1	SUBSTATION NAME AND NUMBER	KEITH(13)
5.27.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Owen
5.27.3	CIRCUIT NAME AND NUMBER	KEITH(13), Circuit 2, 1302
5.27.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Slippery Rock
5.27.5	TOTAL CIRCUIT LENGTH (MILES)	48.1
5.27.6	CUSTOMER COUNT FOR THIS CIRCUIT	392
5.27.7	DATE OF LAST CIRCUIT TRIM (VM)	2020

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

<b>Outage Cause</b>	<b>SAIFI Contribution</b>	<b>SAIDI Contribution</b>
Power Supplier	21.21%	0.76%
Birds/Animals	25.81%	44.68%
Equipment/Installation	0.48%	0.68%
Member/Public	1.48%	1.99%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	0.00%	0.00%
Unknown	3.81%	5.74%
Weather	47.22%	46.15%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.00%	0.00%

5.27.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.620
5.27.10	REPORTING YEAR (SAIDI)	1.601
5.27.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.007
5.27.12	REPORTING YEAR (SAIFI)	0.029

5.27.13 CORRECTIVE ACTION PLAN:

There were numerous outages on this feeder. Most all were well contained to a few members for relatively short durations. There were four three phase outages, one of which was power supplier caused. Animals overall were a major nuisance for this feeder in 2023.

**Action Plan:**

Continue to utilize animal guards in places that are appropriate to try and reduce the number of animal caused outages.

### Circuit # 28

5.28.1	SUBSTATION NAME AND NUMBER	KEITH(13)
5.28.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Owen
5.28.3	CIRCUIT NAME AND NUMBER	KEITH(13), Circuit 1, 1301
5.28.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Claxon Ridge
5.28.5	TOTAL CIRCUIT LENGTH (MILES)	87.2
5.28.6	CUSTOMER COUNT FOR THIS CIRCUIT	719
5.28.7	DATE OF LAST CIRCUIT TRIM (VM)	2016

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	28.33%	0.51%
Birds/Animals	34.69%	62.73%
Equipment/Installation	1.20%	1.23%
Member/Public	1.71%	6.08%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	0.00%	0.00%
Unknown	1.86%	7.01%
Weather	3.41%	5.64%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	28.79%	16.80%

5.28.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.872
5.28.10	REPORTING YEAR (SAIDI)	2.170
5.28.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.013
5.28.12	REPORTING YEAR (SAIFI)	0.039

5.28.13 CORRECTIVE ACTION PLAN:

There were numerous outages on this feeder. Most all were well contained to a few members for relatively short durations. There were three, 3 phase outages, one of which was power supplier caused. Animals overall were a major nuisance for this feeder in 2023

**Action Plan:**

Continue to utilize animal guards in places that are appropriate to try and reduce the number of animal caused outages.

**Circuit # 29**

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5.29.1	SUBSTATION NAME AND NUMBER	BIG BONE(12)
5.29.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Boone
5.29.3	CIRCUIT NAME AND NUMBER	BIG BONE(12), Circuit 5, 1205
5.29.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Dickerson Rd
5.29.5	TOTAL CIRCUIT LENGTH (MILES)	23.0
5.29.6	CUSTOMER COUNT FOR THIS CIRCUIT	209
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

<b>Outage Cause</b>	<b>SAIFI Contribution</b>	<b>SAIDI Contribution</b>
Power Supplier	0.00%	0.00%
Birds/Animals	14.68%	11.41%
Equipment/Installation	0.00%	0.00%
Member/Public	1.22%	1.54%
R.O.W. Unpreventable	14.68%	14.01%
Scheduled	0.00%	0.00%
Unknown	66.06%	66.42%
Weather	3.36%	6.62%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.00%	0.00%

5.29.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.411
5.29.10	REPORTING YEAR (SAIDI)	0.389
5.29.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.002
5.29.12	REPORTING YEAR (SAIFI)	0.005

5.29.13 CORRECTIVE ACTION PLAN:

This circuit had several outages, with all but one being small single phase outages. Overall, this feeder performed well compared to the historic average, with a reduction in SAIDI and only a slight increase in SAIFI

**Action Plan:**  
 This feeder is going to have the coordination plan reviewed, but based on outage history, it looks well sectionalized.

**Circuit # 30**

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5.30.1	SUBSTATION NAME AND NUMBER	BIG BONE(12)
5.30.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Boone
5.30.3	CIRCUIT NAME AND NUMBER	BIG BONE(12), Circuit 1, 1201
5.30.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	BigBone Church Rd
5.30.5	TOTAL CIRCUIT LENGTH (MILES)	51.2
5.30.6	CUSTOMER COUNT FOR THIS CIRCUIT	621
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

<b>Outage Cause</b>	<b>SAIFI Contribution</b>	<b>SAIDI Contribution</b>
Power Supplier	0.00%	0.00%
Birds/Animals	12.14%	6.40%
Equipment/Installation	1.43%	1.05%
Member/Public	0.00%	0.00%
R.O.W. Unpreventable	2.05%	4.62%
Scheduled	0.00%	0.00%
Unknown	56.52%	13.95%
Weather	27.86%	73.97%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.00%	0.00%

5.30.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	6.054
5.30.10	REPORTING YEAR (SAIDI)	1.848
5.30.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.015
5.30.12	REPORTING YEAR (SAIFI)	0.017

5.30.13 CORRECTIVE ACTION PLAN:

Overall, this is a fairly long feeder with large portions through right of way. This feeder did have numerous outages, but for the most part were contained to just a few members.

**Action Plan:**

A coordination review is planned for 2024 to help ensure outages are contained to a smaller number of members and to help reduce overall outage time.

**Circuit # 31**

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5.31.1	SUBSTATION NAME AND NUMBER	CARSON(11)
5.31.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Gallatin
5.31.3	CIRCUIT NAME AND NUMBER	CARSON(11), Circuit 1, 1101
5.31.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Walnut Valley
5.31.5	TOTAL CIRCUIT LENGTH (MILES)	35.7
5.31.6	CUSTOMER COUNT FOR THIS CIRCUIT	284
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

<b>Outage Cause</b>	<b>SAIFI Contribution</b>	<b>SAIDI Contribution</b>
Power Supplier	0.00%	0.00%
Birds/Animals	6.56%	2.38%
Equipment/Installation	2.71%	4.03%
Member/Public	1.85%	2.06%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	0.00%	0.00%
Unknown	0.00%	0.00%
Weather	88.16%	91.01%
Age/Deterioration	0.71%	0.52%
R.O.W. Preventable	0.00%	0.00%

5.31.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.452
5.31.10	REPORTING YEAR (SAIDI)	1.316
5.31.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.005
5.31.12	REPORTING YEAR (SAIFI)	0.011

5.31.13 CORRECTIVE ACTION PLAN:

There were a handful of outages for this feeder. One cause was a semi-truck getting into a low hanging telephone line, causing an extended outage.

**Action Plan:**  
Continuing joint use audits with various attachers and consultants to try and reduce the overall negative reliability effect they have on the power system.



### Circuit # 32

5.32.1	SUBSTATION NAME AND NUMBER	TURKEYFOOT(10)
5.32.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Kenton
5.32.3	CIRCUIT NAME AND NUMBER	TURKEYFOOT(10), Circuit 6, 1006
5.32.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Richardson Rd
5.32.5	TOTAL CIRCUIT LENGTH (MILES)	4.7
5.32.6	CUSTOMER COUNT FOR THIS CIRCUIT	400
5.32.7	DATE OF LAST CIRCUIT TRIM (VM)	2023

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	0.81%	0.16%
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	99.19%	99.84%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.00%	0.00%

5.32.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.054
5.32.10	REPORTING YEAR (SAIDI)	0.873
5.32.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.002
5.32.12	REPORTING YEAR (SAIFI)	0.004

5.32.13 CORRECTIVE ACTION PLAN:

This feeder is short and relatively dense. Overall, usually pretty reliable. This year had three outages, none of which were 3 phase outages.

**Action Plan:**

Overall the feeder remains reliable and expect it to maintain its reliability going forward. No actions planned for this feeder at this time.

**Circuit # 33**

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5.33.1	SUBSTATION NAME AND NUMBER	GRIFFIN(9)
5.33.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Pendelton
5.33.3	CIRCUIT NAME AND NUMBER	GRIFFIN(9), Circuit 4, 0904
5.33.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	HWY 17
5.33.5	TOTAL CIRCUIT LENGTH (MILES)	66.0
5.33.6	CUSTOMER COUNT FOR THIS CIRCUIT	595
5.33.7	DATE OF LAST CIRCUIT TRIM (VM)	2023

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

<b>Outage Cause</b>	<b>SAIFI Contribution</b>	<b>SAIDI Contribution</b>
Power Supplier	0.00%	0.00%
Birds/Animals	1.51%	0.60%
Equipment/Installation	60.56%	61.23%
Member/Public	0.10%	0.02%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	0.00%	0.00%
Unknown	0.00%	0.00%
Weather	37.63%	38.08%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.20%	0.08%

5.33.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.567
5.33.10	REPORTING YEAR (SAIDI)	3.199
5.33.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.006
5.33.12	REPORTING YEAR (SAIFI)	0.015

5.33.13 CORRECTIVE ACTION PLAN:

This feeder is fairly long, rural, and has large portions of right of way. There is also a landfill on this feeder. There were several outages caused by operations in the landfill.

**Action Plan:**

The feeder was moved recently and should be farther from potential interruptions.

**Circuit # 34**

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5.34.1	SUBSTATION NAME AND NUMBER	GRIFFIN(9)
5.34.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Pendelton
5.34.3	CIRCUIT NAME AND NUMBER	GRIFFIN(9), Circuit 3, 0903
5.34.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	HWY 22
5.34.5	TOTAL CIRCUIT LENGTH (MILES)	22.5
5.34.6	CUSTOMER COUNT FOR THIS CIRCUIT	222
5.34.7	DATE OF LAST CIRCUIT TRIM (VM)	2023

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

<b>Outage Cause</b>	<b>SAIFI Contribution</b>	<b>SAIDI Contribution</b>
Power Supplier	0.00%	0.00%
Birds/Animals	6.72%	1.84%
Equipment/Installation	82.09%	94.35%
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	8.96%	3.02%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	2.24%	0.79%

5.34.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.392
5.34.10	REPORTING YEAR (SAIDI)	0.767
5.34.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.005
5.34.12	REPORTING YEAR (SAIFI)	0.004

5.34.13 CORRECTIVE ACTION PLAN:

This feeder is fairly rural, and has significant right of way. There were several outages on this feeder, though only one significant 3 phase outage.

**Action Plan:**

There is recoordination review scheduled for 2024.

**Circuit # 35**

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5.35.1	SUBSTATION NAME AND NUMBER	GRIFFIN(9)
5.35.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Pendelton
5.35.3	CIRCUIT NAME AND NUMBER	GRIFFIN(9), Circuit 1, 0901
5.35.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	HWY 27
5.35.5	TOTAL CIRCUIT LENGTH (MILES)	71.0
5.35.6	CUSTOMER COUNT FOR THIS CIRCUIT	807
5.35.7	DATE OF LAST CIRCUIT TRIM (VM)	2023

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

<b>Outage Cause</b>	<b>SAIFI Contribution</b>	<b>SAIDI Contribution</b>
Power Supplier	0.00%	0.00%
Birds/Animals	6.58%	5.74%
Equipment/Installation	1.23%	1.06%
Member/Public	7.81%	4.72%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	0.00%	0.00%
Unknown	0.14%	0.29%
Weather	82.04%	85.63%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	2.19%	2.55%

5.35.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	1.783
5.35.10	REPORTING YEAR (SAIDI)	1.390
5.35.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.013
5.35.12	REPORTING YEAR (SAIFI)	0.022

5.35.13 CORRECTIVE ACTION PLAN:

This feeder is one of the longer feeders on the system, and has significant right of way. It typically has worse SAIDI and SAIFI than much of the system.

**Action Plan:**  
 The right of way was trimmed in 2023. This should help reduce overall outages due to the extended amount of right of way on this feeder.

**Circuit # 36**

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5.36.1	SUBSTATION NAME AND NUMBER	PENN(7)
5.36.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Scott
5.36.3	CIRCUIT NAME AND NUMBER	PENN(7), Circuit 3, 0703
5.36.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Josephine Rd
5.36.5	TOTAL CIRCUIT LENGTH (MILES)	57.2
5.36.6	CUSTOMER COUNT FOR THIS CIRCUIT	510
5.36.7	DATE OF LAST CIRCUIT TRIM (VM)	2022

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

<b>Outage Cause</b>	<b>SAIFI Contribution</b>	<b>SAIDI Contribution</b>
Power Supplier	41.76%	16.75%
Birds/Animals	0.49%	0.40%
Equipment/Installation	2.45%	0.58%
Member/Public	1.22%	1.44%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	1.71%	0.04%
Unknown	0.00%	0.00%
Weather	50.57%	76.98%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	1.79%	3.80%

5.36.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.535
5.36.10	REPORTING YEAR (SAIDI)	1.482
5.36.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.005
5.36.12	REPORTING YEAR (SAIFI)	0.019

5.36.13 CORRECTIVE ACTION PLAN:

There were several outages on this feeder, there were a few 3 phase outages due to weather events that affected the overall SAIDI and SAIFI for the year.

**Action Plan:**

The right of way is going to be sprayed in 2024 to help reduce the amount of vegetation growth that may cause future outages.

**Circuit # 37**

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5.37.1	SUBSTATION NAME AND NUMBER	PENN(7)
5.37.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Scott
5.37.3	CIRCUIT NAME AND NUMBER	PENN(7), Circuit 2, 0702
5.37.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Leaning Oak
5.37.5	TOTAL CIRCUIT LENGTH (MILES)	112.5
5.37.6	CUSTOMER COUNT FOR THIS CIRCUIT	786
5.37.7	DATE OF LAST CIRCUIT TRIM (VM)	2021

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

<b>Outage Cause</b>	<b>SAIFI Contribution</b>	<b>SAIDI Contribution</b>
Power Supplier	39.13%	15.54%
Birds/Animals	1.19%	1.08%
Equipment/Installation	2.29%	1.40%
Member/Public	3.53%	1.68%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	0.70%	0.46%
Unknown	1.84%	4.38%
Weather	42.17%	63.52%
Age/Deterioration	0.05%	0.05%
R.O.W. Preventable	9.10%	11.88%

5.37.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	1.942
5.37.10	REPORTING YEAR (SAIDI)	2.455
5.37.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.015
5.37.12	REPORTING YEAR (SAIFI)	0.030

5.37.13 CORRECTIVE ACTION PLAN:

This feeder has some extensive right of way and had numerous outages. Several of those affected a large number of members, or were 3 phase outages.

**Action Plan:**

The recoordination plan is scheduled to be reviewed in 2024.

**Circuit # 38**

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5.38.1	SUBSTATION NAME AND NUMBER	PENN(7)
5.38.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Scott
5.38.3	CIRCUIT NAME AND NUMBER	PENN(7), Circuit 1, 0701
5.38.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Marshall pk
5.38.5	TOTAL CIRCUIT LENGTH (MILES)	21.3
5.38.6	CUSTOMER COUNT FOR THIS CIRCUIT	138
5.38.7	DATE OF LAST CIRCUIT TRIM (VM)	2023

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

<b>Outage Cause</b>	<b>SAIFI Contribution</b>	<b>SAIDI Contribution</b>
Power Supplier	5.68%	1.21%
Birds/Animals	33.07%	10.93%
Equipment/Installation	1.35%	0.93%
Member/Public	1.59%	1.05%
R.O.W. Unpreventable	6.43%	22.88%
Scheduled	0.00%	0.00%
Unknown	14.57%	6.97%
Weather	35.33%	54.79%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	1.98%	1.24%

5.38.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.147
5.38.10	REPORTING YEAR (SAIDI)	5.752
5.38.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.002
5.38.12	REPORTING YEAR (SAIFI)	0.038

5.38.13 CORRECTIVE ACTION PLAN:

There were numerous outages on this feeder. Most were contained to a small section of members. The feeder did have a SAIDI significantly higher than the five year average.

**Action Plan:**  
 Tree trimming occurred in 2023, which will ideally help any right of way outage and associated weather outages.

**Circuit # 39**

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5.39.1	SUBSTATION NAME AND NUMBER	BROMLEY(6)
5.39.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Owen
5.39.3	CIRCUIT NAME AND NUMBER	BROMLEY(6), Circuit 2, 0602
5.39.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Long Ridge
5.39.5	TOTAL CIRCUIT LENGTH (MILES)	54.3
5.39.6	CUSTOMER COUNT FOR THIS CIRCUIT	470
5.39.7	DATE OF LAST CIRCUIT TRIM (VM)	2020

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

<b>Outage Cause</b>	<b>SAIFI Contribution</b>	<b>SAIDI Contribution</b>
Power Supplier	0.00%	0.00%
Birds/Animals	0.80%	1.12%
Equipment/Installation	0.00%	0.00%
Member/Public	0.00%	0.00%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	1.30%	3.55%
Unknown	1.00%	0.48%
Weather	96.89%	94.85%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.00%	0.00%

5.39.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.284
5.39.10	REPORTING YEAR (SAIDI)	0.572
5.39.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.004
5.39.12	REPORTING YEAR (SAIFI)	0.015

5.39.13 CORRECTIVE ACTION PLAN:

There were several outages, only two of which affected more than 15 members at a time. There were two weather events that greatly increased the SAIDI and SAIFI for this feeder.

**Action Plan:**  
 Sectionalizing seems adequate on this circuit, no additional plans at this time.



**Circuit # 40**

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5.40.1	SUBSTATION NAME AND NUMBER	BROMLEY(6)
5.40.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Owen
5.40.3	CIRCUIT NAME AND NUMBER	BROMLEY(6), Circuit 1, 0601
5.40.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	HWY 127
5.40.5	TOTAL CIRCUIT LENGTH (MILES)	98.7
5.40.6	CUSTOMER COUNT FOR THIS CIRCUIT	963
5.40.7	DATE OF LAST CIRCUIT TRIM (VM)	2023

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

<b>Outage Cause</b>	<b>SAIFI Contribution</b>	<b>SAIDI Contribution</b>
Power Supplier	11.12%	9.13%
Birds/Animals	3.36%	2.14%
Equipment/Installation	0.05%	0.04%
Member/Public	0.21%	0.47%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	0.00%	0.00%
Unknown	4.77%	5.93%
Weather	79.60%	80.57%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.89%	1.71%

5.40.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	1.520
5.40.10	REPORTING YEAR (SAIDI)	2.128
5.40.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.014
5.40.12	REPORTING YEAR (SAIFI)	0.029

5.40.13 CORRECTIVE ACTION PLAN:

This feeder has extensive right of way. The feeder had numerous outages, though most were contained to a small amount of members.

**Action Plan:**  
 This feeder had its right of way trimmed in 2023, which will potentially reduce the number of weather and right of way outages for the upcoming year.

**Circuit # 41**

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5.41.1	SUBSTATION NAME AND NUMBER	WILLIAMSTOWN(5)
5.41.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Grant
5.41.3	CIRCUIT NAME AND NUMBER	WILLIAMSTOWN(5), Circuit 5, 0505
5.41.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Ruthman Dr
5.41.5	TOTAL CIRCUIT LENGTH (MILES)	14.5
5.41.6	CUSTOMER COUNT FOR THIS CIRCUIT	314
5.41.7	DATE OF LAST CIRCUIT TRIM (VM)	2018

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	28.65%	8.15%
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	71.35%	91.85%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.00%	0.00%

5.41.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.349
5.41.10	REPORTING YEAR (SAIDI)	0.397
5.41.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.003
5.41.12	REPORTING YEAR (SAIFI)	0.003

5.41.13 CORRECTIVE ACTION PLAN:

Overall, SAIDI and SAIFI matched fairly closely to this historic average. There were only 4 outages on this period. An animal caused a 3 phase outage.

**Action Plan:**

Continue implementing animal guards where appropriate. Circuit Trim is scheduled for 2024.

## Circuit # 42

5.42.1	SUBSTATION NAME AND NUMBER	WILLIAMSTOWN(5)
5.42.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Grant
5.42.3	CIRCUIT NAME AND NUMBER	WILLIAMSTOWN(5), Circuit 4, 0504
5.42.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Barnes Rd
5.42.5	TOTAL CIRCUIT LENGTH (MILES)	35.1
5.42.6	CUSTOMER COUNT FOR THIS CIRCUIT	315
5.42.7	DATE OF LAST CIRCUIT TRIM (VM)	2018

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	4.92%	2.20%
Equipment/Installation	0.00%	0.00%
Member/Public	0.00%	0.00%
R.O.W. Unpreventable	0.00%	0.00%
Scheduled	6.56%	3.72%
Unknown	2.46%	1.46%
Weather	85.25%	90.39%
Age/Deterioration	0.82%	2.24%
R.O.W. Preventable	0.00%	0.00%

5.42.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.283
5.42.10	REPORTING YEAR (SAIDI)	0.294
5.42.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.003
5.42.12	REPORTING YEAR (SAIFI)	0.002

5.42.13 CORRECTIVE ACTION PLAN:

Overall SAIDI and SAIFI matched fairly closely to this historic average. There were several outages, but most were single member outages.

**Action Plan:**

Circuit Trim is scheduled for 2024.

### Circuit # 43

5.43.1	SUBSTATION NAME AND NUMBER	WILLIAMSTOWN(5)
5.43.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Grant
5.43.3	CIRCUIT NAME AND NUMBER	WILLIAMSTOWN(5), Circuit 2, 0502
5.43.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Cordova-Mason
5.43.5	TOTAL CIRCUIT LENGTH (MILES)	68.4
5.43.6	CUSTOMER COUNT FOR THIS CIRCUIT	638
5.43.7	DATE OF LAST CIRCUIT TRIM (VM)	2018

5.43.23 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	4.85%	5.44%
Equipment/Installation	0.00%	0.00%
Member/Public	1.79%	2.32%
R.O.W. Unpreventable	0.51%	0.44%
Scheduled	0.00%	0.00%
Unknown	0.00%	0.00%
Weather	92.86%	91.80%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.00%	0.00%

5.43.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	1.034
5.43.10	REPORTING YEAR (SAIDI)	1.460
5.43.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.011
5.43.12	REPORTING YEAR (SAIFI)	0.012

5.43.13 CORRECTIVE ACTION PLAN:

There were several outages on this feeder, most were contained to a small amount of members. There was a 3 phase outage that contributed nearly all the SAIDI and SAIFI for the year.

**Action Plan:**

A circuit trim is scheduled for 2024.

**Circuit # 44**

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5.44.1	SUBSTATION NAME AND NUMBER	MUNK(4)
5.44.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Gallatin
5.44.3	CIRCUIT NAME AND NUMBER	MUNK(4), Circuit 4, 0404
5.44.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Eagle Hill
5.44.5	TOTAL CIRCUIT LENGTH (MILES)	39.8
5.44.6	CUSTOMER COUNT FOR THIS CIRCUIT	511
5.44.7	DATE OF LAST CIRCUIT TRIM (VM)	2022

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

<b>Outage Cause</b>	<b>SAIFI Contribution</b>	<b>SAIDI Contribution</b>
Power Supplier	0.00%	0.00%
Birds/Animals	8.19%	1.95%
Equipment/Installation	75.32%	93.19%
Member/Public	0.00%	0.00%
R.O.W. Unpreventable	5.33%	2.05%
Scheduled	0.00%	0.00%
Unknown	0.00%	0.00%
Weather	7.70%	2.21%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	3.46%	0.59%

5.44.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	2.178
5.44.10	REPORTING YEAR (SAIDI)	5.345
5.44.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.025
5.44.12	REPORTING YEAR (SAIFI)	0.015

5.44.13 CORRECTIVE ACTION PLAN:

There were several outages on the feeder for the year. They were all contained to a small amount of members except for one outage where a failed regulator caused an extended outage.

**Action plan:**

Continue inspection practices to help catch potential failures before they become outages.

**Circuit # 45**

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5.45.1	SUBSTATION NAME AND NUMBER	BANKLICK(2)
5.45.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Kenton
5.45.3	CIRCUIT NAME AND NUMBER	BANKLICK(2), Circuit 5, 0205
5.45.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Bramlage Rd
5.45.5	TOTAL CIRCUIT LENGTH (MILES)	13.0
5.45.6	CUSTOMER COUNT FOR THIS CIRCUIT	204
5.45.7	DATE OF LAST CIRCUIT TRIM (VM)	2020

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

<b>Outage Cause</b>	<b>SAIFI Contribution</b>	<b>SAIDI Contribution</b>
Power Supplier	0.00%	0.00%
Birds/Animals	5.08%	3.73%
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	94.92%	96.27%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	0.00%	0.00%

5.45.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	0.280
5.45.10	REPORTING YEAR (SAIDI)	0.453
5.45.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.003
5.45.12	REPORTING YEAR (SAIFI)	0.007

5.45.13 CORRECTIVE ACTION PLAN:

There were six outages on this feeder for 2023, though two of those were 3 phase outages which contributed most to the SAIDI and SAIFI for this period.

**Action Plan:**  
 This feeder had its right of way sprayed in 2023 to help reduce potential vegetation related outages.

**Circuit # 46**

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5.46.1	SUBSTATION NAME AND NUMBER	BANKLICK(2)
5.46.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Kenton
5.46.3	CIRCUIT NAME AND NUMBER	BANKLICK(2), Circuit 3, 0203
5.46.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Bird Rd
5.46.5	TOTAL CIRCUIT LENGTH (MILES)	38.5
5.46.6	CUSTOMER COUNT FOR THIS CIRCUIT	430
5.46.7	DATE OF LAST CIRCUIT TRIM (VM)	2021

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

<b>Outage Cause</b>	<b>SAIFI Contribution</b>	<b>SAIDI Contribution</b>
Power Supplier	0.00%	0.00%
Birds/Animals	1.14%	0.86%
Equipment/Installation	0.14%	0.47%
Member/Public	0.07%	0.23%
R.O.W. Unpreventable	0.43%	0.69%
Scheduled	0.00%	0.00%
Unknown	0.64%	1.99%
Weather	62.70%	63.89%
Age/Deterioration	0.00%	0.00%
R.O.W. Preventable	34.88%	31.87%

5.46.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	1.332
5.46.10	REPORTING YEAR (SAIDI)	1.459
5.46.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.017
5.46.12	REPORTING YEAR (SAIFI)	0.021

5.46.13 CORRECTIVE ACTION PLAN:

This feeder had several outages, most of which were smaller single phase outages. There were three multi-phase outages that contributed to the largest portion of SAIDI and SAIFI for the year.

**Action Plan:**  
 Right of Way was trimmed in 2023 to help reduce potential outages.

**Circuit # 47**

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5.47.1	SUBSTATION NAME AND NUMBER	BANKLICK(2)
5.47.2	SUBSTATION LOCATION (COUNTY-ROAD-TOWN)	Kenton
5.47.3	CIRCUIT NAME AND NUMBER	BANKLICK(2), Circuit 2, 0202
5.47.4	CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)	Bowman Rd
5.47.5	TOTAL CIRCUIT LENGTH (MILES)	67.7
5.47.6	CUSTOMER COUNT FOR THIS CIRCUIT	987
5.47.7	DATE OF LAST CIRCUIT TRIM (VM)	2021

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

<b>Outage Cause</b>	<b>SAIFI Contribution</b>	<b>SAIDI Contribution</b>
Power Supplier	0.00%	0.00%
Birds/Animals	8.00%	5.81%
Equipment/Installation	0.15%	0.35%
Member/Public	2.77%	1.31%
R.O.W. Unpreventable	2.99%	3.56%
Scheduled	0.00%	0.00%
Unknown	39.08%	32.63%
Weather	45.85%	55.45%
Age/Deterioration	0.15%	0.09%
R.O.W. Preventable	1.01%	0.80%

5.47.9	CIRCUIT 5 YEAR AVERAGE (SAIDI)	2.654
5.47.10	REPORTING YEAR (SAIDI)	2.746
5.47.11	CIRCUIT 5 YEAR AVERAGE (SAIFI)	0.025
5.47.12	REPORTING YEAR (SAIFI)	0.041

5.47.13 CORRECTIVE ACTION PLAN:

This feeder is relatively long and has significant portions of right of way. There were numerous outages for this time period, most of which were small single phase outages. There were a few outages that were multiphase. Trees and weather caused a majority of the outages

**Action Plan:**

Right of Way was trimmed in 2023 to help reduce potential outages related to weather and trees.



# KENTUCKY PUBLIC SERVICE COMMISSION

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## Electric Distribution Utility Annual Reliability Report

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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

Owen Electric's trim cycle prioritizes feeders that have the oldest trim date, have the most work requests for tree work and also are the worst performing in terms of reliability. Two years following the trimming and mowing cycle a low volume herbicide treatment is performed to control undesirable brush in the right of ways. One year after a feeder is sprayed, we perform a mid-cycle hotspot trim; this typically addresses yard trees that have vigorously re-sprouted and hazard trees that have developed since the last trim cycle.

# KENTUCKY PUBLIC SERVICE COMMISSION

## SECTION 7: UTILITY COMMENTS

During the course of 2023 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 has been fully realized in 2021.

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

OEC continues working on future plans to improve reliability. A new substation in Boone County will shorten feeder lengths and provide contingency opportunities for faster restoration. Additionally, OEC has ongoing initiatives for reliability improvements such as feeder hardening, aged conductor replacement, focused ROW clearing and increased sectionalizing to minimize impacts of outages.

OEC has had an unprecedented influx of new pole attachments from outside communication companies. OEC is working diligently to hold the attachers accountable in ensuring safe and proper construction that meets NESC, RUS, and OEC specific construction standards with the intent to ensure that the abundance of joint use attachments do not degrade the overall quality and reliability of the Owen distribution electric system.