

# KENTUCKY PUBLIC SERVICE COMMISSION

## Electric Distribution Utility Annual Reliability Report

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### SECTION 1: CONTACT INFORMATION

UTILITY NAME	Grayson Rural Electric Coop. Corp.
REPORT PREPARED BY	Kyle Clevenger/Mike Martin/Brian Poling
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### SECTION 2: REPORTING YEAR

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

	$T_{MED}$	36.898
FIRST DATE USED TO DETERMINE	$T_{MED}$	1/1/2023
LAST DATE USED TO DETERMINE	$T_{MED}$	12/31/2023
NUMBER OF MED IN REPORT YEAR		4

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NOTE: Per IEEE Tmed 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:	15,448	TOTAL CIRCUITS	43
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#### Excluding MED

	<b>5 YEAR AVERAGE</b>		<b>REPORTING YEAR</b>
SAIDI	333.4	SAIDI	146.2
SAIFI	2.39	SAIFI	1.33

#### Including MED

	<b>5 YEAR AVERAGE</b>		<b>REPORTING YEAR</b>
SAIDI	2704.0	SAIDI	338.2
SAIFI	3.14	SAIFI	2.03

NOTES:

- 1) All durations indices (SAIDI) are to be reported in units of minutes.
- 2) Reports are due on the first business day of April of each year.
- 3) Reports cover the calendar year ending in the December before the reports are due.
- 4) IEEE 1366 (latest version) issued to define SAIDI, SAIFI and T<sub>MED</sub>

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## SECTION 5: CIRCUIT REPORTING

Continued

1. Argentum (Sub #1)
2. Located on Rt. 7, 0.6 miles north of the junction of AA Highway.
3. Feeder 3
4. East Tygart Road
5. There are approximately 23.26 miles of primary line.
6. 242 active consumers.
7. Circuit was cut in 2020
8. Causes of last years outages:

300 Material or equipment fault/failure	3	19%
800 Other	2	13%
600 Small animal/bird	2	13%
110 Maintenance	2	13%
100 Construction	2	13%
790 Public, other	1	6%
430 Tree failure from overhang or dead tree without ice/snow	1	6%
500 Lightning	1	6%
590 Weather, other	1	6%
431 Tree Failure-off ROW	1	6%
9. The 5 year average SAIDI is 186.22
10. The SAIDI for 2023 was 140.51
11. The 5 year average SAIFI is 1.21
12. The SAIFI for 2023 was 2.05
13. The three material failures were unrelated and does not indicate a pattern. We continue to work on reducing small animal and bird failures by adding pole wraps on all new construction and applying a wrap at locations that have outages from that cause.

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## SECTION 5: CIRCUIT REPORTING

Continued

1. Carter City (Sub #10)
2. Located approx 0.2 miles north of Jct of 474 on Rt. 2 & 7
3. Feeder 1
4. Sand Ridge to Adkins Loop
5. There are approximately 37.71 miles of primary line.
6. 226 active consumers.
7. Circuit was cut in 2018
8. Causes of last years outages:

600 Small animal/bird	13	42%
510 Wind, not trees	5	16%
590 Weather, other	5	16%
710 Motor vehicle	2	6%
100 Construction	1	3%
110 Maintenance	1	3%
300 Material or equipment fault/failure	1	3%
420 Tree growth	1	3%
430 Tree failure from overhang or dead tree without ice/snow	1	3%
431 Tree Failure-off ROW	1	3%
9. The 5 year average SAIDI is 318.20
10. The SAIDI for 2023 was 215.78
11. The 5 year average SAIFI is 1.99
12. The SAIFI for 2023 was 2.08
13. Small animals and birds are a problem that we continue to work on and look for newer solutions. We currently attach pole wraps and are looking at new technology to reduce those contact outages.

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## SECTION 5: CIRCUIT REPORTING

Continued

1. Elliottville (Sub #7)
2. Located at the end of Fouch Rd of Rt. 32 near Elliottville
3. Feeder 1
4. Rt. 32 toward Elliott Co/ Wagoner Corner
5. There are approximately 56.24 miles of primary line.
6. 431 active consumers.
7. Circuit was cut in Spot cut only
8. Causes of last years outages:

600 Small animal/bird	18	44%
431 Tree Failure-off ROW	6	15%
400 Decay/age of material/equipment	4	10%
110 Maintenance	3	7%
100 Construction	2	5%
430 Tree failure from overhang or dead tree without ice/snow	2	5%
420 Tree growth	1	2%
500 Lightning	1	2%
590 Weather, other	1	2%
770 Consumer's Problem	1	2%
800 Other	1	2%
999 Cause unknown	1	2%
9. The 5 year average SAIDI is 83.66
10. The SAIDI for 2023 was 116.55
11. The 5 year average SAIFI is 0.70
12. The SAIFI for 2023 was 1.55
13. Small animals and birds are a problem that we continue to work on and look for newer solutions. We currently attach pole wraps and are looking at new technology to reduce those contact outages. There are also consumers on this line that feed and house sparrows which contribute to the cause.

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## SECTION 5: CIRCUIT REPORTING

Continued

1. Elliottville (Sub #7)
2. Located at the end of Fouch Rd of Rt. 32 near Elliottville
3. Feeder 2
4. Rt. 32 toward Morehead/Triangle Tower
5. There are approximately 36.35 miles of primary line.
6. 557 active consumers
7. Circuit was cut in 2017
8. Causes of last years outages:

110 Maintenance	11	26%
600 Small animal/bird	10	24%
400 Decay/age of material/equipment	6	14%
431 Tree Failure-off ROW	3	7%
999 Cause unknown	3	7%
500 Lightning	2	5%
700 Customer-caused	2	5%
430 Tree failure from overhang or dead tree without ice/snow	1	2%
590 Weather, other	1	2%
610 Large animal	1	2%
730 Fire	1	2%
800 Other	1	2%
9. The 5 year average SAIDI is 128.93
10. The SAIDI for 2023 was 141.53
11. The 5 year average SAIFI is 1.31
12. The SAIFI for 2023 was 1.23
13. Maintenance was higher than normal on this line due to a blinking issue on a tap that required multiple outages before locating the issue. Small animals and birds are being addressed by adding pole wraps and looking into other technologies.

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## SECTION 5: CIRCUIT REPORTING

Continued

1. Leon (Sub #2)
2. The sub is located on Rt. 1661 approximately 1.8 miles from Jct Rt. 7
3. Feeder 1
4. North Rt. 7 toward Grayson
5. There are approximately 13.08 miles of primary line.
6. 176 active consumers.
7. Circuit was cut in 2009
8. Causes of last years outages:

600 Small animal/bird	10	36%
431 Tree Failure-off ROW	5	18%
420 Tree growth	4	14%
110 Maintenance	3	11%
999 Cause unknown	3	11%
590 Weather, other	2	7%
510 Wind, not trees	1	4%
9. The 5 year average SAIDI is 187.31
10. The SAIDI for 2023 was 333.19
11. The 5 year average SAIFI is 1.66
12. The SAIFI for 2023 was 3.69
13. Small animals and birds are a problem that we continue to work on and look for newer solutions. We currently attach pole wraps and are looking at new technology to reduce those contact outages.

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## SECTION 5: CIRCUIT REPORTING

Continued

1. Low Gap (Sub #11)
2. Located just off Rt. 2 approximately 1 mile from the junction of Rt. 1459
3. Feeder 1
4. Rt. 2 toward North Fork/Warnock Sub
5. There are approximately 6.87 miles of primary line.
6. 88 active consumers.
7. Circuit was cut in 2014
8. Causes of last years outages:

600 Small animal/bird	3	38%
700 Customer-caused	1	13%
500 Lightning	1	13%
470 Borrower crew cuts tree	1	13%
430 Tree failure from overhang or dead tree without ice/snow	1	13%
110 Maintenance	1	13%
9. The 5 year average SAIDI is 46.07
10. The SAIDI for 2023 was 31.26
11. The 5 year average SAIFI is 0.70
12. The SAIFI for 2023 was 1.09
13. Though a small number of outages, small animals and birds continue to be an issue that we are addressing with pole wraps as well as investigating other methods.



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## SECTION 5: CIRCUIT REPORTING

Continued

1. Mazie (Sub #4)
2. Located approximately 11.5 miles east of Sandy Hook on Rt. 32.
3. Feeder 1
4. Rt. 32 toward Isonville
5. There are approximately 60.96 miles of primary line.
6. 418 active consumers.
7. Circuit was cut in 2018
8. Causes of last years outages:

431 Tree Failure-off ROW	11	32%
110 Maintenance	5	15%
590 Weather, other	5	15%
600 Small animal/bird	4	12%
770 Consumer's Problem	2	6%
999 Cause unknown	2	6%
100 Construction	1	3%
420 Tree growth	1	3%
790 Public, other	1	3%
800 Other	1	3%
750 Vandalism	1	3%
9. The 5 year average SAIDI is 529.76
10. The SAIDI for 2023 was 722.86
11. The 5 year average SAIFI is 3.85
12. The SAIFI for 2023 was 2.90
13. Off right of way trees continue to be an issue even though we are surveying and removing potentially bad trees next to our lines. The issue seems to be moving to trees farther off the lines and the domino effect when they fall on hillsides.

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## SECTION 5: CIRCUIT REPORTING

Continued

1. Newfoundland (Sub #3)
2. Located on Rt. 32 just south of the Junction of Rt. 7
3. Feeder 1
4. Rt. 7 toward Bruin
5. There are approximately 75.03 miles of primary line.
6. 463 active consumers.
7. Circuit was cut in 2016
8. Causes of last years outages:

500 Lightning	20	30%
110 Maintenance	12	18%
600 Small animal/bird	10	15%
431 Tree Failure-off ROW	4	6%
300 Material or equipment fault/failure	3	4%
590 Weather, other	3	4%
400 Decay/age of material/equipment	2	3%
430 Tree failure from overhang or dead tree without ice/snow	2	3%
470 Borrower crew cuts tree	2	3%
770 Consumer's Problem	2	3%
100 Construction	1	1%
360 Other equipment installation/design	1	1%
410 Corrosion/abrasion of material/equipment	1	1%
420 Tree growth	1	1%
710 Motor vehicle	1	1%
800 Other	1	1%
999 Cause unknown	1	1%
9. The 5 year average SAIDI is 156.32
10. The SAIDI for 2023 was 133.61
11. The 5 year average SAIFI is 1.34
12. The SAIFI for 2023 was 2.27
13. A lightning storm that appeared to be concentrated to one area caused multiple fuses to blow causing the majority of the outages. We are addressing small animals and birds on this line with the same approach as the rest of the system.

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## SECTION 5: CIRCUIT REPORTING

Continued

1. Newfoundland (Sub #3)
2. Located on Rt. 32 just south of the Junction of Rt. 7
3. Feeder 2
4. Rt. 32 toward Brown Ridge
5. There are approximately 28.78 miles of primary line.
6. 196 active consumers.
7. Circuit was cut in 2017
8. Causes of last years outages:

110 Maintenance	2	17%
400 Decay/age of material/equipment	2	17%
431 Tree Failure-off ROW	1	8%
470 Borrower crew cuts tree	1	8%
490 Maintenance, other	1	8%
500 Lightning	1	8%
590 Weather, other	1	8%
600 Small animal/bird	1	8%
770 Consumer's Problem	1	8%
999 Cause unknown	1	8%
9. The 5 year average SAIDI is 104.75
10. The SAIDI for 2023 was 301.59
11. The 5 year average SAIFI is 1.44
12. The SAIFI for 2023 was 1.39
13. Due to an issue from one outage that took an extended period to fix, this feeder needed to be reported.

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## SECTION 5: CIRCUIT REPORTING

Continued

1. Newfoundland (Sub #3)
2. Located on Rt. 32 just south of the Junction of Rt. 7
3. Feeder 4
4. toward Rt. 755 (Ruin)
5. There are approximately 40.57 miles of primary line.
6. 302 active consumers.
7. Circuit was cut in 2017
8. Causes of last years outages:

800 Other	5	20%
110 Maintenance	3	12%
430 Tree failure from overhang or dead tree without ice/snow	3	12%
431 Tree Failure-off ROW	3	12%
500 Lightning	3	12%
300 Material or equipment fault/failure	2	8%
600 Small animal/bird	2	8%
400 Decay/age of material/equipment	1	4%
420 Tree growth	1	4%
770 Consumer's Problem	1	4%
999 Cause unknown	1	4%
9. The 5 year average SAIDI is 185.84
10. The SAIDI for 2023 was 320.12
11. The 5 year average SAIFI is 1.53
12. The SAIFI for 2023 was 1.19
13. This line runs in a cliffy area and despite our regular inspections, had issues we did not foresee. Additional inspections have since taken place to avoid such an incident in the future.

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## SECTION 5: CIRCUIT REPORTING

Continued

1. Pelfrey (Sub #5)
2. Located on US 60 0.8 miles west from the Junction of Grahn Road (Rt. 182)
3. Feeder 1
4. West to West Carter/Rt. 2
5. There are approximately 74.4 miles of primary line.
6. 620 active consumers.
7. Circuit was cut in 2012
8. Causes of last years outages:

590 Weather, other	12	20%
431 Tree Failure-off ROW	12	20%
600 Small animal/bird	10	17%
110 Maintenance	10	17%
999 Cause unknown	3	5%
800 Other	3	5%
300 Material or equipment fault/failure	2	3%
100 Construction	2	3%
700 Customer-caused	1	2%
500 Lightning	1	2%
420 Tree growth	1	2%
400 Decay/age of material/equipment	1	2%
000 Power supply	1	2%
9. The 5 year average SAIDI is 501.97
10. The SAIDI for 2023 was 511.62
11. The 5 year average SAIFI is 3.28
12. The SAIFI for 2023 was 2.14
13. A rather isolated storm that fell outside the MED caused outages on this line. We are and have been trying to work on the off ROW trees in conjunction with the arborist.

## SECTION 6: VEGETATION MANAGEMENT PLAN REVIEW

### INCLUDE CURRENT VEGETATION MANAGEMENT PLAN

Additional pages may be attached as needed.

In 2023 our circuit crew cut 72.58 miles of line on the Warnock feeders 1 and 2. We also cut 55.25 miles in other parts of the system as well as trimming 12,932 trees and cut 21,005 individual trees across the system.

The 2024 spray crew will cover Warnock feeders 1, 3 and 4 and the cutting crews will cut Carter City feeder 2 and 4.

## SECTION 7: UTILITY COMMENTS

We continue to battle the small animals and birds along with off right of way trees. We continue to address both issues and continue to look for solutions that will reduce and, hopefully someday, make these types of outages negatable.