

MAR 31 2016

KENTUCKY PUBLIC SERVICE COMMISSION

Public Service
Commission

Electric Distribution Utility Annual Reliability Report

SECTION 1: CONTACT INFORMATION

UTILITY NAME	Grayson Rural Electric Cooperative Corporation
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SECTION 2: REPORTING YEAR

CALENDAR YEAR OF REPORT	2015
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SECTION 3: MAJOR EVENT DAYS (MED)

	T _{MED}	53.18
FIRST DATE USED TO DETERMINE	T _{MED}	1/1/2015
LAST DATE USED TO DETERMINE	T _{MED}	12/31/2015
NUMBER OF MED IN REPORT YEAR		6

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:	14,969	TOTAL CIRCUITS	42
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Excluding MED

	5 YEAR AVERAGE		REPORTING YEAR
SAIDI	366.5	SAIDI	423.7
SAIFI	2.74	SAIFI	3.13

Including MED

	5 YEAR AVERAGE		REPORTING YEAR
SAIDI	1315.3	SAIDI	1642.0
SAIFI	3.57	SAIFI	3.13

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_{MED}

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SECTION 5: CIRCUIT REPORTING

(CIRCUITS WITH SAIDI AND/OR SAIFI EXCEEDING 5 YEAR AVERAGE)

(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)

1. Airport Road (Sub 12)
2. The sub is located on Rt. 986 (Airport Road)
3. Feeder 1
4. South along Rt. 7 toward Elliott County
5. Approximately 28.1 Primary Miles
6. 199 Active Consumers
7. Circuit has been 'hot spot' cut for years. Records don't indicate a full cut year.
8. Causes of last years outages:

590 Weather, other	44.0%
430 Tree failure from overhang or dead tree without ice/snow	26.0%
110 Maintenance	10.0%
500 Lightning	4.0%
600 Small animal/bird	4.0%
740 Public cuts tree	4.0%
410 Corrosion/abrasion of material/equipment	2.0%
431 Tree Failure-off ROW	2.0%
800 Other	2.0%
999 Cause unknown	2.0%
9. The average SAIDI is 457.34
10. The SAIDI for 2015 was 364.34
11. The average SAIFI is 2.9
12. The SAIFI for 2015 was 3.10
13. See Section 7

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SECTION 5: CIRCUIT REPORTING

Continued

1. Airport Road (Sub 12)
2. The sub is located on Rt. 986 (Airport Road)
3. Feeder 2
4. Follows Airport Road
5. Approximately 77.3 Primary Miles
6. 505 Active Consumers
7. Circuit was partially cut in 2009 and is in progress of a being cut now.
8. Causes of last years outages:

590 Weather, other	39.0%
110 Maintenance	18.3%
431 Tree Failure-off ROW	11.0%
300 Material or equipment fault/failure	9.8%
600 Small animal/bird	7.3%
999 Cause unknown	7.3%
520 Ice, sleet, frost, not trees	4.9%
500 Lightning	1.2%
800 Other	1.2%
9. The average SAIDI is 762.51
10. The SAIDI for 2015 was 1215.12
11. The average SAIFI is 5.07
12. The SAIFI for 2015 was 5.31
13. See Section 7

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SECTION 5: CIRCUIT REPORTING

Continued

1. Airport Road (Sub 12)
2. The sub is located on Rt. 986 (Airport Road)
3. Feeder 3
4. North along Rt. 7 toward Grayson Lake
5. Approximately 19.0 Primary Miles
6. 102 Active Consumers
7. Records indicate this circuit has only been spot cut.
8. Causes of last years outages:

590 Weather, other	43.3%
110 Maintenance	20.0%
300 Material or equipment fault/failure	13.3%
431 Tree Failure-off ROW	6.7%
600 Small animal/bird	6.7%
400 Decay/age of material/equipment	3.3%
800 Other	3.3%
999 Cause unknown	3.3%
9. The average SAIDI is 831.1
10. The SAIDI for 2015 was 1021.44
11. The average SAIFI is 7.49
12. The SAIFI for 2015 was 6.22
13. See Section 7

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SECTION 5: CIRCUIT REPORTING

Continued

1. Argentum Sub (1)
2. Located approx. one half mile north of AA Highway on Rt. 7
3. Feeder 1
4. North along Rt. 7 / Schultz
5. Approximately 56.8 Primary Miles
6. 549 Active Consumers
7. Circuit was last cut in 2011
8. Causes of last years outages:

110 Maintenance	22.1%
590 Weather, other	22.1%
300 Material or equipment fault/failure	20.6%
999 Cause unknown	11.8%
431 Tree Failure-off ROW	5.9%
520 Ice, sleet, frost, not trees	4.4%
600 Small animal/bird	4.4%
500 Lightning	2.9%
100 Construction	1.5%
400 Decay/age of material/equipment	1.5%
410 Corrosion/abrasion of material/equipment	1.5%
510 Wind, not trees	1.5%
9. The average SAIDI is 831.1
10. The SAIDI for 2015 was 1021.44
11. The average SAIFI is 7.49
12. The SAIFI for 2015 was 6.22
13. See Section 7

KENTUCKY PUBLIC SERVICE COMMISSION

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 Suck to Adkins Loop
5. Approximately 41.4 Primary Miles
6. 226 Active Consumers
7. Records indicate circuit has only be 'spot cut'.
8. Causes of last years outages:

590 Weather, other	24.0%
110 Maintenance	14.0%
431 Tree Failure-off ROW	14.0%
600 Small animal/bird	12.0%
300 Material or equipment fault/failure	8.0%
520 Ice, sleet, frost, not trees	6.0%
340 Overload	4.0%
420 Tree growth	4.0%
700 Customer-caused	4.0%
400 Decay/age of material/equipment	2.0%
430 Tree failure from overhang or dead tree without ice/snow	2.0%
500 Lightning	2.0%
800 Other	2.0%
999 Cause unknown	2.0%
9. The average SAIDI is 486.87
10. The SAIDI for 2015 was 915.91
11. The average SAIFI is 3.62
12. The SAIFI for 2015 was 5.79
13. See Section 7

KENTUCKY PUBLIC SERVICE COMMISSION

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 2
4. Follows Rt. 2
5. Approximately 52.4 Primary Miles
6. 282 Active Consumers
7. Records indicate circuit has only be 'spot cut'.
8. Causes of last years outages:

590 Weather, other	42.9%
110 Maintenance	12.2%
431 Tree Failure-off ROW	10.2%
300 Material or equipment fault/failure	6.1%
520 Ice, sleet, frost, not trees	6.1%
600 Small animal/bird	6.1%
410 Corrosion/abrasion of material/equipment	4.1%
100 Construction	2.0%
340 Overload	2.0%
360 Other equipment installation/design	2.0%
420 Tree growth	2.0%
500 Lightning	2.0%
800 Other	2.0%
9. The average SAIDI is 356.65
10. The SAIDI for 2015 was 798.41
11. The average SAIFI is 2.36
12. The SAIFI for 2015 was 3.75
13. See Section 7

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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 3
4. Follows Rt. 474 (Smith Creek)
5. Approximately 27 Primary Miles
6. 149 Active Consumers
7. Records indicate circuit has only be 'spot cut'.
8. Causes of last years outages:

431 Tree Failure-off ROW	23.1%
400 Decay/age of material/equipment	11.5%
590 Weather, other	11.5%
999 Cause unknown	11.5%
300 Material or equipment fault/failure	7.7%
520 Ice, sleet, frost, not trees	7.7%
110 Maintenance	5.8%
340 Overload	3.8%
420 Tree growth	3.8%
430 Tree failure from overhang or dead tree without ice/snow	3.8%
600 Small animal/bird	3.8%
470 Borrower crew cuts tree	1.9%
730 Fire	1.9%
740 Public cuts tree	1.9%
9. The average SAIDI is 335.78
10. The SAIDI for 2015 was 751.17
11. The average SAIFI is 2.57
12. The SAIFI for 2015 was 4.81
13. See Section 7

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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 4
4. Follows Rt. 2 & 7 North
5. Approximately 78 Primary Miles
6. 541 Active Consumers
7. Records indicate circuit has only be 'spot cut'.
8. Causes of last years outages:

590 Weather, other	34.9%
520 Ice, sleet, frost, not trees	15.9%
600 Small animal/bird	15.9%
110 Maintenance	6.3%
431 Tree Failure-off ROW	6.3%
300 Material or equipment fault/failure	4.8%
430 Tree failure from overhang or dead tree without ice/snow	4.8%
100 Construction	1.6%
400 Decay/age of material/equipment	1.6%
410 Corrosion/abrasion of material/equipment	1.6%
500 Lightning	1.6%
730 Fire	1.6%
740 Public cuts tree	1.6%
999 Cause unknown	1.6%
9. The average SAIDI is 211.70
10. The SAIDI for 2015 was 281.89
11. The average SAIFI is 1.86
12. The SAIFI for 2015 was 2.05
13. See Section 7

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SECTION 5: CIRCUIT REPORTING

Continued

1. Elliotville (Sub 7)
2. Located on Fouch Rd off Rt. 32 approx 1.5 miles east of Jct Rt. 504 and Rt. 32
3. Feeder 2
4. Follows Rt. 32 toward Morehead/Triangle Tower
5. Approximately 40 Primary Miles
6. 551 Active Consumers
7. Records indicate circuit has only be 'spot cut'.
8. Causes of last years outages:

110 Maintenance	20.5%
590 Weather, other	15.1%
431 Tree Failure-off ROW	13.7%
600 Small animal/bird	12.3%
999 Cause unknown	12.3%
300 Material or equipment fault/failure	6.8%
500 Lightning	4.1%
400 Decay/age of material/equipment	2.7%
420 Tree growth	2.7%
710 Motor vehicle	2.7%
800 Other	2.7%
490 Maintenance, other	1.4%
520 Ice, sleet, frost, not trees	1.4%
740 Public cuts tree	1.4%
9. The average SAIDI is 405.29
10. The SAIDI for 2015 was 463.00
11. The average SAIFI is 3.17
12. The SAIFI for 2015 was 4.69
13. See Section 7

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SECTION 5: CIRCUIT REPORTING

Continued

1. Low Gap (Sub 12)
2. Junction Rt. 2 and Rt. 1459 (Low Gap Road)
3. Feeder 2
4. Follows Rt. 2 toward Whetstone/River Park
5. Approximately 46.4 Primary Miles
6. 728 Active Consumers
7. Records indicate circuit has only be 'spot cut'.
8. Causes of last years outages:

300 Material or equipment fault/failure	20.5%
590 Weather, other	17.9%
110 Maintenance	12.5%
999 Cause unknown	10.7%
431 Tree Failure-off ROW	8.9%
600 Small animal/bird	6.3%
430 Tree failure from overhang or dead tree without ice/snow	5.4%
520 Ice, sleet, frost, not trees	5.4%
400 Decay/age of material/equipment	4.5%
700 Customer-caused	1.8%
800 Other	1.8%
100 Construction	0.9%
360 Other equipment installation/design	0.9%
420 Tree growth	0.9%
500 Lightning	0.9%
730 Fire	0.9%
9. The average SAIDI is 650.61
10. The SAIDI for 2015 was 890.92
11. The average SAIFI is 4.56
12. The SAIFI for 2015 was 7.25
13. See Section 7

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SECTION 5: CIRCUIT REPORTING

Continued

1. Mazie Sub (Sub 4)
2. Located on Rt. 32 at Mazie
3. Feeder 1
4. Follows Rt. e2 toward Isonville
5. Approximately 42.8 Primary Miles
6. Active Consumers 288
7. Records indicate circuit has only be 'spot cut'.
8. Causes of last years outages:

430 Tree failure from overhang or dead tree without ice/snow	30.8%
600 Small animal/bird	15.4%
431 Tree Failure-off ROW	11.5%
400 Decay/age of material/equipment	7.7%
470 Borrower crew cuts tree	7.7%
590 Weather, other	7.7%
110 Maintenance	3.8%
340 Overload	3.8%
420 Tree growth	3.8%
520 Ice, sleet, frost, not trees	3.8%
700 Customer-caused	3.8%
9. The average SAIDI is 642.77
10. The SAIDI for 2015 was 1152.36
11. The average SAIFI is 4.09
12. The SAIFI for 2015 was 4.83
13. See Section 7

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SECTION 5: CIRCUIT REPORTING

Continued

1. Pelfrey Sub (Sub 5)
2. Located on US 60 at Pleasant Valley
3. Feeder 2
4. Goes East toward Cascade Road/Biggs Hill
5. Approximately 27 Primary Miles
6. Active Consumers 353
7. Records indicate circuit has only be 'spot cut'.
8. Causes of last years outages:

590 Weather, other	24.6%
600 Small animal/bird	18.8%
431 Tree Failure-off ROW	11.6%
110 Maintenance	8.7%
300 Material or equipment fault/failure	8.7%
420 Tree growth	5.8%
500 Lightning	5.8%
340 Overload	4.3%
430 Tree failure from overhang or dead tree without ice/snow	4.3%
520 Ice, sleet, frost, not trees	2.9%
999 Cause unknown	2.9%
190 Other planned	1.4%
9. The average SAIDI is 221.63
10. The SAIDI for 2015 was 238.54
11. The average SAIFI is 2.52
12. The SAIFI for 2015 was 2.47
13. See Section 7

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SECTION 5: CIRCUIT REPORTING

Continued

1. Pactolus Sub (Sub 8)
2. Substation Road off Rt. 1959
3. Feeder 2
4. Follows Along 1947/Sunset Hill/Radio Station
5. Approximately 11 Primary Miles
6. Active Consumers 244
7. Records indicate circuit has only be 'spot cut'.
8. Causes of last years outages:

110 Maintenanc	3%	24.6%
300 Material or	10%	18.8%
340 Overload	3%	11.6%
400 Decay/age	7%	8.7%
410 Corrosion/	3%	8.7%
431 Tree Failu	17%	5.8%
520 Ice, sleet,	3%	5.8%
590 Weather, t	24%	4.3%
600 Small anin	24%	4.3%
800 Other	3%	2.9%
9. The average SAIDI is 283.27
10. The SAIDI for 2015 was 343.34
11. The average SAIFI is 2.35
12. The SAIFI for 2015 was 2.37
13. See Section 7

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SECTION 5: CIRCUIT REPORTING

Continued

1. Sandy Hook Sub (Sub 9)
2. Located on Bank Street in Sandy Hook
3. Feeder 1
4. Follows Rt. 7 South then Rt 173
5. Approximately 90 Primary Miles
6. Active Consumers 635
7. Records indicate circuit has only be 'spot cut'.
8. Causes of last years outages:

999 Cause unknown	23.1%
300 Material or equipment fault/failure	20.0%
590 Weather, other	13.8%
110 Maintenance	10.8%
360 Other equipment installation/design	4.6%
400 Decay/age of material/equipment	4.6%
500 Lightning	4.6%
600 Small animal/bird	4.6%
470 Borrower crew cuts tree	3.1%
100 Construction	1.5%
190 Other planned	1.5%
431 Tree Failure-off ROW	1.5%
610 Large animal	1.5%
700 Customer-caused	1.5%
730 Fire	1.5%
800 Other	1.5%
9. The average SAIDI is 198.79
10. The SAIDI for 2015 was 409.40
11. The average SAIFI is 1.96
12. The SAIFI for 2015 was 3.12
13. See Section 7

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SECTION 5: CIRCUIT REPORTING

Continued

1. Sandy Hook Sub (Sub 9)
2. Located on Bank Street in Sandy Hook
3. Feeder 3
4. Follows Rt. 32 East toward Isonville
5. Approximately 75 Primary Miles
6. Active Consumers 430
7. Records indicate circuit has only be 'spot cut'.
8. Causes of last years outages:

999 Cause unknown	23.1%
300 Material or equipment fault/failure	20.0%
590 Weather, other	13.8%
110 Maintenance	10.8%
360 Other equipment installation/design	4.6%
400 Decay/age of material/equipment	4.6%
500 Lightning	4.6%
600 Small animal/bird	4.6%
470 Borrower crew cuts tree	3.1%
100 Construction	1.5%
190 Other planned	1.5%
431 Tree Failure-off ROW	1.5%
610 Large animal	1.5%
700 Customer-caused	1.5%
730 Fire	1.5%
800 Other	1.5%
9. The average SAIDI is 697.06
10. The SAIDI for 2015 was 792.23
11. The average SAIFI is 6.02
12. The SAIFI for 2015 was 7.14
13. See Section 7

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SECTION 5: CIRCUIT REPORTING

Continued

1. Warnock 2 (Sub 6)
2. Located about 1/2 mile up Hoods Run from Rt. 2
3. Feeder 2
4. Rt. 2 to Greenbo
5. Approximately 3.7 Primary Miles
6. Active Consumers 18
7. Records indicate circuit has only be 'spot cut'.
8. Causes of last years outages:

590 Weather, other	80.0%
300 Material or equipment fault/failure	20.0%
9. The average SAIDI is 11.69
10. The SAIDI for 2015 was 13.32
11. The average SAIFI is 0.2
12. The SAIFI for 2015 was 0.28
13. See Section 7

KENTUCKY PUBLIC SERVICE COMMISSION

SECTION 5: CIRCUIT REPORTING

Continued

1. Warnock Sub (Sub 6)
2. Located about 1/2 mile up Hoods Run from Rt. 2
3. Feeder 4
4. Rt. 2 & 7 South toward Lost Creek
5. Approximately 90 Primary Miles
6. Active Consumers 512
7. Records indicate circuit has only be 'spot cut'.
8. Causes of last years outages:

110 Maintenance	25.5%
520 Ice, sleet, frost, not trees	20.2%
590 Weather, other	10.6%
999 Cause unknown	9.6%
431 Tree Failure-off ROW	7.4%
300 Material or equipment fault/failure	5.3%
430 Tree failure from overhang or dead tree without ice/snow	5.3%
400 Decay/age of material/equipment	4.3%
600 Small animal/bird	3.2%
500 Lightning	2.1%
700 Customer-caused	2.1%
100 Construction	1.1%
420 Tree growth	1.1%
730 Fire	1.1%
800 Other	1.1%
9. The average SAIDI is 401.51
10. The SAIDI for 2015 was 572.65
11. The average SAIFI is 2.82
12. The SAIFI for 2015 was 3.56
13. See Section 7

INCLUDE CURRENT VEGETATION MANAGEMENT PLAN

Additional pages may be attached as needed.

In 2015 we cleared 109 miles through our circuit cutting program. We also re-cleared 149 miles, bush hogged 30 miles, sprayed 55 miles of overhead lines. We removed 12,364 individual trees and trimmed 7059 yard trees.

Our plans for 2016 include cutting three full circuits: Newfoundland Feeders 1 & 3 and Elliottville Feeder 3. We will also spray Airport Road Feeder #1, Carter City Feeder #3 and Newfoundland Feeder #1.

SECTION 7: UTILITY COMMENTS

After analyzing our data, we believe our indices are not a true reflection of the system outage data. We have improved the accuracy of our outage data somewhat over the past year. But, beginning this year we are undertaking a GIS project that will create a complete new set of OMS maps allowing for much more accurate indices in the future. We will also continue to train and oversee the accuracy of the data being entered.