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COMMISSION



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April 13, 2018

Ms. Gwen R. Pinson
Public Service Commission
P.O. Box 615
211 Sower Boulevard
Frankfort, Kentucky 40602-0615

RE: Administrative Case No. 2011-00450: Annual Distribution Reliability Report

Dear Ms. Pinson:

Please find enclosed a paper copy of the 2017 electric distribution utility annual reliability report for Nolin RECC, as well as a copy of Nolin RECC's vegetation management program. Additionally, the enclosed disk contains electronic copies of these files.

If you have any questions regarding the enclosed information, please contact me at (270) 765-6153 ext 3383 or dwoosley@nolinrecc.com.

Regards,

A handwritten signature in blue ink that reads "Devon C. Woosley".

Devon C. Woosley
System Engineer/ SCADA Administrator
Nolin Rural Electric Cooperative Corporation

Enclosures

Kentucky Public Service Commission
Electric Distribution Utility Annual Reliability Report

SECTION 1: CONTACT INFORMATION

UTILITY NAME:	Nolin RECC
REPORT PREPARED BY:	Devon Woosley
E-MAIL ADDRESS OF PREPARER:	dwoosley@nolinrecc.com
PHONE NUMBER OF PREPARER:	(270) 765-6153 ext 3383

SECTION 2: REPORTING YEAR

CALENDAR YEAR OF REPORT:	2017
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SECTION 3: MAJOR EVENT DAYS (MED)

TMED:	7.51
FIRST DATE USED TO DETERMINE TMED:	1/1/2012
LAST DATE USED TO DETERMINE TMED:	1/1/2016
NUMBER OF MED IN REPORT YEAR:	0

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 accumulated.

SECTION 4: SYSTEM RELIABILITY INFORMATION AND RESULTS

System-wide Information

TOTAL CUSTOMERS: 35,203 TOTAL CIRCUITS: 84

Excluding MED

5-YEAR AVERAGE (2012 - 2016)	REPORTING YEAR
SAIDI: <u>81.012</u>	SAIDI: <u>47.595</u>
SAIFI: <u>0.896</u>	SAIFI: <u>0.733</u>

Including MED

5-YEAR AVERAGE (2012 - 2016)	REPORTING YEAR
SAIDI: <u>122.189</u>	SAIDI: <u>47.595</u>
SAIFI: <u>1.082</u>	SAIFI: <u>0.733</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 TMED.

SECTION 5: CIRCUIT REPORTING
(CIRCUITS WITH SAIDI AND/OR SAIFI EXCEEDING 5 YEAR AVERAGE)
(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)

CIRCUIT #1:	HODGENVILLE - 1
1. SUBSTATION NAME AND NUMBER:	HODGENVILLE 4
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN):	LARUE - HWY 31E (NEAR WADDELL RD)- HODGENVILLE
3. CIRCUIT NAME AND NUMBER:	HODGENVILLE - 1
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA):	HODGENVILLE, KY - LEAFDALE RD, SALEM CHURCH RD
5. TOTAL CIRCUIT LENGTH (MILES):	59.47
6. CUSTOMER COUNT FOR THIS CIRCUIT:	651
7. DATE OF LAST CIRCUIT TRIM (MM/YY):	12/14

8. LIST OF OUTAGE(S):	OUTAGE MINUTES (% OF TOTAL OUTAGE MINUTES):	
	CONTRACTOR <u>0.00%</u>	PUBLIC ACCIDENTS, OTHER <u>0.60%</u>
	EQUIPMENT / MATERIAL FAILURE <u>50.63%</u>	SMALL ANIMALS OR BIRDS <u>3.46%</u>
	LIGHTNING <u>0.98%</u>	TREES <u>16.59%</u>
	NO CAUSE CODE <u>0.10%</u>	WIND, HIGH WIND <u>24.87%</u>
	PLANNED OUTAGE <u>2.76%</u>	WEATHER <u>0.00%</u>
	POWER SUPPLIER <u>0.00%</u>	

9. CIRCUIT 5 YEAR AVERAGE (SAIDI):	44.94
10. REPORTING YEAR (SAIDI):	182.74
11. CIRCUIT 5 YEAR AVERAGE (SAIFI):	0.56
12. REPORTING YEAR (SAIFI):	3.25

13. LIST OF CORRECTIVE ACTION, IF ANY, TAKEN OR TO BE TAKEN

Feeder inspection to identify equipment for maintenance.

SECTION 5: CIRCUIT REPORTING
(CIRCUITS WITH SAIDI AND/OR SAIFI EXCEEDING 5 YEAR AVERAGE)
(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)

CIRCUIT #2:	MAGNOLIA - 1
1. SUBSTATION NAME AND NUMBER:	MAGNOLIA 5
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN):	LARUE - NEW JACKSON HWY - MAGNOLIA
3. CIRCUIT NAME AND NUMBER:	MAGNOLIA - 1
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA):	MAGNOLIA, KY- JE JONES RD, MT SHERMAN, BAILEY X-ROADS, MT TABOR RD, HWY 210, HWY 61
5. TOTAL CIRCUIT LENGTH (MILES):	107.17
6. CUSTOMER COUNT FOR THIS CIRCUIT:	956
7. DATE OF LAST CIRCUIT TRIM (MM/YY):	01/16

8. LIST OF OUTAGE(S):	OUTAGE MINUTES (% OF TOTAL OUTAGE MINUTES):	
	CONTRACTOR	PUBLIC ACCIDENTS, OTHER
	EQUIPMENT / MATERIAL FAILURE	SMALL ANIMALS OR BIRDS
	LIGHTNING	TREES
	NO CAUSE CODE	WIND, HIGH WIND
	PLANNED OUTAGE	WEATHER
	POWER SUPPLIER	
	0.00%	1.78%
	3.13%	0.00%
	6.03%	56.09%
	0.01%	0.00%
	32.97%	0.00%
	0.00%	

9. CIRCUIT 5 YEAR AVERAGE (SAIDI):	112.16
10. REPORTING YEAR (SAIDI):	136.21
11. CIRCUIT 5 YEAR AVERAGE (SAIFI):	1.18
12. REPORTING YEAR (SAIFI):	2.22

13. LIST OF CORRECTIVE ACTION, IF ANY,
TAKEN OR TO BE TAKEN

Review ROW conditions and vegetation management cycle.

SECTION 5: CIRCUIT REPORTING
(CIRCUITS WITH SAIDI AND/OR SAIFI EXCEEDING 5 YEAR AVERAGE)
(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)

CIRCUIT #3:	MAGNOLIA - 4
1. SUBSTATION NAME AND NUMBER:	MAGNOLIA 5
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN):	LARUE - NEW JACKSON HWY - MAGNOLIA
3. CIRCUIT NAME AND NUMBER:	MAGNOLIA - 4
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA):	TANNER, KY - OAK HILL RD, NEW JACKSON HWY, HAWKINS RD, SONORA RD, SIBERIA RD, MURRIELTOWN RD
5. TOTAL CIRCUIT LENGTH (MILES):	76.86
6. CUSTOMER COUNT FOR THIS CIRCUIT:	486
7. DATE OF LAST CIRCUIT TRIM (MM/YY):	08/15

8. LIST OF OUTAGE(S):	OUTAGE MINUTES (% OF TOTAL OUTAGE MINUTES):	
	CONTRACTOR <u>0.00%</u>	PUBLIC ACCIDENTS, OTHER <u>0.00%</u>
	EQUIPMENT / MATERIAL FAILURE <u>21.71%</u>	SMALL ANIMALS OR BIRDS <u>44.46%</u>
	LIGHTNING <u>11.98%</u>	TREES <u>2.93%</u>
	NO CAUSE CODE <u>16.83%</u>	WIND, HIGH WIND <u>0.00%</u>
	PLANNED OUTAGE <u>2.10%</u>	WEATHER <u>0.00%</u>
	POWER SUPPLIER <u>0.00%</u>	

9. CIRCUIT 5 YEAR AVERAGE (SAIDI):	62.16
10. REPORTING YEAR (SAIDI):	66.65
11. CIRCUIT 5 YEAR AVERAGE (SAIFI):	1.14
12. REPORTING YEAR (SAIFI):	0.70

13. LIST OF CORRECTIVE ACTION, IF ANY, TAKEN OR TO BE TAKEN	Feeder inspection will identify areas to mitigate animal caused outages.
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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)

CIRCUIT #4:	STEPHENSBURG - 5
1. SUBSTATION NAME AND NUMBER:	STEPHENSBURG 6
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN):	HARDIN-LEITCHFIELD RD-STEPHENSBURG
3. CIRCUIT NAME AND NUMBER:	STEPHENSBURG - 5
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA):	STEPHENSBURG, KY - EASTVIEW RD, NACKE PIKE RD
5. TOTAL CIRCUIT LENGTH (MILES):	43.39
6. CUSTOMER COUNT FOR THIS CIRCUIT:	308
7. DATE OF LAST CIRCUIT TRIM (MM/YY):	12/14

8. LIST OF OUTAGE(S):	OUTAGE MINUTES (% OF TOTAL OUTAGE MINUTES):	
	CONTRACTOR	0.00%
	PUBLIC ACCIDENTS, OTHER	0.00%
	EQUIPMENT / MATERIAL FAILURE	8.38%
	SMALL ANIMALS OR BIRDS	0.43%
	LIGHTNING	9.12%
	TREES	9.26%
	NO CAUSE CODE	0.60%
	WIND, HIGH WIND	0.00%
	PLANNED OUTAGE	7.46%
	WEATHER	64.74%
	POWER SUPPLIER	0.00%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI):	97.04
10. REPORTING YEAR (SAIDI):	103.92
11. CIRCUIT 5 YEAR AVERAGE (SAIFI):	1.30
12. REPORTING YEAR (SAIFI):	1.36

13. LIST OF CORRECTIVE ACTION, IF ANY, TAKEN OR TO BE TAKEN

Review sectionalizing on feeder to minimize number of customers impacted by equipment operations.

SECTION 5: CIRCUIT REPORTING
(CIRCUITS WITH SAIDI AND/OR SAIFI EXCEEDING 5 YEAR AVERAGE)
(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)

CIRCUIT #5:	VERTREES - 5
1. SUBSTATION NAME AND NUMBER:	VERTREES 8
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN):	HARDIN - SALT RIVER RD. - VERTREES
3. CIRCUIT NAME AND NUMBER:	VERTREES - 5
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA):	EAST VIEW, KY - SALT RIVER RD, LAUREL RIDGE RD, SONORA HARDIN SPRINGS RD, RIDGE TOP LN
5. TOTAL CIRCUIT LENGTH (MILES):	71.88
6. CUSTOMER COUNT FOR THIS CIRCUIT:	465
7. DATE OF LAST CIRCUIT TRIM (MM/YY):	03/16

8. LIST OF OUTAGE(S):	OUTAGE MINUTES (% OF TOTAL OUTAGE MINUTES):	
	CONTRACTOR	PUBLIC ACCIDENTS, OTHER
	4.92%	5.54%
	EQUIPMENT / MATERIAL FAILURE	SMALL ANIMALS OR BIRDS
	72.33%	0.00%
	LIGHTNING	TREES
	0.26%	9.88%
	NO CAUSE CODE	WIND, HIGH WIND
	4.68%	0.00%
	PLANNED OUTAGE	WEATHER
	2.40%	0.00%
	POWER SUPPLIER	
	0.00%	

9. CIRCUIT 5 YEAR AVERAGE (SAIDI):	203.81
10. REPORTING YEAR (SAIDI):	226.70
11. CIRCUIT 5 YEAR AVERAGE (SAIFI):	1.27
12. REPORTING YEAR (SAIFI):	2.59

13. LIST OF CORRECTIVE ACTION, IF ANY, TAKEN OR TO BE TAKEN

Feeder inspection to identify equipment for maintenance.

SECTION 5: CIRCUIT REPORTING
(CIRCUITS WITH SAIDI AND/OR SAIFI EXCEEDING 5 YEAR AVERAGE)
(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)

CIRCUIT #6:	VINE GROVE - 2
1. SUBSTATION NAME AND NUMBER:	VINE GROVE 9
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN):	HARDIN - ROGERSVILLE RD. - VINE GROVE
3. CIRCUIT NAME AND NUMBER:	VINE GROVE - 2
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA):	VINE GROVE, KY - TO HWY 313 & COMMERCE DR
5. TOTAL CIRCUIT LENGTH (MILES):	2.75
6. CUSTOMER COUNT FOR THIS CIRCUIT:	91
7. DATE OF LAST CIRCUIT TRIM (MM/YY):	08/17

8. LIST OF OUTAGE(S):	OUTAGE MINUTES (% OF TOTAL OUTAGE MINUTES):	
	CONTRACTOR	0.00%
	PUBLIC ACCIDENTS, OTHER	0.00%
	EQUIPMENT / MATERIAL FAILURE	0.00%
	SMALL ANIMALS OR BIRDS	0.00%
	LIGHTNING	0.00%
	TREES	100.00%
	NO CAUSE CODE	0.00%
	WIND, HIGH WIND	0.00%
	PLANNED OUTAGE	0.00%
	WEATHER	0.00%
	POWER SUPPLIER	0.00%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI):	48.46
10. REPORTING YEAR (SAIDI):	66.77
11. CIRCUIT 5 YEAR AVERAGE (SAIFI):	0.67
12. REPORTING YEAR (SAIFI):	0.37

13. LIST OF CORRECTIVE ACTION, IF ANY, TAKEN OR TO BE TAKEN

Circuit was trimmed recently to remedy tree related outages. Nolin RECC to monitor this feeder to make sure ROW issues have been corrected.

SECTION 5: CIRCUIT REPORTING
(CIRCUITS WITH SAIDI AND/OR SAIFI EXCEEDING 5 YEAR AVERAGE)
(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)

CIRCUIT #7:	RADCLIFF - 2
1. SUBSTATION NAME AND NUMBER:	RADCLIFF 10
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN):	HARDIN - HILL ST (NEAR W. LINCOLN TRAIL BLVD) - RADCLIFF
3. CIRCUIT NAME AND NUMBER:	RADCLIFF - 2
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA):	VINE GROVE, KY - KNOX AVE, WEST SIDE OF SAFARI TRL, RED HILL RD TO GERONIMO CIR, DITTO LN
5. TOTAL CIRCUIT LENGTH (MILES):	19.56
6. CUSTOMER COUNT FOR THIS CIRCUIT:	421
7. DATE OF LAST CIRCUIT TRIM (MM/YY):	04/13

8. LIST OF OUTAGE(S):	OUTAGE MINUTES (% OF TOTAL OUTAGE MINUTES):	
	CONTRACTOR	0.00%
	PUBLIC ACCIDENTS, OTHER	0.00%
EQUIPMENT / MATERIAL FAILURE	96.07%	SMALL ANIMALS OR BIRDS
	LIGHTNING	1.71%
	NO CAUSE CODE	0.00%
	PLANNED OUTAGE	1.19%
	POWER SUPPLIER	0.00%
		TREES
		1.02%
		WIND, HIGH WIND
		0.00%
		WEATHER
		0.00%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI):	56.17
10. REPORTING YEAR (SAIDI):	121.57
11. CIRCUIT 5 YEAR AVERAGE (SAIFI):	0.86
12. REPORTING YEAR (SAIFI):	1.07

13. LIST OF CORRECTIVE ACTION, IF ANY, TAKEN OR TO BE TAKEN

Feeder inspection to identify equipment for maintenance.

SECTION 5: CIRCUIT REPORTING
(CIRCUITS WITH SAIDI AND/OR SAIFI EXCEEDING 5 YEAR AVERAGE)
(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)

CIRCUIT #8:	RADCLIFF - 3
1. SUBSTATION NAME AND NUMBER:	RADCLIFF 10
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN):	HARDIN - HILL ST (NEAR W. LINCOLN TRAIL BLVD) - RADCLIFF
3. CIRCUIT NAME AND NUMBER:	RADCLIFF - 3
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA):	RADCLIFF, KY - RED HILL RD NORTH OF GERONIMO CIR, HILL ST NORTH OF SUBSTATION, EAST SIDE OF SAFARI TRL, INOVATION
5. TOTAL CIRCUIT LENGTH (MILES):	19.79
6. CUSTOMER COUNT FOR THIS CIRCUIT:	1194
7. DATE OF LAST CIRCUIT TRIM (MM/YY):	01/13

8. LIST OF OUTAGE(S):	OUTAGE MINUTES (% OF TOTAL OUTAGE MINUTES):	
	CONTRACTOR	0.00%
	PUBLIC ACCIDENTS, OTHER	1.50%
EQUIPMENT / MATERIAL FAILURE	1.56%	SMALL ANIMALS OR BIRDS
	3.54%	2.24%
LIGHTNING	3.54%	TREES
	0.00%	63.03%
NO CAUSE CODE	0.00%	WIND, HIGH WIND
	28.13%	0.00%
PLANNED OUTAGE	28.13%	WEATHER
	0.00%	0.00%
POWER SUPPLIER	0.00%	

9. CIRCUIT 5 YEAR AVERAGE (SAIDI):	103.00
10. REPORTING YEAR (SAIDI):	82.17
11. CIRCUIT 5 YEAR AVERAGE (SAIFI):	0.91
12. REPORTING YEAR (SAIFI):	1.39

13. LIST OF CORRECTIVE ACTION, IF ANY, TAKEN OR TO BE TAKEN

Review ROW conditions and vegetation management cycle.

SECTION 5: CIRCUIT REPORTING
(CIRCUITS WITH SAIDI AND/OR SAIFI EXCEEDING 5 YEAR AVERAGE)
(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)

CIRCUIT #9:	TUNNEL HILL 1 - 2
1. SUBSTATION NAME AND NUMBER:	TUNNEL HILL 1 11
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN):	HARDIN - TUNNEL HILL RD. - E-TOWN
3. CIRCUIT NAME AND NUMBER:	TUNNEL HILL 1 - 2
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA):	ELIZABETHTOWN, KY - TUNNEL HILL RD, RING RD, BON AIRE DR
5. TOTAL CIRCUIT LENGTH (MILES):	7.42
6. CUSTOMER COUNT FOR THIS CIRCUIT:	714
7. DATE OF LAST CIRCUIT TRIM (MM/YY):	04/13

8. LIST OF OUTAGE(S):	OUTAGE MINUTES (% OF TOTAL OUTAGE MINUTES):	
	CONTRACTOR	0.00%
	PUBLIC ACCIDENTS, OTHER	95.68%
	EQUIPMENT / MATERIAL FAILURE	3.10%
	SMALL ANIMALS OR BIRDS	0.00%
	LIGHTNING	0.00%
	TREES	0.00%
	NO CAUSE CODE	0.05%
	WIND, HIGH WIND	0.00%
	PLANNED OUTAGE	1.17%
	WEATHER	0.00%
	POWER SUPPLIER	0.00%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI):	33.06
10. REPORTING YEAR (SAIDI):	33.98
11. CIRCUIT 5 YEAR AVERAGE (SAIFI):	0.24
12. REPORTING YEAR (SAIFI):	0.15

13. LIST OF CORRECTIVE ACTION, IF ANY, TAKEN OR TO BE TAKEN

Feeder inspection will identify areas for correction.

SECTION 5: CIRCUIT REPORTING
(CIRCUITS WITH SAIDI AND/OR SAIFI EXCEEDING 5 YEAR AVERAGE)
(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)

CIRCUIT #10:	SMITHERSVILLE 1 - 3
1. SUBSTATION NAME AND NUMBER:	SMITHERSVILLE 1 13
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN):	HARDIN -S. WILSON & W.A. JENKINS RD. - E-TOWN
3. CIRCUIT NAME AND NUMBER:	SMITHERSVILLE 1 - 3
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA):	RINEYVILLE, KY - HWY 447, DECKARD SCHOOL RD
5. TOTAL CIRCUIT LENGTH (MILES):	29.23
6. CUSTOMER COUNT FOR THIS CIRCUIT:	827
7. DATE OF LAST CIRCUIT TRIM (MM/YY):	10/14

8. LIST OF OUTAGE(S):	OUTAGE MINUTES (% OF TOTAL OUTAGE MINUTES):		
CONTRACTOR	0.00%	PUBLIC ACCIDENTS, OTHER	0.23%
EQUIPMENT / MATERIAL FAILURE	36.80%	SMALL ANIMALS OR BIRDS	8.06%
LIGHTNING	11.42%	TREES	39.69%
NO CAUSE CODE	0.01%	WIND, HIGH WIND	0.00%
PLANNED OUTAGE	3.79%	WEATHER	0.00%
POWER SUPPLIER	0.00%		

9. CIRCUIT 5 YEAR AVERAGE (SAIDI):	69.10
10. REPORTING YEAR (SAIDI):	73.93
11. CIRCUIT 5 YEAR AVERAGE (SAIFI):	0.80
12. REPORTING YEAR (SAIFI):	1.52

13. LIST OF CORRECTIVE ACTION, IF ANY, TAKEN OR TO BE TAKEN	Feeder inspection to identify equipment for maintenance. Review ROW conditions and vegetation management cycle.
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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)

CIRCUIT #11:	SOUTH BOUNDARY - 2
1. SUBSTATION NAME AND NUMBER:	SOUTH BOUNDARY 14
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN):	HARDIN - HWY 313 - RADCLIFF
3. CIRCUIT NAME AND NUMBER:	SOUTH BOUNDARY - 2
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA):	RADCLIFF, KY - SOUTH BOUNDARY RD (N OF SUB) , WAGON WHEEL TR , LIBERTY ST
5. TOTAL CIRCUIT LENGTH (MILES):	4.68
6. CUSTOMER COUNT FOR THIS CIRCUIT:	508
7. DATE OF LAST CIRCUIT TRIM (MM/YY):	04/15

8. LIST OF OUTAGE(S):	OUTAGE MINUTES (% OF TOTAL OUTAGE MINUTES):	
	CONTRACTOR	PUBLIC ACCIDENTS, OTHER
	EQUIPMENT / MATERIAL FAILURE	SMALL ANIMALS OR BIRDS
	LIGHTNING	TREES
	NO CAUSE CODE	WIND, HIGH WIND
	PLANNED OUTAGE	WEATHER
	POWER SUPPLIER	
	0.00%	0.00%
	0.00%	0.00%
	95.48%	0.00%
	2.49%	0.00%
	2.02%	0.00%
	0.00%	

9. CIRCUIT 5 YEAR AVERAGE (SAIDI):	15.66
10. REPORTING YEAR (SAIDI):	27.43
11. CIRCUIT 5 YEAR AVERAGE (SAIFI):	0.21
12. REPORTING YEAR (SAIFI):	0.17

13. LIST OF CORRECTIVE ACTION, IF ANY, TAKEN OR TO BE TAKEN	Identify new surge arrestor placement opportunities. Review overvoltage protection.
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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)

CIRCUIT #12:	SOUTH BOUNDARY - 3
1. SUBSTATION NAME AND NUMBER:	SOUTH BOUNDARY 14
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN):	HARDIN - HWY 313 - RADCLIFF
3. CIRCUIT NAME AND NUMBER:	SOUTH BOUNDARY - 3
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA):	RADCLIFF, KY - SOUTH BOUNDARY RD (N OF SUB) , AUSTIN DR , SHELBY AVE
5. TOTAL CIRCUIT LENGTH (MILES):	16.17
6. CUSTOMER COUNT FOR THIS CIRCUIT:	731
7. DATE OF LAST CIRCUIT TRIM (MM/YY):	04/15

8. LIST OF OUTAGE(S):	OUTAGE MINUTES (% OF TOTAL OUTAGE MINUTES):	
	CONTRACTOR	PUBLIC ACCIDENTS, OTHER
	<u>0.00%</u>	<u>1.63%</u>
	EQUIPMENT / MATERIAL FAILURE	SMALL ANIMALS OR BIRDS
	<u>80.60%</u>	<u>0.00%</u>
	LIGHTNING	TREES
	<u>6.10%</u>	<u>8.27%</u>
	NO CAUSE CODE	WIND, HIGH WIND
	<u>0.00%</u>	<u>0.00%</u>
	PLANNED OUTAGE	WEATHER
	<u>3.40%</u>	<u>0.00%</u>
	POWER SUPPLIER	<u>0.00%</u>

9. CIRCUIT 5 YEAR AVERAGE (SAIDI):	32.02
10. REPORTING YEAR (SAIDI):	95.24
11. CIRCUIT 5 YEAR AVERAGE (SAIFI):	0.54
12. REPORTING YEAR (SAIFI):	1.35

13. LIST OF CORRECTIVE ACTION, IF ANY, TAKEN OR TO BE TAKEN

Feeder inspection to identify equipment for maintenance.

SECTION 5: CIRCUIT REPORTING
(CIRCUITS WITH SAIDI AND/OR SAIFI EXCEEDING 5 YEAR AVERAGE)
(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)

CIRCUIT #13:	SOUTH BOUNDARY - 5
1. SUBSTATION NAME AND NUMBER:	SOUTH BOUNDARY 14
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN):	HARDIN - HWY 313 - RADCLIFF
3. CIRCUIT NAME AND NUMBER:	SOUTH BOUNDARY - 5
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA):	ELIZABETHTOWN, KY - BATTLE TRAINING RD
5. TOTAL CIRCUIT LENGTH (MILES):	13.79
6. CUSTOMER COUNT FOR THIS CIRCUIT:	232
7. DATE OF LAST CIRCUIT TRIM (MM/YY):	01/15

8. LIST OF OUTAGE(S):	OUTAGE MINUTES (% OF TOTAL OUTAGE MINUTES):		
CONTRACTOR	0.00%	PUBLIC ACCIDENTS, OTHER	0.00%
EQUIPMENT / MATERIAL FAILURE	3.79%	SMALL ANIMALS OR BIRDS	4.80%
LIGHTNING	2.18%	TREES	50.75%
NO CAUSE CODE	0.00%	WIND, HIGH WIND	0.00%
PLANNED OUTAGE	38.48%	WEATHER	0.00%
POWER SUPPLIER	0.00%		

9. CIRCUIT 5 YEAR AVERAGE (SAIDI):	63.97
10. REPORTING YEAR (SAIDI):	48.31
11. CIRCUIT 5 YEAR AVERAGE (SAIFI):	1.03
12. REPORTING YEAR (SAIFI):	1.20

13. LIST OF CORRECTIVE ACTION, IF ANY, TAKEN OR TO BE TAKEN

Review ROW conditions and vegetation management cycle.

SECTION 5: CIRCUIT REPORTING
(CIRCUITS WITH SAIDI AND/OR SAIFI EXCEEDING 5 YEAR AVERAGE)
(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)

CIRCUIT #14:	WILLIAMS - 1
1. SUBSTATION NAME AND NUMBER:	WILLIAMS 16
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN):	HARDIN - BARDSTOWN RD. - E-TOWN
3. CIRCUIT NAME AND NUMBER:	WILLIAMS - 1
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA):	ELIZABETHTOWN, KY - BARDSTOWN RD, LINCOLN RD
5. TOTAL CIRCUIT LENGTH (MILES):	20.97
6. CUSTOMER COUNT FOR THIS CIRCUIT:	563
7. DATE OF LAST CIRCUIT TRIM (MM/YY):	03/17

8. LIST OF OUTAGE(S):	OUTAGE MINUTES (% OF TOTAL OUTAGE MINUTES):	
	CONTRACTOR	0.00%
	PUBLIC ACCIDENTS, OTHER	0.00%
	EQUIPMENT / MATERIAL FAILURE	1.15%
	SMALL ANIMALS OR BIRDS	0.00%
	LIGHTNING	1.93%
	TREES	6.35%
	NO CAUSE CODE	0.02%
	WIND, HIGH WIND	10.54%
	PLANNED OUTAGE	4.34%
	WEATHER	0.00%
	POWER SUPPLIER	75.67%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI):	80.50
10. REPORTING YEAR (SAIDI):	97.84
11. CIRCUIT 5 YEAR AVERAGE (SAIFI):	0.56
12. REPORTING YEAR (SAIFI):	1.86

13. LIST OF CORRECTIVE ACTION, IF ANY, TAKEN OR TO BE TAKEN	<p>Nolin RECC to work with EKPC to review remedies for transmission/substation reliability issues.</p>
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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)

CIRCUIT #15:	WILLIAMS - 2
1. SUBSTATION NAME AND NUMBER:	WILLIAMS 16
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN):	HARDIN - BARDSTOWN RD. - E-TOWN
3. CIRCUIT NAME AND NUMBER:	WILLIAMS - 2
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA):	ELIZABETHTOWN, KY - TO BARDSTOWN RD
5. TOTAL CIRCUIT LENGTH (MILES):	0.21
6. CUSTOMER COUNT FOR THIS CIRCUIT:	1
7. DATE OF LAST CIRCUIT TRIM (MM/YY):	03/17

8. LIST OF OUTAGE(S):	OUTAGE MINUTES (% OF TOTAL OUTAGE MINUTES):	
	CONTRACTOR <u>0.00%</u>	PUBLIC ACCIDENTS, OTHER <u>0.00%</u>
	EQUIPMENT / MATERIAL FAILURE <u>0.00%</u>	SMALL ANIMALS OR BIRDS <u>0.00%</u>
	LIGHTNING <u>0.00%</u>	TREES <u>0.00%</u>
	NO CAUSE CODE <u>0.00%</u>	WIND, HIGH WIND <u>0.00%</u>
	PLANNED OUTAGE <u>0.00%</u>	WEATHER <u>0.00%</u>
	POWER SUPPLIER <u>100.00%</u>	

9. CIRCUIT 5 YEAR AVERAGE (SAIDI):	56.40
10. REPORTING YEAR (SAIDI):	6.60
11. CIRCUIT 5 YEAR AVERAGE (SAIFI):	0.20
12. REPORTING YEAR (SAIFI):	1.00

13. LIST OF CORRECTIVE ACTION, IF ANY, TAKEN OR TO BE TAKEN

Nolin RECC to work with EKPC to review remedies for transmission/substation reliability issues.

SECTION 5: CIRCUIT REPORTING
(CIRCUITS WITH SAIDI AND/OR SAIFI EXCEEDING 5 YEAR AVERAGE)
(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)

CIRCUIT #16:	WILLIAMS - 4
1. SUBSTATION NAME AND NUMBER:	WILLIAMS 16
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN):	HARDIN - BARDSTOWN RD. - E-TOWN
3. CIRCUIT NAME AND NUMBER:	WILLIAMS - 4
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA):	ELIZABETHTOWN, KY - BARDSTOWN RD, N MULBERRY ST EAST OF I-65, BETH CT,
5. TOTAL CIRCUIT LENGTH (MILES):	13.33
6. CUSTOMER COUNT FOR THIS CIRCUIT:	450
7. DATE OF LAST CIRCUIT TRIM (MM/YY):	03/17

8. LIST OF OUTAGE(S):	OUTAGE MINUTES (% OF TOTAL OUTAGE MINUTES):	
	CONTRACTOR <u>0.11%</u>	PUBLIC ACCIDENTS, OTHER <u>83.01%</u>
	EQUIPMENT / MATERIAL FAILURE <u>0.00%</u>	SMALL ANIMALS OR BIRDS <u>0.00%</u>
	LIGHTNING <u>0.80%</u>	TREES <u>0.00%</u>
	NO CAUSE CODE <u>0.00%</u>	WIND, HIGH WIND <u>12.43%</u>
	PLANNED OUTAGE <u>3.65%</u>	WEATHER <u>0.00%</u>
	POWER SUPPLIER <u>0.00%</u>	

9. CIRCUIT 5 YEAR AVERAGE (SAIDI):	80.70
10. REPORTING YEAR (SAIDI):	79.74
11. CIRCUIT 5 YEAR AVERAGE (SAIFI):	0.51
12. REPORTING YEAR (SAIFI):	1.12

13. LIST OF CORRECTIVE ACTION, IF ANY, TAKEN OR TO BE TAKEN

Feeder inspection will identify areas for correction.

SECTION 5: CIRCUIT REPORTING
(CIRCUITS WITH SAIDI AND/OR SAIFI EXCEEDING 5 YEAR AVERAGE)
(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)

CIRCUIT #17:	SMITHERSVILLE 2 - 4
1. SUBSTATION NAME AND NUMBER:	SMITHERSVILLE 2 17
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN):	HARDIN -S. WILSON & W.A. JENKINS RD. - E-TOWN
3. CIRCUIT NAME AND NUMBER:	SMITHERSVILLE 2 - 4
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA):	E-TOWN, KY - S WILSON RD, PINE VALLEY DR, HUTCHERSON RD, N DIXIE AVE, BEWLEY HOLLOW RD TO MAFFET CEM
5. TOTAL CIRCUIT LENGTH (MILES):	22.45
6. CUSTOMER COUNT FOR THIS CIRCUIT:	1047
7. DATE OF LAST CIRCUIT TRIM (MM/YY):	11/14

8. LIST OF OUTAGE(S):	OUTAGE MINUTES (% OF TOTAL OUTAGE MINUTES):	
	CONTRACTOR	0.00%
	PUBLIC ACCIDENTS, OTHER	0.00%
	EQUIPMENT / MATERIAL FAILURE	1.91%
	SMALL ANIMALS OR BIRDS	67.13%
	LIGHTNING	0.00%
	TREES	0.14%
	NO CAUSE CODE	28.53%
	WIND, HIGH WIND	0.00%
	PLANNED OUTAGE	2.29%
	WEATHER	0.00%
	POWER SUPPLIER	0.00%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI):	81.07
10. REPORTING YEAR (SAIDI):	46.17
11. CIRCUIT 5 YEAR AVERAGE (SAIFI):	1.09
12. REPORTING YEAR (SAIFI):	2.00

13. LIST OF CORRECTIVE ACTION, IF ANY,
TAKEN OR TO BE TAKEN

Feeder inspection will identify areas to mitigate animal caused outages.

SECTION 5: CIRCUIT REPORTING
(CIRCUITS WITH SAIDI AND/OR SAIFI EXCEEDING 5 YEAR AVERAGE)
(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)

CIRCUIT #18:	LOGSDON - 3
1. SUBSTATION NAME AND NUMBER:	LOGSDON 18
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN):	HARDIN - HILL ST (NEAR ETHAN CT) - VINE GROVE
3. CIRCUIT NAME AND NUMBER:	LOGSDON - 3
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA):	RADCLIFF, KY -W CROCUS DR , ELM RD , N LOGSDON PKWY
5. TOTAL CIRCUIT LENGTH (MILES):	15.05
6. CUSTOMER COUNT FOR THIS CIRCUIT:	1012
7. DATE OF LAST CIRCUIT TRIM (MM/YY):	10/17

8. LIST OF OUTAGE(S):	OUTAGE MINUTES (% OF TOTAL OUTAGE MINUTES):	
	CONTRACTOR	0.00%
	PUBLIC ACCIDENTS, OTHER	0.78%
	EQUIPMENT / MATERIAL FAILURE	84.50%
	SMALL ANIMALS OR BIRDS	0.00%
	LIGHTNING	2.87%
	TREES	4.34%
	NO CAUSE CODE	0.00%
	WIND, HIGH WIND	1.70%
	PLANNED OUTAGE	5.80%
	WEATHER	0.00%
	POWER SUPPLIER	0.00%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI):	24.45
10. REPORTING YEAR (SAIDI):	92.72
11. CIRCUIT 5 YEAR AVERAGE (SAIFI):	0.38
12. REPORTING YEAR (SAIFI):	1.23

13. LIST OF CORRECTIVE ACTION, IF ANY, TAKEN OR TO BE TAKEN	Feeder inspection to identify equipment for maintenance.
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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)

CIRCUIT #19:	LOGSDON - 4
1. SUBSTATION NAME AND NUMBER:	LOGSDON 18
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN):	HARDIN - HILL ST (NEAR ETHAN CT) - VINE GROVE
3. CIRCUIT NAME AND NUMBER:	LOGSDON - 4
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA):	RADCLIFF, KY - VINELAND CENTER DR , HILL ST , MANLEY AVE , AIRPORT RD
5. TOTAL CIRCUIT LENGTH (MILES):	9.29
6. CUSTOMER COUNT FOR THIS CIRCUIT:	501
7. DATE OF LAST CIRCUIT TRIM (MM/YY):	10/17

8. LIST OF OUTAGE(S):	OUTAGE MINUTES (% OF TOTAL OUTAGE MINUTES):	
	CONTRACTOR	PUBLIC ACCIDENTS, OTHER
	0.00%	0.00%
	EQUIPMENT / MATERIAL FAILURE	SMALL ANIMALS OR BIRDS
	38.72%	0.00%
	LIGHTNING	TREES
	16.88%	0.00%
	NO CAUSE CODE	WIND, HIGH WIND
	0.35%	3.01%
	PLANNED OUTAGE	WEATHER
	41.04%	0.00%
	POWER SUPPLIER	0.00%
	0.00%	

9. CIRCUIT 5 YEAR AVERAGE (SAIDI):	49.32
10. REPORTING YEAR (SAIDI):	38.94
11. CIRCUIT 5 YEAR AVERAGE (SAIFI):	0.53
12. REPORTING YEAR (SAIFI):	1.28

13. LIST OF CORRECTIVE ACTION, IF ANY, TAKEN OR TO BE TAKEN

Feeder inspection to identify equipment for maintenance.

SECTION 5: CIRCUIT REPORTING
(CIRCUITS WITH SAIDI AND/OR SAIFI EXCEEDING 5 YEAR AVERAGE)
(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)

CIRCUIT #20:	TUNNEL HILL 2 - 2
1. SUBSTATION NAME AND NUMBER:	TUNNEL HILL 2 19
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN):	HARDIN - TUNNEL HILL RD. - E-TOWN
3. CIRCUIT NAME AND NUMBER:	TUNNEL HILL 2 - 2
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA):	ETOWN, KY - TUNNEL HILL RD, N MILES ST TO COLONIAL DR
5. TOTAL CIRCUIT LENGTH (MILES):	9.17
6. CUSTOMER COUNT FOR THIS CIRCUIT:	505
7. DATE OF LAST CIRCUIT TRIM (MM/YY):	08/13

8. LIST OF OUTAGE(S):	OUTAGE MINUTES (% OF TOTAL OUTAGE MINUTES):	
	CONTRACTOR	0.00%
	PUBLIC ACCIDENTS, OTHER	11.26%
EQUIPMENT / MATERIAL FAILURE	1.40%	SMALL ANIMALS OR BIRDS
		0.00%
LIGHTNING	0.00%	TREES
		41.44%
NO CAUSE CODE	0.00%	WIND, HIGH WIND
		40.47%
PLANNED OUTAGE	5.44%	WEATHER
		0.00%
POWER SUPPLIER	0.00%	

9. CIRCUIT 5 YEAR AVERAGE (SAIDI):	9.00
10. REPORTING YEAR (SAIDI):	14.12
11. CIRCUIT 5 YEAR AVERAGE (SAIFI):	0.13
12. REPORTING YEAR (SAIFI):	0.14

13. LIST OF CORRECTIVE ACTION, IF ANY, TAKEN OR TO BE TAKEN

Review ROW conditions and vegetation management cycle. Feeder inspection will identify areas to mitigate wind caused outages.

SECTION 5: CIRCUIT REPORTING
(CIRCUITS WITH SAIDI AND/OR SAIFI EXCEEDING 5 YEAR AVERAGE)
(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)

CIRCUIT #21:	TUNNEL HILL 2 - 3
1. SUBSTATION NAME AND NUMBER:	TUNNEL HILL 2 19
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN):	HARDIN - TUNNEL HILL RD. - E-TOWN
3. CIRCUIT NAME AND NUMBER:	TUNNEL HILL 2 - 3
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA):	ETOWN, KY - TUNNEL HILL CHURCH RD, SAINT JOHN RD
5. TOTAL CIRCUIT LENGTH (MILES):	62.24
6. CUSTOMER COUNT FOR THIS CIRCUIT:	1060
7. DATE OF LAST CIRCUIT TRIM (MM/YY):	02/13

8. LIST OF OUTAGE(S):	OUTAGE MINUTES (% OF TOTAL OUTAGE MINUTES):	
	CONTRACTOR <u>3.51%</u>	PUBLIC ACCIDENTS, OTHER <u>1.21%</u>
	EQUIPMENT / MATERIAL FAILURE <u>5.42%</u>	SMALL ANIMALS OR BIRDS <u>1.30%</u>
	LIGHTNING <u>33.45%</u>	TREES <u>27.37%</u>
	NO CAUSE CODE <u>0.06%</u>	WIND, HIGH WIND <u>0.00%</u>
	PLANNED OUTAGE <u>27.69%</u>	WEATHER <u>0.00%</u>
	POWER SUPPLIER <u>0.00%</u>	

9. CIRCUIT 5 YEAR AVERAGE (SAIDI):	124.13
10. REPORTING YEAR (SAIDI):	52.44
11. CIRCUIT 5 YEAR AVERAGE (SAIFI):	0.76
12. REPORTING YEAR (SAIFI):	1.45

13. LIST OF CORRECTIVE ACTION, IF ANY, TAKEN OR TO BE TAKEN

Identify new surge arrestor placement opportunities. Review overvoltage protection.

SECTION 5: CIRCUIT REPORTING
(CIRCUITS WITH SAIDI AND/OR SAIFI EXCEEDING 5 YEAR AVERAGE)
(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)

CIRCUIT #22:	ETOWN 2 - 2
1. SUBSTATION NAME AND NUMBER:	ETOWN 2 20
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN):	HARDIN - WOODLAND DR. - E-TOWN
3. CIRCUIT NAME AND NUMBER:	ETOWN 2 - 2
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA):	ETOWN, KY - JOHNSTOWN RD, CARDINAL DR, RING RD
5. TOTAL CIRCUIT LENGTH (MILES):	31.18
6. CUSTOMER COUNT FOR THIS CIRCUIT:	450
7. DATE OF LAST CIRCUIT TRIM (MM/YY):	06/16

8. LIST OF OUTAGE(S):	OUTAGE MINUTES (% OF TOTAL OUTAGE MINUTES):	
	CONTRACTOR	PUBLIC ACCIDENTS, OTHER
	0.00%	0.18%
	EQUIPMENT / MATERIAL FAILURE	SMALL ANIMALS OR BIRDS
	0.71%	0.00%
	LIGHTNING	TREES
	4.41%	0.00%
	NO CAUSE CODE	WIND, HIGH WIND
	93.88%	0.00%
	PLANNED OUTAGE	WEATHER
	0.82%	0.00%
	POWER SUPPLIER	_____
	0.00%	

9. CIRCUIT 5 YEAR AVERAGE (SAIDI):	71.36
10. REPORTING YEAR (SAIDI):	297.54
11. CIRCUIT 5 YEAR AVERAGE (SAIFI):	1.12
12. REPORTING YEAR (SAIFI):	2.09

13. LIST OF CORRECTIVE ACTION, IF ANY, TAKEN OR TO BE TAKEN

Feeder inspection will identify areas for correction.

SECTION 5: CIRCUIT REPORTING
(CIRCUITS WITH SAIDI AND/OR SAIFI EXCEEDING 5 YEAR AVERAGE)
(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)

CIRCUIT #23:	RINEYVILLE - 4
1. SUBSTATION NAME AND NUMBER:	RINEYVILLE 21
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN):	HARDIN - OWSLEY RD - RINEYVILLE
3. CIRCUIT NAME AND NUMBER:	RINEYVILLE - 4
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA):	RINEYVILLE, KY - BERRYTOWN RD, BLUE BALL RD, SALT RIVER RD
5. TOTAL CIRCUIT LENGTH (MILES):	51.03
6. CUSTOMER COUNT FOR THIS CIRCUIT:	403
7. DATE OF LAST CIRCUIT TRIM (MM/YY):	04/17

8. LIST OF OUTAGE(S):	OUTAGE MINUTES (% OF TOTAL OUTAGE MINUTES):	
	CONTRACTOR	0.00%
	PUBLIC ACCIDENTS, OTHER	0.95%
	EQUIPMENT / MATERIAL FAILURE	12.50%
	SMALL ANIMALS OR BIRDS	0.00%
	LIGHTNING	7.32%
	TREES	65.42%
	NO CAUSE CODE	0.00%
	WIND, HIGH WIND	0.00%
	PLANNED OUTAGE	13.81%
	WEATHER	0.00%
	POWER SUPPLIER	0.00%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI):	93.96
10. REPORTING YEAR (SAIDI):	91.10
11. CIRCUIT 5 YEAR AVERAGE (SAIFI):	0.74
12. REPORTING YEAR (SAIFI):	0.76

13. LIST OF CORRECTIVE ACTION, IF ANY, TAKEN OR TO BE TAKEN

Review ROW conditions and vegetation management cycle.

SECTION 5: CIRCUIT REPORTING
(CIRCUITS WITH SAIDI AND/OR SAIFI EXCEEDING 5 YEAR AVERAGE)
(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)

CIRCUIT #24:	RINEYVILLE - 5
1. SUBSTATION NAME AND NUMBER:	RINEYVILLE 21
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN):	HARDIN - OWSLEY RD - RINEYVILLE
3. CIRCUIT NAME AND NUMBER:	RINEYVILLE - 5
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA):	RINEYVILLE, KY - OWSLEY RD, RINEYVILLE RD, HARGAN RD, PICKERELL LN, BENNET RD, BLACKBURN RD
5. TOTAL CIRCUIT LENGTH (MILES):	29.31
6. CUSTOMER COUNT FOR THIS CIRCUIT:	511
7. DATE OF LAST CIRCUIT TRIM (MM/YY):	05/17

8. LIST OF OUTAGE(S):	OUTAGE MINUTES (% OF TOTAL OUTAGE MINUTES):	
	CONTRACTOR	0.00%
	PUBLIC ACCIDENTS, OTHER	1.85%
	EQUIPMENT / MATERIAL FAILURE	1.21%
	SMALL ANIMALS OR BIRDS	0.00%
	LIGHTNING	2.51%
	TREES	52.35%
	NO CAUSE CODE	0.76%
	WIND, HIGH WIND	0.00%
	PLANNED OUTAGE	41.33%
	WEATHER	0.00%
	POWER SUPPLIER	0.00%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI):	57.00
10. REPORTING YEAR (SAIDI):	22.37
11. CIRCUIT 5 YEAR AVERAGE (SAIFI):	0.73
12. REPORTING YEAR (SAIFI):	1.17

13. LIST OF CORRECTIVE ACTION, IF ANY, TAKEN OR TO BE TAKEN

Circuit was trimmed recently to remedy tree related outages. Nolin RECC to monitor this feeder to make sure ROW issues have been corrected.

SECTION 5: CIRCUIT REPORTING
(CIRCUITS WITH SAIDI AND/OR SAIFI EXCEEDING 5 YEAR AVERAGE)
(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)

CIRCUIT #25:	ROANOKE - 1
1. SUBSTATION NAME AND NUMBER:	ROANOKE 23
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN):	LARUE - GRAY RD - ROANOKE
3. CIRCUIT NAME AND NUMBER:	ROANOKE - 1
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA):	HODGENVILLE, KY - RIVER RD, LAFOLLETTE RD
5. TOTAL CIRCUIT LENGTH (MILES):	8.53
6. CUSTOMER COUNT FOR THIS CIRCUIT:	91
7. DATE OF LAST CIRCUIT TRIM (MM/YY):	N/A

8. LIST OF OUTAGE(S):	OUTAGE MINUTES (% OF TOTAL OUTAGE MINUTES):		
CONTRACTOR	0.00%	PUBLIC ACCIDENTS, OTHER	2.42%
EQUIPMENT / MATERIAL FAILURE	0.00%	SMALL ANIMALS OR BIRDS	0.00%
LIGHTNING	93.57%	TREES	0.00%
NO CAUSE CODE	0.00%	WIND, HIGH WIND	0.00%
PLANNED OUTAGE	4.01%	WEATHER	0.00%
POWER SUPPLIER	0.00%		

9. CIRCUIT 1 YEAR AVERAGE (SAIDI):	0.00
10. REPORTING YEAR (SAIDI):	7.90
11. CIRCUIT 1 YEAR AVERAGE (SAIFI):	0.00
12. REPORTING YEAR (SAIFI):	0.18

13. LIST OF CORRECTIVE ACTION, IF ANY, TAKEN OR TO BE TAKEN	Identify new surge arrestor placement opportunities. Review overvoltage protection.
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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)

CIRCUIT #26:	ROANOKE - 2
1. SUBSTATION NAME AND NUMBER:	ROANOKE 23
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN):	LARUE - GRAY RD - ROANOKE
3. CIRCUIT NAME AND NUMBER:	ROANOKE - 2
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA):	HODGENVILLE, KY - DAN DUNN RD, SLACK RD, MARTIN RD, SPENCER SCHOOL RD, CISSAL HILL RD
5. TOTAL CIRCUIT LENGTH (MILES):	22.08
6. CUSTOMER COUNT FOR THIS CIRCUIT:	166
7. DATE OF LAST CIRCUIT TRIM (MM/YY):	N/A

8. LIST OF OUTAGE(S):	OUTAGE MINUTES (% OF TOTAL OUTAGE MINUTES):		
CONTRACTOR	<u>0.00%</u>	PUBLIC ACCIDENTS, OTHER	<u>1.39%</u>
EQUIPMENT / MATERIAL FAILURE	<u>10.09%</u>	SMALL ANIMALS OR BIRDS	<u>0.00%</u>
LIGHTNING	<u>11.47%</u>	TREES	<u>0.00%</u>
NO CAUSE CODE	<u>0.00%</u>	WIND, HIGH WIND	<u>0.00%</u>
PLANNED OUTAGE	<u>77.05%</u>	WEATHER	<u>0.00%</u>
POWER SUPPLIER	<u>0.00%</u>		

9. CIRCUIT 1 YEAR AVERAGE (SAIDI):	0.00
10. REPORTING YEAR (SAIDI):	100.32
11. CIRCUIT 1 YEAR AVERAGE (SAIFI):	0.00
12. REPORTING YEAR (SAIFI):	1.30

13. LIST OF CORRECTIVE ACTION, IF ANY, TAKEN OR TO BE TAKEN

SECTION 5: CIRCUIT REPORTING
(CIRCUITS WITH SAIDI AND/OR SAIFI EXCEEDING 5 YEAR AVERAGE)
(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)

CIRCUIT #27:	ROANOKE - 3
1. SUBSTATION NAME AND NUMBER:	ROANOKE 23
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN):	LARUE - GRAY RD - ROANOKE
3. CIRCUIT NAME AND NUMBER:	ROANOKE - 3
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA):	HODGENVILLE, KY - DAN DUNN RD
5. TOTAL CIRCUIT LENGTH (MILES):	10.21
6. CUSTOMER COUNT FOR THIS CIRCUIT:	66
7. DATE OF LAST CIRCUIT TRIM (MM/YY):	N/A

8. LIST OF OUTAGE(S):	OUTAGE MINUTES (% OF TOTAL OUTAGE MINUTES):		
CONTRACTOR	0.00%	PUBLIC ACCIDENTS, OTHER	0.00%
EQUIPMENT / MATERIAL FAILURE	3.93%	SMALL ANIMALS OR BIRDS	22.78%
LIGHTNING	0.00%	TREES	20.69%
NO CAUSE CODE	20.80%	WIND, HIGH WIND	0.00%
PLANNED OUTAGE	31.80%	WEATHER	0.00%
POWER SUPPLIER	0.00%		

9. CIRCUIT 1 YEAR AVERAGE (SAIDI):	0.00
10. REPORTING YEAR (SAIDI):	36.11
11. CIRCUIT 1 YEAR AVERAGE (SAIFI):	0.00
12. REPORTING YEAR (SAIFI):	0.45

13. LIST OF CORRECTIVE ACTION, IF ANY, TAKEN OR TO BE TAKEN

SECTION 5: CIRCUIT REPORTING
(CIRCUITS WITH SAIDI AND/OR SAIFI EXCEEDING 5 YEAR AVERAGE)
(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)

CIRCUIT #28:	ROANOKE - 4
1. SUBSTATION NAME AND NUMBER:	ROANOKE 23
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN):	LARUE - GRAY RD - ROANOKE
3. CIRCUIT NAME AND NUMBER:	ROANOKE - 4
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA):	HODGENVILLE, KY - GRAY RD, VALLEY CREEK RD
5. TOTAL CIRCUIT LENGTH (MILES):	10.01
6. CUSTOMER COUNT FOR THIS CIRCUIT:	117
7. DATE OF LAST CIRCUIT TRIM (MM/YY):	N/A

8. LIST OF OUTAGE(S):	OUTAGE MINUTES (% OF TOTAL OUTAGE MINUTES):		
CONTRACTOR	0.00%	PUBLIC ACCIDENTS, OTHER	3.56%
EQUIPMENT / MATERIAL FAILURE	4.69%	SMALL ANIMALS OR BIRDS	49.48%
LIGHTNING	0.00%	TREES	14.68%
NO CAUSE CODE	0.00%	WIND, HIGH WIND	0.00%
PLANNED OUTAGE	27.58%	WEATHER	0.00%
POWER SUPPLIER	0.00%		

9. CIRCUIT 1 YEAR AVERAGE (SAIDI):	0.76
10. REPORTING YEAR (SAIDI):	10.93
11. CIRCUIT 1 YEAR AVERAGE (SAIFI):	0.01
12. REPORTING YEAR (SAIFI):	0.21

13. LIST OF CORRECTIVE ACTION, IF ANY, TAKEN OR TO BE TAKEN

Feeder inspection will identify areas to mitigate animal caused outages.

SECTION 6: VEGETATION MANAGEMENT PLAN REVIEW
INCLUDE CURRENT VEGETATION MANGEMENT PLAN

See attached "Vegetation Management Program 2-18-11 Nolin.pdf"

SECTION 7: UTILITY COMMENTS

NOLIN RURAL ELECTRIC COOPERATIVE CORPORATION'S VEGETATION MANAGEMENT PROGRAM

Purpose is to improve the reliability of the electric distribution systems by preventing outages from vegetation located on distribution rights-of-way and minimizing outages from vegetation located adjacent to rights-of-way, maintaining clearances between distribution lines and vegetation on and along distribution rights-of-ways.

Vegetation Management Program

Definitions of Terms Used in Standard

This section includes newly defined or revised terms used in this standard. New or revised definitions, listed below, become approved when the standard is placed in operation. When the standard becomes effective, these defined terms will be removed from the individual standard and added to the Glossary.

Fire Risk: The likelihood that a fire will ignite or spread in a particular geographic area.

Flashover: An electrical discharge through air around or over the surface of insulation, between objects of different potential, caused by placing a voltage across the air space that results in the ionization of the air space.

IEEE: Institute of Electrical and Electronics Engineers, Inc.

Vegetation Inspection: The systematic examination of a distribution corridor to document vegetation conditions.

Operating Voltage: The voltage level by which an electrical system is designated and to which certain operating characteristics of the system are related; also, the effective (root-mean-square) potential difference between any two conductors or between a conductor and the ground. The actual voltage of the circuit may vary somewhat above or below this value.

Rated Electrical Operating Conditions: The specified or reasonably anticipated conditions under which the electrical system or an individual electrical circuit is intend/designed to operate.

Right-of-Way (ROW): A corridor of land on which electric lines may be located. The distribution owner may own the land in fee, own an easement, or have certain franchise, prescription, or license rights to construct and maintain lines.

Sustained Outage: The de-energized condition of a distribution line resulting from a fault or disturbance following an unsuccessful automatic reclosing sequence and/or unsuccessful manual reclosing procedure.

Distribution Line: A system of structures, wires, insulators and associated hardware that carry electric energy from one point to another in an electric power system. Lines are operated at relatively high voltages varying from 120 V up to 7.2 kV, and are capable of transmitting quantities of electricity over long distances.

Vegetation: All plant material, growing or not, living or dead.

Introduction

Purpose:

To improve the reliability of the electric distribution systems by preventing outages from vegetation located on distribution rights-of-way (ROW) and minimizing outages from vegetation located adjacent to ROW, maintaining clearances between distribution lines and vegetation on and along distribution ROW.

This standard is developed for all distribution lines operated at 7.2 kV and to any lower voltage lines designated by the Nolin Rural Electric Cooperative Corporation (RECC) as critical to the reliability of the electric system in the region.

Requirements:

- 1) Nolin RECC will periodically review, and keep current, the formal distribution vegetation management program. The review will include the evaluation of objectives, practices, approved procedures, work specifications, and evaluation of SAIDI, SAIFI, CAIDI, and CAIFI. The outage management system (OMS) will collect information from the automated meter reading (AMR) system, supervisory control and data acquisition (SCADA) and input from the on-duty dispatcher for evaluation.
- 2) The plan defines a schedule for ROW vegetation inspections. This schedule will be flexible enough to adjust for changing conditions. The inspection schedule is based on the anticipated growth of vegetation and any other environmental or operational factors that could impact the relationship of vegetation to the Nolin RECC's distribution lines.
- 3) Encourage public outreach to educate the public, in general, about the use and acceptance of vegetation management on rights-of-way.
- 4) Nolin RECC will, during initial installation, identify clearances between vegetation and any overhead, ungrounded supply conductors, taking into consideration the line voltage, the effects of ambient temperature on conductor sag under maximum design loading, the configuration and insulated value of the line, and the effects of wind velocities on conductor sway. Specifically, Nolin RECC will establish clearances to be achieved at the time of vegetation management work to maintain a set of clearances identified to prevent flashover between vegetation and overhead-ungrounded supply conductors. Nolin RECC shall determine appropriate clearance distances to be achieved at the time of distribution vegetation management work based upon: operating voltage, appropriate vegetation management techniques, fire risk, reasonably anticipated tree and conductor movement, species types and growth rates, species failure characteristics, local climate and rainfall patterns, line terrain and elevation, location of the vegetation within the span, and worker approach distance requirements.

- 5) Nolin RECC will determine specific radial clearances to be maintained between vegetation and conductors under all rated electrical operating conditions. These minimum clearance distances are necessary to prevent flashover between vegetation and conductors and may vary due to such factors as has been stated. Nolin RECC shall develop mitigation measures to achieve sufficient clearances for the protection of the distribution facilities when it identifies locations on the ROW where it is restricted from attaining the clearances specified in this Requirement.
- 6) All personnel directly involved in the design and implementation of the Vegetation Management Program shall hold appropriate qualifications and training, as defined by Nolin RECC, to perform their duties.
- 7) Nolin RECC shall establish a process for the communication of vegetation conditions that present an imminent threat of an outage to a distribution line. This is so action may be taken (temporary reduction in line's consumers, switching line out of service, etc.) until the threat is relieved.
- 8) Nolin RECC shall create and implement an annual plan for vegetation management work to ensure the reliability of the system. The plan shall describe the methods used, such as manual clearing, mechanical clearing, herbicide treatment, or other actions. The plan should be flexible enough to adjust to changing conditions, taking into consideration the anticipated growth of vegetation and other environmental factors that may have an impact on the reliability of the distribution systems. Adjustments to the plan shall be documented as they occur. The plan should take into consideration the time required to obtain permissions or permits from landowners or regulatory authorities. Each procedure for documenting and tracking the planned vegetation management work and ensuring that the vegetation management work was completed according to work specifications.

Compliance to the Requirements

1. The overall 'Vegetation Management Plan' will be evaluated annually to establish the progress of the plans' past year improvement against prior years. The comparison will include outage data of specific feeders, overall system outages, record keeping process of outage tickets, time response to outage lengths, comparison of funds to lines lengths and type of work done, and AMR's blink reports. Each year the progress of the plan will be evaluated; deviations, deficiencies or improvements will be made for the following year, and work procedures will be considered.
2. The inspection and right of clearing schedule will be 3 years in dense housing areas (approximately 14 consumers per mile), fast growing tree (locust, sycamore etc.) areas and in areas where trimming maybe limited (historic sites, national forest, and sensitive environmental areas). Other areas will be on the normal 5-year cycle.
3. An article describing the need for right of way maintenance, safety issues associated with live electric lines and trees, and proper tree selection for planting near electric lines will be mailed to all consumer's service address.
4. During System inspection, employees working on existing facilities will make calls to the dispatcher about tree trimming or removal of trouble areas that may not comply with the RUS standard that is set forth in M1.30G "Right of way clearing guide" and standards set by the National Electrical Safety Code in Section 23. If no imminent danger exists, the dispatcher will generate a Work Order Ticket for the correction of the problem.
5. Staking sheets will have notes associated for tree trimming or removal with dimensions from the centerline of the line construction. The notes will remain with the staking sheets throughout the construction phase and final inspection of the jobs. The dimensions will comply with the RUS standard that is set forth in M1.30G "Right of way clearing guide" and standards set in the National Electrical Safety Code in Section 23.
6. Employees will have annual training on the RUS standards and National Electrical Safety Code relating to line construction and safety issues.
7. The dispatcher will be available 24 hours a day to take calls, make work order tickets, and dispatch employees for imminent danger of hazards to the public.
8. An overall system map will be color coded for work to be done each year. The map will be a base for planning and an estimate for budget numbers. The cost of various methods right of way control will be used as the land and environment dictate. Each year, during the planning period, an evaluation of outages and outages data will be used to set an estimated budget number. During the Budget planning, a dollar figure will be set aside for the various methods of right of way control. The areas, as budget permits, will be designated as to method and length of lines to be done.