



Jackson Purchase Energy
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Visit our Web Site www.JPEnergy.com

April 13, 2018

Ms. Gwen R. Pinson
Executive Director
Kentucky Public Service Commission
211 Sower Boulevard
Frankfort, KY 40601

RECEIVED

APR 23 2018

**PUBLIC SERVICE
COMMISSION**

RE: 2017 Annual Distribution Reliability Report

Executive Director Pinson:

Please find enclosed Jackson Purchase Energy Corporation's 2017 Annual Distribution Reliability Report as outlined by Administrative Case 2011-00450.

If you have any questions please contact me at 270-442-7321

Sincerely,

A handwritten signature in blue ink that reads "Scott Ribble".

Scott Ribble
Jackson Purchase Energy Corporation

enclosures



KENTUCKY PUBLIC SERVICE COMMISSION

Electric Distribution Utility Annual Reliability Report

SECTION 1: CONTACT INFORMATION

UTILITY NAME	1.1	Jackson Purchase Energy Corporation
REPORT PREPARED BY	1.2	Scott Ribble
E-MAIL ADDRESS OF PREPARER	1.3	scott.ribble@jpecenergy.com
PHONE NUMBER OF PREPARER	1.4	270-442-7321

SECTION 2: REPORT YEAR

CALENDAR YEAR OF REPORT	2.1	2017
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SECTION 3: MAJOR EVENT DAYS

TMED	3.1	8.01
FIRST DATE USED TO DETERMINE TMED	3.2	1/1/2012
LAST DATE USED TO DETERMINE TMED	3.3	12/31/2016
NUMBER OF MED IN REPORT YEAR	3.4	4

NOTE: Per IEEE 1366 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.

SECTION 4: SYSTEM RELIABILITY RESULTS

System - Wide Information

Total Customers	29752	Total Circuits	91
Excluding MED			
6 Year Average		Reporting Year	
SAIDI	118.24	SAIDI	121.105
SAIFI	1.27	SAIFI	1.1002
Including MED			
5 Year Average		Reporting Year	
SAIDI	381.56	SAIDI	1127.3
SAIFI	1.59	SAIFI	1.8832

SECTION 6: VEGETATION MANAGEMENT PLAN REVIEW

JPEC has established a four (4) year cycle on right-of-way maintenance and employs a contractor to perform that cycle clearing. JPEC also employs contract crews that handles mid-cycle trimming. We have experienced over the last couple of years an increased tree problem from "danger trees" (trees outside of right-of-way) falling into our ROW and tearing down lines and poles. We are working with our members and contractors to identify those danger trees for removal. In addition to JPEC's contractors, JPEC construction and maintenance crews have the tools and ability to recognize hazards and trim trees away from the line as they perform their duties.

SECTION 7: UTILITY COMMENTS

Overall, 2017 was a good year in comparison to previous years. JPEC worked with BREC to increase reliability on the transmission system by installing a number of radio controlled switches. These new switch points will keep future power supply caused outages to a minimum as BREC will be able to isolate problems faster and restore unaffected station sooner. Unfortunately, some of this work has cause interruptions to our members. JPEC has worked to keep those interruptions to a minimum. JPEC and BREC have three more switches to add in 2018. JPEC has brought in additional contract crews to continue the work started last year replacing structures and hardening the system. New technologies will be tested in 2018 that will put more information into the hands of crews. This new technology will make reporting restoration closer to real time. New switching points are being installed to isolate outages and return as many members back on as possible.

		Outage Causes	
		Cause	Percentage (%)
Substation Name	Joy	000 Power supply	0.153846154
Substation Number	5	100 Construction	0.076923077
Substation County	Livingston	110 Maintenance	0
Substation Road	Carrsville Road	190 Other planned	0.076923077
Substation Town	Carrsville	300 Material or equipment fault/failure	0
Circuit Name	Hampton-South	310 Installation fault	0
Circuit Number	501	320 Conductor sag or inadequate clearance	0
Circuit Location	0501-Hampton South	340 Overload	0
Total Circuit Length (Miles)	57.417	350 Miscoordination of protection devices	0
Customer Count	194.241095	360 Other equipment installation/design	0
Date of Last Circuit Trim	2016	400 Decay/age of material/equipment	0
Circuit 5 Year Average (SADI)	270.138327	420 Tree growth	0
Reporting Year (SAIDI)	574.152446	430 Tree failure from overhang or dead tree without ice/snow	0.076923077
Circuit 5 Year Average (SAIFI)	2.225494054	440 Trees with ice/snow	0
Reporting Year (SAIFI)	2.327005004	470 Borrower crew cuts tree	0
		490 Maintenance, other	0.076923077
		500 Lightning	0.076923077
		510 Wind, not trees	0
		520 Ice, sleet, frost, not trees	0
		530 Flood	0
		540 Storm	0
		590 Weather, other	0
		600 Animal/bird	0
		630 Squirrel	0
		690 Animal, other	0
		700 Customer-caused	0
		710 Motor vehicle	0.153846154
		715 Farming Equipment	0
		720 Aircraft	0
		730 Fire	0
		740 Public cuts tree	0
		750 Vandalism	0
		760 Switching error or caused by construction or maintenance	0
		790 Public, other	0
		800 Other	0
		999 Cause unknown	0.307692308

100%

Corrective Action Plan

This circuit fell outside 5 year average numbers because of two power supply caused events. These events were needed by JPEC's power supplier to install a new 69kV structure with radio controlled motor operated switches. The location of this structure was located on the radial transmission line that feeds both JPEC's Joy and Burma substations and both stations had to be de-energized to perform the work. JPEC was able to backfeed two out of six circuits involved. The two separate required outages by BREC happened after midnight each lasting 4-5 hours each. BREC's new structure and radio controlled motor operated switch will speed future power supply caused outages to a minimum as BREC will be able to isolate problems faster and restore unaffected stations sooner.

Substation Name Joy
Substation Number 5
Substation County Livingston
Substation Road Carrsville Road
Substation Town Carrsville
Circuit Name Carrsville
Circuit Number 504
Circuit Location 0504-Carrsville
Total Circuit Length (Miles) 10.735
Customer Count 72.09315
Date of Last Circuit Trim 2016
Circuit 5 Year Average (SADI) 183.8994614
Reporting Year (SAIDI) 680.522351
Circuit 5 Year Average (SAIFI) 1.491315143
Reporting Year (SAIFI) 2.954510935

Outage Causes	
Cause	Percentage (%)
000 Power supply	0.666666667
100 Construction	0
110 Maintenance	0
190 Other planned	0
300 Material or equipment fault/failure	0
310 Installation fault	0
320 Conductor sag or inadequate clearance	0
340 Overload	0
350 Miscoordination of protection devices	0
360 Other equipment installation/design	0
400 Decay/age of material/equipment	0
420 Tree growth	0
430 Tree failure from overhang or dead tree without ice/snow	0
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
490 Maintenance, other	0
500 Lightning	0.333333333
510 Wind, not trees	0
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0
590 Weather, other	0
600 Animal/bird	0
630 Squirmel	0
690 Animal, other	0
700 Customer-caused	0
710 Motor vehicle	0
715 Farming Equipment	0
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0
750 Vandalism	0
780 Switching error or caused by construction or maintenance	0
790 Public, other	0
800 Other	0
999 Cause unknown	0

100%

Corrective Action Plan

This circuit fell outside 5 year average numbers because of two power supply caused events. These events were needed by JPEC's power supplier to install a new 69kV structure with radio controlled motor operated switches. The location of this structure was located on the radial transmission line that feeds both JPEC's Joy and Buma substations and both stations had to be de-energized to perform the work. JPEC was able to backfeed two out of six circuits involved. The two separate required outages by BREC happened after midnight each lasting 4-5 hours each. BREC's new structure and radio controlled motor operated switch will speed future power supply caused outages to a minimum as BREC will be able to isolate problems faster and restore unaffected stations sooner.

Substation Name Joy
Substation Number 5
Substation County Livingston
Substation Road Carrsville Road
Substation Town Carrsville
Circuit Name Lola
Circuit Number 505
Circuit Location 0505-Lola
Total Circuit Length (Miles) 56.512
Customer Count 298.742465
Date of Last Circuit Trim 2016
Circuit 5 Year Average (SADI) 122.5605129
Reporting Year (SAIDI) 563.160647
Circuit 5 Year Average (SAIFI) 0.777992961
Reporting Year (SAIFI) 2.152355541

Outage Causes	
Cause	Percentage (%)
000 Power supply	0.125
100 Construction	0.125
110 Maintenance	0.125
190 Other planned	0
300 Material or equipment fault/failure	0.0625
310 Installation fault	0
320 Conductor sag or inadequate clearance	0
340 Overload	0
350 Miscoordination of protection devices	0
360 Other equipment installation/design	0
400 Decay/age of material/equipment	0
420 Tree growth	0
430 Tree failure from overhang or dead tree without ice/snow	0.0625
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
490 Maintenance, other	0
500 Lightning	0.0625
510 Wind, not trees	0
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0
590 Weather, other	0
600 Animal/blrd	0
630 Squirrel	0.0625
690 Animal, other	0
700 Customer-caused	0
710 Motor vehicle	0
715 Farming Equipment	0
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0
750 Vandalism	0
760 Switching error or caused by construction or maintenance	0
790 Public, other	0
800 Other	0
999 Cause unknown	0.375

100%

Corrective Action Plan

This circuit fell outside 5 year average numbers because of two power supply caused events. These events were needed by JPEC's power supplier to install a new 69kV structure with radio controlled motor operated switches. The location of this structure was located on the radial transmission line that feeds both JPEC's Joy and Burma substations and both stations had to be de-energized to perform the work. JPEC was able to backfeed two out of six circuits involved. The two separate required outages by BREC happened after midnight each lasting 4-5 hours each. BREC's new structure and radio controlled motor operated switch will speed future power supply caused outages to a minimum as BREC will be able to isolate problems faster and restore unaffected stations sooner.

Substation Name Burma
Substation Number 14
Substation County Livingston
Substation Road Carrsville, Rd
Substation Town Burma
Circuit Name Hampton
Circuit Number 1401
Circuit Location 1401-Hampton
Total Circuit Length (Miles) 12.903
Customer Count 87.175342
Date of Last Circuit Trim 2015
Circuit 5 Year Average (SADI) 19.24594552
Reporting Year (SAIDI) 544.477359
Circuit 5 Year Average (SAIFI) 0.161794277
Reporting Year (SAIFI) 2.041861792

Outage Causes	
Cause	Percentage (%)
000 Power supply	0.333333333
100 Construction	0.333333333
110 Maintenance	0.166666667
190 Other planned	0
300 Material or equipment fault/failure	0
310 Installation fault	0
320 Conductor sag or inadequate clearance	0
340 Overload	0
350 Miscoordination of protection devices	0
360 Other equipment installation/design	0
400 Decay/age of material/equipment	0
420 Tree growth	0
430 Tree failure from overhang or dead tree without ice/snow	0
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
480 Maintenance, other	0
500 Lightning	0
510 Wind, not trees	0.166666667
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0
590 Weather, other	0
600 Animal/bird	0
630 Squirrel	0
690 Animal, other	0
700 Customer-caused	0
710 Motor vehicle	0
715 Farming Equipment	0
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0
750 Vandallism	0
760 Switching error or caused by construction or maintenance	0
790 Public, other	0
800 Other	0
999 Cause unknown	0

100%

Corrective Action Plan

This circuit fell outside 5 year average numbers because of two power supply caused events. These events were needed by JPEC's power supplier to install a new 69kV structure with radio controlled motor operated switches. The location of this structure was located on the radial transmission line that feeds both JPEC's Joy and Burma substations and both stations had to be de-energized to perform the work. JPEC was able to backfeed two out of six circuits involved. The two separate required outages by BREC happened after midnight each lasting 4-5 hours each. BREC's new structure and radio controlled motor operated switch will speed future power supply caused outages to a minimum as BREC will be able to isolate problems faster and restore unaffected stations sooner.

Substation Name Burna
Substation Number 14
Substation County Livingston
Substation Road Carrsville, Rd
Substation Town Burna
Circuit Name Salem
Circuit Number 1404
Circuit Location 1404-Salem
Total Circuit Length (Miles) 53.744
Customer Count 328.520547
Date of Last Circuit Trim 2015
Circuit 5 Year Average (SAIDI) 26.94276903
Reporting Year (SAIDI) 69.061129
Circuit 5 Year Average (SAIFI) 0.171186718
Reporting Year (SAIFI) 0.368317906

Outage Causes		Percentage (%)
Cause		
000 Power supply		0
100 Construction		0.125
110 Maintenance		0.125
190 Other planned		0
300 Material or equipment fault/failure		0.083333333
310 Installation fault		0
320 Conductor sag or inadequate clearance		0
340 Overload		0
350 Miscoordination of protection devices		0
360 Other equipment installation/design		0
400 Decay/age of material/equipment		0
420 Tree growth		0
430 Tree failure from overhang or dead tree without ice/snow		0.083333333
440 Trees with ice/snow		0
470 Borrower crew cuts tree		0
490 Maintenance, other		0
500 Lightning		0.083333333
510 Wind, not trees		0.041666667
520 Ice, sleet, frost, not trees		0
530 Flood		0
540 Storm		0
590 Weather, other		0
600 Animal/bird		0
630 Squirrel		0.125
690 Animal, other		0.041666667
700 Customer-caused		0
710 Motor vehicle		0
715 Farming Equipment		0
720 Aircraft		0
730 Fire		0
740 Public cuts tree		0.041666667
750 Vandalism		0
780 Switching error or caused by construction or maintenance		0
790 Public, other		0
800 Other		0.041666667
999 Cause unknown		0.208333333

100%

Corrective Action Plan

The two major outages on this circuit are due to ROW. Although "Tree Failure" was the cause, weather (storms) was the underlying factor.

Substation Name Ragland
Substation Number 19
Substation County McCracken
Substation Road Ogen Landing Rd
Substation Town Kevil
Circuit Name Ragland
Circuit Number 1902
Circuit Location 1902-Ragland
Total Circuit Length (Miles) 33.588
Customer Count 231.158904
Date of Last Circuit Trlm 2017
Circuit 5 Year Average (SADI) 36.63384382
Reporting Year (SAIDI) 45.929444
Circuit 5 Year Average (SAIFI) 0.668869062
Reporting Year (SAIFI) 0.350408306

Outage Causes	
Cause	Percentage (%)
000 Power supply	0
100 Construction	0
110 Maintenance	0.125
190 Other planned	0
300 Material or equipment fault/failure	0
310 Installation fault	0
320 Conductor sag or inadequate clearance	0
340 Overload	0
350 Miscoordination of protection devices	0
360 Other equipment installation/design	0
400 Decay/age of material/equipment	0
420 Tree growth	0
430 Tree failure from overhang or dead tree without ice/snow	0.375
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
490 Maintenance, other	0
500 Lightning	0
510 Wind, not trees	0
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0
590 Weather, other	0
600 Animal/bird	0.125
630 Squirrel	0.125
690 Animal, other	0
700 Customer-caused	0
710 Motor vehicle	0
715 Farming Equipment	0
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0
750 Vandalism	0
760 Switching error or caused by construction or maintenance	0
790 Public, other	0
800 Other	0.125
999 Cause unknown	0.125

100%

Corrective Action Plan

The two major outages on this circuit are due to ROW. Although "Tree Failure" was the cause, weather (storms) was the underlying factor.

		Outage Causes	
		Cause	Percentage (%)
Substation Name	LaCenter	000 Power supply	0
Substation Number	26	100 Construction	0.058823529
Substation County	Ballard	110 Maintenance	0
Substation Road	Turner Landing Rd	190 Other planned	0
Substation Town	LaCenter	300 Material or equipment fault/failure	0.176470588
Circuit Name	Damron's	310 Installation fault	0
Circuit Number	2601	320 Conductor sag or inadequate clearance	0
Circuit Location	2601-Damrons	340 Overload	0
Total Circuit Length (Miles)	39.285	350 Miscoordination of protection devices	0
Customer Count	230.263013	380 Other equipment installation/design	0
Date of Last Circuit Trlm	2015	400 Decay/age of material/equipment	0
Circuit 5 Year Average (SADI)	201.4870816	420 Tree growth	0
Reporting Year (SAIDI)	207.076244	430 Tree failure from overhang or dead tree without ice/snow	0
Circuit 5 Year Average (SAIFI)	2.167049354	440 Trees with ice/snow	0
Reporting Year (SAIFI)	0.977143472	470 Borrower crew cuts tree	0
		490 Maintenance, other	0
		500 Lightning	0.058823529
		510 Wind, not trees	0.058823529
		520 Ice, sleet, frost, not trees	0
		530 Flood	0
		540 Storm	0.294117647
		590 Weather, other	0
		600 Animal/bird	0
		630 Squirrel	0
		690 Animal, other	0
		700 Customer-caused	0
		710 Motor vehicle	0
		715 Farming Equipment	0.058823529
		720 Aircraft	0
		730 Fire	0
		740 Public cuts tree	0
		750 Vandalism	0
		760 Switching error or caused by construction or maintenance	0
		790 Public, other	0
		800 Other	0.058823529
		999 Cause unknown	0.235294118
			100%

Corrective Action Plan

Weather was the main factor in this circuits outage results. No further action required.

Substation Name Kevil
Substation Number 28
Substation County Ballard
Substation Road Woodville Rd
Substation Town Kevil
Circuit Name Hobbs Rd
Circuit Number 2801
Circuit Location 2801-Hobbs Rd
Total Circuit Length (Miles) 53.455
Customer Count 557.260273
Date of Last Circuit Trim 2017
Circuit 5 Year Average (SADI) 79.03814226
Reporting Year (SAIDI) 245.011185
Circuit 5 Year Average (SAIFI) 0.882233764
Reporting Year (SAIFI) 2.289773849

Outage Causes

Cause	Percentage (%)
-------	----------------

000 Power supply	0.058823529
100 Construction	0.058823529
110 Maintenance	0
190 Other planned	0
300 Material or equipment fault/failure	0.058823529
310 Installation fault	0
320 Conductor sag or inadequate clearance	0
340 Overload	0
350 Miscoordination of protection devices	0
380 Other equipment installation/design	0
400 Decay/age of material/equipment	0
420 Tree growth	0
430 Tree failure from overhang or dead tree without ice/snow	0.176470588
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
490 Maintenance, other	0
500 Lightning	0.117647059
510 Wind, not trees	0
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0.117647059
590 Weather, other	0
600 Animal/bird	0.058823529
630 Squirrel	0.058823529
690 Animal, other	0
700 Customer-caused	0
710 Motor vehicle	0
715 Farming Equipment	0.058823529
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0
750 Vandalism	0
760 Switching error or caused by construction or maintenance	0
790 Public, other	0
800 Other	0
999 Cause unknown	0.235294118

100%

Corrective Action Plan

Danger trees outside of JPEC's ROW are becoming an issue and we are working with our members and contractor to identify and remove. A power supply outage was also factored into this station's performance.

Substation Name Kevil
Substation Number 28
Substation County Ballard
Substation Road Woodville Rd
Substation Town Kevil
Circuit Name Woodville Rd
Circuit Number 2802
Circuit Location 2802-Woodville Rd
Total Circuit Length (Miles) 70.665
Customer Count 544.756164
Date of Last Circuit Trim 2017
Circuit 5 Year Average (SADI) 89.18471316
Reporting Year (SAIDI) 264.415548
Circuit 5 Year Average (SAIFI) 0.831187237
Reporting Year (SAIFI) 2.481844336

Outage Causes

Cause	Percentage (%)
-------	----------------

000 Power supply	0.041666667
100 Construction	0
110 Maintenance	0.041666667
190 Other planned	0
300 Material or equipment fault/failure	0.041666667
310 Installation fault	0
320 Conductor sag or inadequate clearance	0
340 Overload	0
350 Miscoordination of protection devices	0
360 Other equipment installation/design	0
400 Decay/age of material/equipment	0
420 Tree growth	0.041666667
430 Tree failure from overhang or dead tree without ice/snow	0.083333333
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
490 Maintenance, other	0
500 Lightning	0.083333333
510 Wind, not trees	0.083333333
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0.041666667
580 Weather, other	0
600 Animal/bird	0
630 Squirrel	0.25
690 Animal, other	0
700 Customer-caused	0
710 Motor vehicle	0
715 Farming Equipment	0
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0
750 Vandalism	0
760 Switching error or caused by construction or maintenance	0
790 Public, other	0
800 Other	0.083333333
999 Cause unknown	0.208333333

100%

Corrective Action Plan
 No corrective action needed. Circuit trimmed in 2017.

Substation Name High Point
Substation Number 29
Substation County McCracken
Substation Road Noble Rd
Substation Town West Paducah
Circuit Name Carneal Rd
Circuit Number 2902
Circuit Location 2902-Carneal Rd
Total Circuit Length (Miles) 17.372
Customer Count 186,019,178
Date of Last Circuit Trlm 2015
Circuit 5 Year Average (SADI) 160.2091433
Reporting Year (SAIDI) 236.975566
Circuit 5 Year Average (SAIFI) 1.761107594
Reporting Year (SAIFI) 1.704125367

Outage Causes

Cause	Percentage (%)
-------	----------------

000 Power supply	0
100 Construction	0.357142857
110 Maintenance	0.071428571
190 Other planned	0
300 Material or equipment fault/failure	0
310 Installation fault	0
320 Conductor sag or inadequate clearance	0
340 Overload	0
350 Miscoordination of protection devices	0
360 Other equipment installation/design	0
400 Decay/age of material/equipment	0
420 Tree growth	0
430 Tree failure from overhang or dead tree without ice/snow	0.071428571
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
490 Maintenance, other	0
500 Lightning	0.142857143
510 Wind, not trees	0
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0
590 Weather, other	0
600 Animal/bird	0
630 Squirrel	0
690 Animal, other	0
700 Customer-caused	0
710 Motor vehicle	0
715 Farming Equipment	0
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0
750 Vandalism	0
760 Switching error or caused by construction or maintenance	0
790 Public, other	0.071428571
800 Other	0.142857143
999 Cause unknown	0.142857143

100%

Corrective Action Plan
 No action needed.

		Outage Causes	
		Cause	Percentage (%)
Substation Name	Coleman Road	000 Power supply	0
Substation Number	30	100 Construction	0
Substation County	McCracken	110 Maintenance	0.083333333
Substation Road	Coleman Rd	190 Other planned	0.083333333
Substation Town	Paducah	300 Material or equipment fault/failure	0.083333333
Circuit Name	Conrad Heights	310 Installation fault	0
Circuit Number	3002	320 Conductor sag or inadequate clearance	0
Circuit Location	3002-Conrad Heights	340 Overload	0
Total Circuit Length (Miles)	18.174	350 Miscoordination of protection devices	0
Customer Count	393.402739	360 Other equipment installation/design	0
Date of Last Circuit Trim	2015	400 Decay/age of material/equipment	0
Circuit 5 Year Average (SADI)	68.06957608	420 Tree growth	0
Reporting Year (SAIDI)	105.878774	430 Tree failure from overhang or dead tree without ice/snow	0.166666667
Circuit 5 Year Average (SAIFI)	0.856754327	440 Trees with ice/snow	0
Reporting Year (SAIFI)	1.611580035	470 Borrower crew cuts tree	0
		490 Maintenance, other	0
		500 Lightning	0.083333333
		510 Wind, not trees	0
		520 Ice, sleet, frost, not trees	0
		530 Flood	0
		540 Storm	0.083333333
		590 Weather, other	0
		600 Animal/bird	0
		630 Squirrel	0.083333333
		690 Animal, other	0.083333333
		700 Customer-caused	0
		710 Motor vehicle	0
		715 Farming Equipment	0
		720 Aircraft	0
		730 Fire	0
		740 Public cuts tree	0
		750 Vandalism	0
		760 Switching error or caused by construction or maintenance	0
		790 Public, other	0
		800 Other	0.083333333
		999 Cause unknown	0.166666667
			100%

Corrective Action Plan

Outage caused by a snake inside the station on the bus. This circuit is part of a distributed automation scheme and the equipment that switches this circuit to another circuit was out of service for testing and repair. This equipment has been repaired and is back in service.

		Outage Causes	
		Cause	Percentage (%)
Substation Name	Coleman Road	000 Power supply	0
Substation Number	30	100 Construction	0
Substation County	McCracken	110 Maintenance	0
Substation Road	Coleman Rd	190 Other planned	0
Substation Town	Paducah	300 Material or equipment fault/failure	0
Circuit Name	Holt Rd	310 Installation fault	0
Circuit Number	3004	320 Conductor sag or inadequate clearance	0
Circuit Location	3004-Hwy 60 Business	340 Overload	0
Total Circuit Length (Miles)	7.678	350 Miscoordination of protection devices	0
Customer Count	103.361643	360 Other equipment installation/design	0
Date of Last Circuit Trim	2015	400 Decay/age of material/equipment	0
Circuit 5 Year Average (SADI)	11.67023105	420 Tree growth	0
Reporting Year (SAIDI)	99.921012	430 Tree failure from overhang or dead tree without ice/snow	0
Circuit 5 Year Average (SAIFI)	0.218031997	440 Trees with ice/snow	0
Reporting Year (SAIFI)	0.986826419	470 Borrower crew cuts tree	0
		490 Maintenance, other	0
		500 Lightning	0.5
		510 Wind, not trees	0
		520 Ice, sleet, frost, not trees	0
		530 Flood	0
		540 Storm	0
		590 Weather, other	0
		600 Animal/bird	0
		630 Squirrel	0
		690 Animal, other	0.5
		700 Customer-caused	0
		710 Motor vehicle	0
		715 Farming Equipment	0
		720 Aircraft	0
		730 Fire	0
		740 Public cuts tree	0
		750 Vandalism	0
		760 Switching error or caused by construction or maintenance	0
		790 Public, other	0
		800 Other	0
		999 Cause unknown	0

100%

Corrective Action Plan

Outage caused by a snake inside the station on the bus. This circuit is part of a distributed automation scheme and the equipment that switches this circuit to another circuit was out of service. This equipment has been repaired and is back in service.

Substation Name Coleman Road
Substation Number 30
Substation County McCracken
Substation Road Coleman Rd
Substation Town Paducah
Circuit Name Ky Oaks Mall
Circuit Number 3005
Circuit Location 3005-KY Oaks Mall
Total Circuit Length (Miles) 3.877
Customer Count 80.520547
Date of Last Circuit Trim 2015
Circuit 5 Year Average (SADI) 6.425833674
Reporting Year (SAIDI) 110.381763
Circuit 5 Year Average (SAIFI) 0.249843474
Reporting Year (SAIFI) 0.956277657

Outage Causes		Cause	Percentage (%)
000	Power supply		0
100	Construction		0
110	Maintenance		0
190	Other planned		0
300	Material or equipment fault/failure		0
310	Installation fault		0
320	Conductor sag or inadequate clearance		0
340	Overload		0
350	Miscoordination of protection devices		0
360	Other equipment installation/design		0
400	Decay/age of material/equipment		0
420	Tree growth		0
430	Tree failure from overhang or dead tree without ice/snow		0
440	Trees with ice/snow		0
470	Borrower crew cuts tree		0
490	Maintenance, other		0
500	Lightning		0
510	Wind, not trees		0
520	Ice, sleet, frost, not trees		0
530	Flood		0
540	Storm		0
590	Weather, other		0
600	Animal/bird		0
630	Squirrel		0
690	Animal, other		1
700	Customer-caused		0
710	Motor vehicle		0
715	Farming Equipment		0
720	Aircraft		0
730	Fire		0
740	Public cuts tree		0
750	Vandalism		0
760	Switching error or caused by construction or maintenance		0
790	Public, other		0
800	Other		0
999	Cause unknown		0

100%

Corrective Action Plan

Outage caused by a snake inside the station on the bus. Due to how the sequencing worked, this circuit remained out until the situation was resolved.

Outage Causes

Substation Name	Smithland
Substation Number	32
Substation County	Livingston
Substation Road	Iuka Rd
Substation Town	Smithland
Circuit Name	Smithland
Circuit Number	3201
Circuit Location	3201-Smithland
Total Circuit Length (Miles)	29.715
Customer Count	388.4
Date of Last Circuit Trim	2014
Circuit 5 Year Average (SADI)	222.4704995
Reporting Year (SAIDI)	287.154994
Circuit 5 Year Average (SAIFI)	2.063652181
Reporting Year (SAIFI)	2.469104016

Cause	Percentage (%)
000 Power supply	0.076923077
100 Construction	0.076923077
110 Maintenance	0.153846154
190 Other planned	0
300 Material or equipment fault/failure	0
310 Installation fault	0
320 Conductor sag or inadequate	0
340 Overload	0
350 Miscoordination of protection	0
360 Other equipment installation	0.076923077
400 Decay/age of material/equipment	0
420 Tree growth	0
430 Tree failure from overhang or	0.153846154
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
490 Maintenance, other	0.153846154
500 Lightning	0
510 Wind, not trees	0
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0
590 Weather, other	0
600 Animal/bird	0
630 Squirrel	0.230769231
690 Animal, other	0
700 Customer-caused	0
710 Motor vehicle	0
715 Farming Equipment	0
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0
750 Vandalism	0
760 Switching error or caused by	0
790 Public, other	0
800 Other	0
999 Cause unknown	0.076923077

100%

Corrective Action Plan

Power supply outage. Operator missed turning the station back on after isolating the transmission fault. Circuit is scheduled for ROW maintenance in 2018

Outage Causes

Substation Name Smithland
Substation Number 32
Substation County Livingston
Substation Road Iuka Rd
Substation Town Smithland
Circuit Name Mitchell Store
Circuit Number 3204
Circuit Location 3204-Mitchell Store
Total Circuit Length (Miles) 55.336
Customer Count 379.931506
Date of Last Circuit Trim 2014
Circuit 5 Year Average (SADI) 160.3690724
Reporting Year (SAIDI) 251.234758
Circuit 5 Year Average (SAIFI) 1.120547483
Reporting Year (SAIFI) 3.029493427

Cause	Percentage (%)
000 Power supply	0.043478261
100 Construction	0
110 Maintenance	0
190 Other planned	0.043478261
300 Material or equipment fault/failure	0
310 Installation fault	0
320 Conductor sag or inadequate clearance	0
340 Overload	0
350 Miscoordination of protection	0
360 Other equipment installation	0
400 Decay/age of material/equipment	0
420 Tree growth	0.086956522
430 Tree failure from overhang or contact	0.304347826
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
490 Maintenance, other	0
500 Lightning	0
510 Wind, not trees	0.086956522
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0.043478261
590 Weather, other	0
600 Animal/bird	0
630 Squirrel	0.130434783
690 Animal, other	0
700 Customer-caused	0
710 Motor vehicle	0
715 Farming Equipment	0
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0
750 Vandalism	0
760 Switching error or caused by	0
790 Public, other	0.043478261
800 Other	0.086956522
999 Cause unknown	0.130434783

100%

Corrective Action Plan

Power supply outage. Operator missed turning the station back on after isolating the transmission fault. Circuit is scheduled for ROW maintenance in 2018

Outage Causes

Substation Name Little Union
Substation Number 39
Substation County McCracken
Substation Road Old Hinkleville Rd
Substation Town Paducah
Circuit Name US 60 West
Circuit Number 3902
Circuit Location 3902-US 60 West
Total Circuit Length (Miles) 36.427
Customer Count 462.536986
Date of Last Circuit Trim 2017
Circuit 5 Year Average (SADI) 58.407218
Reporting Year (SAIDI) 64.081361
Circuit 5 Year Average (SAIFI) 0.817731028
Reporting Year (SAIFI) 0.419425918

Cause	Percentage (%)
000 Power supply	0
100 Construction	0.2
110 Maintenance	0
190 Other planned	0
300 Material or equipment fault/f	0
310 Installation fault	0
320 Conductor sag or inadequate	0
340 Overload	0
350 Miscoordination of protection	0
360 Other equipment installation	0
400 Decay/age of material/equip	0
420 Tree growth	0
430 Tree failure from overhang c	0.133333333
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
490 Maintenance, other	0
500 Lightning	0.133333333
510 Wind, not trees	0
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0
590 Weather, other	0
600 Animal/bird	0.066666667
630 Squirrel	0
690 Animal, other	0
700 Customer-caused	0.133333333
710 Motor vehicle	0
715 Farming Equipment	0
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0
750 Vandalism	0
760 Switching error or caused by	0
790 Public, other	0.133333333
800 Other	0.066666667
999 Cause unknown	0.133333333

100%

Corrective Action Plan

No corrective action needed. Circuit trimmed in 2017.

Substation Name Husbands Road
Substation Number 40
Substation County McCracken
Substation Road Husbands Rd
Substation Town Paducah
Circuit Name Clarkline Rd
Circuit Number 4044
Circuit Location 4044-Clarkline Rd
Total Circuit Length (Miles) 26.55
Customer Count 300.451612
Date of Last Circuit Trim 2014
Circuit 5 Year Average (SADI) 26.19067671
Reporting Year (SAIDI) 26.706463
Circuit 5 Year Average (SAIFI) 0.529747286
Reporting Year (SAIFI) 0.183057763

Outage Causes	
Cause	Percentage (%)
000 Power supply	0
100 Construction	0
110 Maintenance	0.2
190 Other planned	0
300 Material or equipment fault/f	0.2
310 Installation fault	0
320 Conductor sag or inadequate	0
340 Overload	0
350 Miscoordination of protection	0
360 Other equipment installation	0
400 Decay/age of material/equip	0
420 Tree growth	0
430 Tree failure from overhang c	0.2
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
490 Maintenance, other	0
500 Lightning	0
510 WInd, not trees	0
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0
590 Weather, other	0
600 Animal/bird	0
630 Squirrel	0
690 Animal, other	0
700 Customer-caused	0
710 Motor vehicle	0
715 Farming Equipment	0
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0
750 Vandallsm	0
760 Switching error or caused by	0
790 Public, other	0.2
800 Other	0
999 Cause unknown	0.2

100%

Corrective Action Plan
 No corrective action needed. Circuit due for cycle trimming in 2018.

Substation Name Reidland
Substation Number 41
Substation County McCracken
Substation Road US 62
Substation Town Reidland
Circuit Name Reidland Water
Circuit Number 4102
Circuit Location 4102-Reidland Water
Total Circuit Length (Miles) 2.956
Customer Count 53.934246
Date of Last Circuit Trim 2014
Circuit 5 Year Average (SAIDI) 57.90232759
Reporting Year (SAIDI) 105.109469
Circuit 5 Year Average (SAIFI) 0.559997533
Reporting Year (SAIFI) 1.16808901

Outage Causes	
Cause	Percentage (%)
000 Power supply	0
100 Construction	0.2
110 Maintenance	0
190 Other planned	0
300 Material or equipment fault/failure	0
310 Installation fault	0
320 Conductor sag or inadequate clearance	0
340 Overload	0
350 Miscoordination of protection devices	0
360 Other equipment installation/design	0
400 Decay/age of material/equipment	0
420 Tree growth	0
430 Tree fallure from overhang or dead tree without ice/snow	0.2
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
490 Maintenance, other	0
500 Lightning	0
510 Wind, not trees	0
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0
590 Weather, other	0
600 Animal/bird	0
630 Squirrel	0
690 Animal, other	0
700 Customer-caused	0
710 Motor vehicle	0.2
715 Farming Equipment	0
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0
750 Vandalism	0
760 Switching error or caused by construction or maintenance	0
790 Public, other	0
800 Other	0
999 Cause unknown	0.4

100%

Corrective Action Plan
 No corrective action needed. Circuit due for cycle trimming in 2018.

Substation Name Culp
Substation Number 42
Substation County McCracken
Substation Road Kerth Rd
Substation Town Paducah
Circuit Name Proform
Circuit Number 4201
Circuit Location 4201-Proform
Total Circuit Length (Miles) 25.596
Customer Count 423.421917
Date of Last Circuit Trim 2014
Circuit 5 Year Average (SADI) 51.7910204
Reporting Year (SAIDI) 101.041081
Circuit 5 Year Average (SAIFI) 0.762080467
Reporting Year (SAIFI) 1.568175792

Outage Causes

Cause	Percentage (%)
-------	----------------

000 Power supply	0
100 Construction	0
110 Maintenance	0.055555556
190 Other planned	0
300 Material or equipment fault/failure	0.055555556
310 Installation fault	0
320 Conductor sag or inadequate clearance	0
340 Overload	0
350 Miscoordination of protection devices	0
360 Other equipment installation/design	0
400 Decay/age of material/equipment	0
420 Tree growth	0.111111111
430 Tree failure from overhang or dead tree without ice/snow	0.166666667
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
490 Maintenance, other	0
500 Lightning	0
510 Wind, not trees	0
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0.055555556
590 Weather, other	0
600 Animal/bird	0.055555556
630 Squirrel	0.222222222
690 Animal, other	0
700 Customer-caused	0
710 Motor vehicle	0
715 Farming Equipment	0
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0
750 Vandalism	0
760 Switching error or caused by construction or maintenance	0
790 Public, other	0
800 Other	0.055555556
999 Cause unknown	0.222222222

100%

Corrective Action Plan

Unknown cause of an outage that had the circuit out for over an hour. JPEC has begin infra-redding circuits and plans to infra-red this circuit and others out of Culp substation this spring. Circuit is scheduled for ROW maintenance in 2018.

Substation Name Culp
Substation Number 42
Substation County McCracken
Substation Road Kerth Rd
Substation Town Paducah
Circuit Name Little Cypress
Circuit Number 4202
Circuit Location 4202-Little Cypress
Total Circuit Length (Miles) 8.224
Customer Count 50.558904
Date of Last Circuit Trim 2014
Circuit 5 Year Average (SAIDI) 10.78144874
Reporting Year (SAIDI) 68.909721
Circuit 5 Year Average (SAIFI) 0.12407372
Reporting Year (SAIFI) 1.127397857

Outage Causes

Cause	Percentage (%)
-------	----------------

000 Power supply	0
100 Construction	0
110 Maintenance	0
190 Other planned	0
300 Material or equipment fault/failure	0
310 Installation fault	0.166666667
320 Conductor sag or inadequate clearance	0
340 Overload	0
350 Miscoordination of protection devices	0
360 Other equipment installation/design	0.333333333
400 Decay/age of material/equipment	0
420 Tree growth	0.166666667
430 Tree failure from overhang or dead tree without ice/snow	0.166666667
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
490 Maintenance, other	0
500 Lightning	0
510 Wind, not trees	0
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0
590 Weather, other	0
600 Animal/bird	0
630 Squirmet	0
690 Animal, other	0
700 Customer-caused	0
710 Motor vehicle	0
715 Farming Equipment	0
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0
750 Vandalism	0
760 Switching error or caused by construction or maintenance	0
790 Public, other	0
800 Other	0
999 Cause unknown	0.166666667

100%

Corrective Action Plan

No corrective action needed. Circuit is scheduled for ROW maintenance in 2018.

Substation Name Culp
Substation Number 42
Substation County McCracken
Substation Road Kerth Rd
Substation Town Paducah
Circuit Name Sharpe
Circuit Number 4204
Circuit Location 4204-Sharpe
Total Circuit Length (Miles) 77.482
Customer Count 1068.243835
Date of Last Circuit Trim 2014
Circuit 5 Year Average (SAIDI) 43.65510468
Reporting Year (SAIDI) 69.972788
Circuit 5 Year Average (SAIFI) 0.914437278
Reporting Year (SAIFI) 0.555116707

Outage Causes

Cause	Percentage (%)
000 Power supply	0
100 Construction	0.034482759
110 Maintenance	0.068965517
190 Other planned	0
300 Material or equipment fault/failure	0.103448276
310 Installation fault	0
320 Conductor sag or inadequate clearance	0
340 Overload	0
350 Miscoordination of protection devices	0
360 Other equipment installation/design	0.034482759
400 Decay/lage of material/equipment	0
420 Tree growth	0
430 Tree failure from overhang or dead tree without ice/snow	0.068965517
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
490 Maintenance, other	0.034482759
500 Lightning	0.068965517
510 Wind, not trees	0.034482759
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0.034482759
590 Weather, other	0
600 Animal/bird	0.034482759
630 Squirrel	0.310344828
690 Animal, other	0
700 Customer-caused	0
710 Motor vehicle	0.034482759
715 Farming Equipment	0
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0
750 Vandalism	0
760 Switching error or caused by construction or maintenance	0
790 Public, other	0
800 Other	0
999 Cause unknown	0.137931034

100%

Corrective Action Plan

Major outages on this circuit are due to ROW. Although "Tree Failure" was the cause, weather was the underlying factor. Circuit is scheduled for ROW maintenance in 2018

Substation Name Calvert City
Substation Number 43
Substation County Marshall
Substation Road Gilbertsville Hwy
Substation Town Calvert City
Circuit Name Gilbertsville
Circuit Number 4303
Circuit Location 4303-Gilbertsville
Total Circuit Length (Miles) 23.086
Customer Count 366.402739
Date of Last Circuit Trim 2017
Circuit 5 Year Average (SADI) 43.93734106
Reporting Year (SAIDI) 117.250761
Circuit 5 Year Average (SAIFI) 0.480560423
Reporting Year (SAIFI) 0.357530078

Outage Causes

Cause	Percentage (%)
000 Power supply	0
100 Construction	0
110 Maintenance	0.117647059
190 Other planned	0
300 Material or equipment fault/failure	0.117647059
310 Installation fault	0
320 Conductor sag or inadequate clearance	0
340 Overload	0
350 Miscoordination of protection devices	0
380 Other equipment installation/design	0
400 Decay/age of material/equipment	0
420 Tree growth	0
430 Tree failure from overhang or dead tree without ice/snow	0.176470588
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
480 Maintenance, other	0
500 Lightning	0
510 Wind, not trees	0
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0.058823529
590 Weather, other	0
600 Animal/bird	0
630 Squirrel	0.058823529
690 Animal, other	0.058823529
700 Customer-caused	0
710 Motor vehicle	0
715 Farming Equipment	0
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0
750 Vandalism	0
780 Switching error or caused by construction or maintenance	0
790 Public, other	0
800 Other	0.058823529
999 Cause unknown	0.352941176

100%

Corrective Action Plan
 No action needed.

		Outage Causes	
		Cause	Percentage (%)
Substation Name	Vulcan	000 Power supply	0
Substation Number	45	100 Construction	0
Substation County	Livingston	110 Maintenance	0
Substation Road	Vulcan Materials	190 Other planned	0
Substation Town	Grand Rivers	300 Material or equipment fault/failure	0
Circuit Name	vulcan 1-Rock Crusher	310 Installation fault	0
Circuit Number	4503	320 Conductor sag or inadequate clearance	0
Circuit Location	03-Vulcan1 Rock Crusher	340 Overload	0
Total Circuit Length (Miles)	1.273	350 Miscoordination of protection devices	0
Customer Count	2	360 Other equipment installation/design	0.333333333
Date of Last Circuit Trim	2016	400 Decay/age of material/equipment	0
Circuit 5 Year Average (SADI)	30.9	420 Tree growth	0
Reporting Year (SAIDI)	190	430 Tree failure from overhang or dead tree without ice/snow	0
Circuit 5 Year Average (SAIFI)	0.2	440 Trees with ice/snow	0
Reporting Year (SAIFI)	1.5	470 Borrower crew cuts tree	0
		490 Maintenance, other	0
		500 Lightning	0
		510 Wind, not trees	0
		520 Ice, sleet, frost, not trees	0
		530 Flood	0
		540 Storm	0
		590 Weather, other	0
		600 Animal/bird	0
		630 Squirrel	0
		690 Animal, other	0
		700 Customer-caused	0
		710 Motor vehicle	0
		715 Farming Equipment	0
		720 Aircraft	0
		730 Fire	0
		740 Public cuts tree	0
		750 Vandalism	0
		760 Switching error or caused by construction or maintenance	0
		790 Public, other	0
		800 Other	0.333333333
		999 Cause unknown	0.333333333
			100%

Corrective Action Plan
 Recloser failure. Equipment replaced. No action needed.

Substation Name Vulcan
Substation Number 45
Substation County Livingston
Substation Road Vulcan Materials
Substation Town Grand Rivers
Circuit Name Kinder Morgan 1
Circuit Number 4504
Circuit Location 4504-Kinder Morgan 1
Total Circuit Length (Miles) 7.774
Customer Count 31.643835
Date of Last Circuit Trim 2016
Circuit 5 Year Average (SADI) 111.9650439
Reporting Year (SAIDI) 378.55715
Circuit 5 Year Average (SAIFI) 0.874599358
Reporting Year (SAIFI) 1.927705665

Outage Causes		Percentage (%)
Cause		
000 Power supply		0
100 Construction		0
110 Maintenance		0
190 Other planned		0
300 Material or equipment fault/failure		0
310 Installation fault		0
320 Conductor sag or inadequate clearance		0
340 Overload		0
350 Miscoordination of protection devices		0
360 Other equipment installation/design		0.333333333
400 Decay/age of material/equipment		0
420 Tree growth		0
430 Tree failure from overhang or dead tree without ice/snow		0.333333333
440 Trees with ice/snow		0
470 Borrower crew cuts tree		0
480 Maintenance, other		0
500 Lightning		0
510 Wind, not trees		0
520 Ice, sleet, frost, not trees		0
530 Flood		0
540 Storm		0
580 Weather, other		0
600 Animal/bird		0
630 Squirrel		0
680 Animal, other		0
700 Customer-caused		0
710 Motor vehicle		0
715 Farming Equipment		0
720 Aircraft		0
730 Fire		0
740 Public cuts tree		0
750 Vandalism		0
760 Switching error or caused by construction or maintenance		0
780 Public, other		0
800 Other		0.333333333
999 Cause unknown		0

100%

Corrective Action Plan
 Recloser failure. Equipment replaced. No action needed.

Substation Name Vulcan
Substation Number 45
Substation County Livingston
Substation Road Vulcan Materials
Substation Town Grand Rivers
Circuit Name Vulcan 2 Hwy 62
Circuit Number 4505
Circuit Location 4505-Vulcan 2 Hwy 62
Total Circuit Length (Miles) 5.015
Customer Count 3
Date of Last Circuit Trim 2016
Circuit 5 Year Average (SAIDI) 49.70909091
Reporting Year (SAIDI) 134
Circuit 5 Year Average (SAIFI) 0.381818182
Reporting Year (SAIFI) 0.666666667

Outage Causes

Cause	Percentage (%)
-------	----------------

000 Power supply	0
100 Construction	0
110 Maintenance	0
190 Other planned	0
300 Material or equipment fault/failure	0
310 Installation fault	0
320 Conductor sag or inadequate clearance	0
340 Overload	0
350 Miscoordination of protection devices	0
360 Other equipment installation/design	1
400 Decay/age of material/equipment	0
420 Tree growth	0
430 Tree failure from overhang or dead tree without ice/snow	0
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
490 Maintenance, other	0
500 Lightning	0
510 Wind, not trees	0
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0
590 Weather, other	0
600 Animal/bird	0
630 Squirrel	0
690 Animal, other	0
700 Customer-caused	0
710 Motor vehicle	0
715 Farming Equipment	0
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0
750 Vandalism	0
760 Switching error or caused by construction or maintenance	0
790 Public, other	0
800 Other	0
899 Cause unknown	0

100%

Corrective Action Plan
 Recloser failure. Equipment replaced. No action needed.

Substation Name New York
Substation Number 47
Substation County Ballard
Substation Road La Center Rd
Substation Town Wickliffe
Circuit Name Hinkleville
Circuit Number 4701
Circuit Location 4701-Hinkleville
Total Circuit Length (Miles) 44.517
Customer Count 264,408,219
Date of Last Circuit Trim 2017
Circuit 5 Year Average (SADI) 182.273167
Reporting Year (SAIDI) 311.276254
Circuit 5 Year Average (SAIFI) 1.696710295
Reporting Year (SAIFI) 2.602037117

Outage Causes	
Cause	Percentage (%)
000 Power supply	0
100 Construction	0.16
110 Maintenance	0.16
190 Other planned	0
300 Material or equipment fault/failure	0.08
310 Installation fault	0
320 Conductor sag or inadequate clearance	0.04
340 Overload	0
350 Miscoordination of protection devices	0
360 Other equipment installation/design	0
400 Decay/age of material/equipment	0
420 Tree growth	0
430 Tree fallure from overhang or dead tree without ice/snow	0
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
490 Maintenance, other	0
500 Lightning	0.08
510 Wind, not trees	0
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0
590 Weather, other	0
600 Animal/bird	0
630 Squirrel	0.2
690 Animal, other	0.04
700 Customer-caused	0
710 Motor vehicle	0
715 Farming Equipment	0
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0
750 Vandalism	0
760 Switching error or caused by construction or maintenance	0
790 Public, other	0
800 Other	0.04
999 Cause unknown	0.2

100%

Corrective Action Plan

Animal in substation. No action needed. Circuit was trimmed fall of 2017.

		Outage Causes	
		Cause	Percentage (%)
Substation Name	New York	000 Power supply	0
Substation Number	47	100 Construction	0.1
Substation County	Ballard	110 Maintenance	0.3
Substation Road	La Center Rd	190 Other planned	0
Substation Town	Wickliffe	300 Material or equipment fault/failure	0.05
Circuit Name	US 286 East-Gage	310 Installation fault	0
Circuit Number	4702	320 Conductor sag or inadequate clearance	0
Circuit Location	702-US 286 East Gage	340 Overload	0
Total Circuit Length (Miles)	45.25	350 Miscoordination of protection devices	0
Customer Count	267.279452	360 Other equipment installation/design	0
Date of Last Circuit Trim	2017	400 Decay/age of material/equipment	0
Circuit 5 Year Average (SADI)	97.37166885	420 Tree growth	0
Reporting Year (SAIDI)	304.991645	430 Tree failure from overhang or dead tree without ice/snow	0.2
Circuit 5 Year Average (SAIFI)	1.087766165	440 Trees with ice/snow	0
Reporting Year (SAIFI)	2.510481053	470 Borrower crew cuts tree	0
		490 Maintenance, other	0
		500 Lightning	0.05
		510 Wind, not trees	0
		520 Ice, sleet, frost, not trees	0
		530 Flood	0
		540 Storm	0
		590 Weather, other	0
		600 Animal/bird	0.05
		630 Squirrel	0.1
		690 Animal, other	0
		700 Customer-caused	0
		710 Motor vehicle	0.1
		715 Farming Equipment	0
		720 Aircraft	0
		730 Fire	0
		740 Public cuts tree	0
		750 Vandalism	0
		760 Switching error or caused by construction or maintenance	0
		790 Public, other	0
		800 Other	0
		999 Cause unknown	0.05

100%

Corrective Action Plan

Wreck during a storm that took the recloser out. Animal in Substation. Circuit was trimmed fall of 2017.

Substation Name New York
Substation Number 47
Substation County Ballard
Substation Road La Center Rd
Substation Town Wickliffe
Circuit Name Wickliffe
Circuit Number 4704
Circuit Location 4704-Wickliffe
Total Circuit Length (Miles) 49.217
Customer Count 354.49315
Date of Last Circuit Trim 2017
Circuit 5 Year Average (SAIDI) 102.9242055
Reporting Year (SAIDI) 337.45645
Circuit 5 Year Average (SAIFI) 1.004504712
Reporting Year (SAIFI) 2.993005648

Outage Causes	
Cause	Percentage (%)
000 Power supply	0
100 Construction	0.076923077
110 Maintenance	0
190 Other planned	0
300 Material or equipment fault/failure	0.038461538
310 Installation fault	0
320 Conductor sag or inadequate clearance	0
340 Overload	0
350 Miscoordination of protection devices	0
360 Other equipment installation/design	0
400 Decay/age of material/equipment	0
420 Tree growth	0.115384615
430 Tree fallure from overhang or dead tree without ice/snow	0.384615385
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
490 Maintenance, other	0
500 Lightning	0.038461538
510 Wind, not trees	0
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0.038461538
590 Weather, other	0
600 Animal/bird	0
630 Squirrel	0.115384615
690 Animal, other	0.038461538
700 Customer-caused	0
710 Motor vehicle	0
715 Farming Equipment	0
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0
750 Vandalism	0
760 Switching error or caused by construction or maintenance	0
790 Public, other	0
800 Other	0.038461538
999 Cause unknown	0.115384615

100%

Corrective Action Plan
 Circuit was trimmed fall of 2017. Animal In substation.

Substation Name New York
Substation Number 47
Substation County Ballard
Substation Road La Center Rd
Substation Town Wickliffe
Circuit Name Slater
Circuit Number 4705
Circuit Location 4705-Slater
Total Circuit Length (Miles) 68.382
Customer Count 346.210958
Date of Last Circuit Trim 2017
Circuit 5 Year Average (SADI) 149.422072
Reporting Year (SAIDI) 325.154352
Circuit 5 Year Average (SAIFI) 1.191887375
Reporting Year (SAIFI) 3.884914584

Outage Causes

Cause	Percentage (%)
-------	----------------

000 Power supply	0
100 Construction	0
110 Maintenance	0.029411765
180 Other planned	0
300 Material or equipment fault/failure	0.117647059
310 Installation fault	0
320 Conductor sag or inadequate clearance	0
340 Overload	0
350 Miscoordination of protection devices	0
360 Other equipment installation/design	0.058823529
400 Decay/age of material/equipment	0
420 Tree growth	0.029411765
430 Tree failure from overhang or dead tree without ice/snow	0.117647059
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
490 Maintenance, other	0
500 Lightning	0.058823529
510 Wind, not trees	0.029411765
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0.058823529
590 Weather, other	0.029411765
600 Animal/bird	0
630 Squirrel	0.029411765
690 Animal, other	0
700 Customer-caused	0.029411765
710 Motor vehicle	0
715 Farming Equipment	0.029411765
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0
750 Vandalism	0
760 Switching error or caused by construction or maintenance	0
790 Public, other	0.029411765
800 Other	0.117647059
999 Cause unknown	0.235294118

100%

Corrective Action Plan
 Weather. Circuit was trimmed fall of 2017. Animal in substation.

Substation Name Lovelaceville
Substation Number 49
Substation County Ballard
Substation Road Cunningham Rd
Substation Town Lovelaceville
Circuit Name Blandville
Circuit Number 4901
Circuit Location 4901-Blandville
Total Circuit Length (Miles) 20.368
Customer Count 134.564383
Date of Last Circuit Trim 2015
Circuit 5 Year Average (SADI) 122.5093687
Reporting Year (SAIDI) 116.999756
Circuit 5 Year Average (SAIFI) 0.988200618
Reporting Year (SAIFI) 2.132808055

Outage Causes	
Cause	Percentage (%)
000 Power supply	0
100 Construction	0
110 Maintenance	0
190 Other planned	0
300 Material or equipment fault/failure	0
310 Installation fault	0
320 Conductor sag or inadequate clearance	0
340 Overload	0
350 Miscoordination of protection devices	0
380 Other equipment installation/design	0
400 Decay/age of material/equipment	0
420 Tree growth	0
430 Tree failure from overhang or dead tree without ice/snow	0.666666667
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
490 Maintenance, other	0
500 Lightning	0
510 Wind, not trees	0
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0
590 Weather, other	0
600 Animal/bird	0
630 Squirrel	0
690 Animal, other	0
700 Customer-caused	0
710 Motor vehicle	0
715 Farming Equipment	0.333333333
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0
750 Vandalism	0
760 Switching error or caused by construction or maintenance	0
790 Public, other	0
800 Other	0
999 Cause unknown	0

100%

Corrective Action Plan
 No action needed.

Substation Name Lovelaceville
Substation Number 49
Substation County Ballard
Substation Road Cunningham Rd
Substation Town Lovelaceville
Circuit Name Lovelaceville
Circuit Number 4902
Circuit Location 4902-Lovelaceville
Total Circuit Length (Miles) 57.681
Customer Count 521.057534
Date of Last Circuit Trlm 2015
Circuit 5 Year Average (SADI) 68.8286835
Reporting Year (SAIDI) 257.217276
Circuit 5 Year Average (SAIFI) 0.703936107
Reporting Year (SAIFI) 0.829083109

Outage Causes

Cause	Percentage (%)
000 Power supply	0
100 Construction	0
110 Maintenance	0.210526316
190 Other planned	0
300 Material or equipment fault/failure	0.052631579
310 Installation fault	0
320 Conductor sag or inadequate clearance	0
340 Overload	0
350 Miscoordination of protection devices	0
360 Other equipment installation/design	0
400 Decay/age of material/equipment	0
420 Tree growth	0
430 Tree failure from overhang or dead tree without ice/snow	0
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
490 Maintenance, other	0
500 Lightning	0
510 Wind, not trees	0
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0
590 Weather, other	0
600 Animal/bird	0.052631579
630 Squirrel	0
690 Animal, other	0
700 Customer-caused	0
710 Motor vehicle	0.421052632
715 Farming Equipment	0
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0
750 Vandalism	0
760 Switching error or caused by construction or maintenance	0
790 Public, other	0
800 Other	0.105263158
999 Cause unknown	0.157894737

100%

Corrective Action Plan
 Multiple vehicle accidents.

Substation Name Lovelaceville
Substation Number 49
Substation County Ballard
Substation Road Cunningham Rd
Substation Town Lovelaceville
Circuit Name Cunningham
Circuit Number 4903
Circuit Location 4903-Cunningham
Total Circuit Length (Miles) 64.468
Customer Count 527.852054
Date of Last Circuit Trim 2015
Circuit 5 Year Average (SADI) 132.8837945
Reporting Year (SAIDI) 217.344991
Circuit 5 Year Average (SAIFI) 1.387988874
Reporting Year (SAIFI) 0.994596869

Outage Causes	
Cause	Percentage (%)
000 Power supply	0
100 Construction	0.05
110 Maintenance	0.1
190 Other planned	0
300 Material or equipment fault/failure	0.05
310 Installation fault	0
320 Conductor sag or inadequate clearance	0
340 Overload	0
350 Miscoordination of protection devices	0
360 Other equipment installation/design	0
400 Decay/age of material/equipment	0
420 Tree growth	0.05
430 Tree failure from overhang or dead tree without ice/snow	0.3
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
480 Maintenance, other	0
500 Lightning	0.05
510 Wind, not trees	0
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0
590 Weather, other	0
600 Animal/bird	0.05
630 Squirrel	0
690 Animal, other	0.05
700 Customer-caused	0
710 Motor vehicle	0
715 Farming Equipment	0.05
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0
750 Vandalism	0
760 Switching error or caused by construction or maintenance	0
790 Public, other	0
800 Other	0.2
999 Cause unknown	0.05

100%

Corrective Action Plan
 No action needed.

Substation Name Krebs Station Road
Substation Number 50
Substation County McCracken
Substation Road Krebs Station Rd
Substation Town Paducah
Circuit Name Browns Plating
Circuit Number 5001
Circuit Location 5001-Browns Plating
Total Circuit Length (Miles) 36.923
Customer Count 511.19726
Date of Last Circuit Trim 2016
Circuit 5 Year Average (SADI) 105.7357254
Reporting Year (SAIDI) 142.966337
Circuit 5 Year Average (SAIFI) 1.414160883
Reporting Year (SAIFI) 1.25978766

Outage Causes

Cause	Percentage (%)
-------	----------------

000 Power supply	0
100 Construction	0.086956522
110 Maintenance	0.130434783
190 Other planned	0
300 Material or equipment fault/failure	0.043478261
310 Installation fault	0
320 Conductor sag or inadequate clearance	0
340 Overload	0
350 Miscoordination of protection devices	0
360 Other equipment installation/design	0
400 Decay/age of material/equipment	0
420 Tree growth	0
430 Tree failure from overhang or dead tree without ice/snow	0.217391304
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
490 Maintenance, other	0.043478261
500 Lightning	0.043478261
510 Wind, not trees	0
520 Ice, sleet, frost, not trees	0
530 Flood	0
640 Storm	0.130434783
590 Weather, other	0
600 Animal/bird	0.043478261
630 Squirrel	0.086956522
690 Animal, other	0
700 Customer-caused	0
710 Motor vehicle	0
715 Farming Equipment	0.086956522
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0
750 Vandalism	0
760 Switching error or caused by construction or maintenance	0
790 Public, other	0.043478261
800 Other	0
999 Cause unknown	0.043478261

100%

Corrective Action Plan
 No action needed.

Substation Name Freemont
Substation Number 51
Substation County McCracken
Substation Road Hardmoney Rd
Substation Town Paducah
Circuit Name Mc Neil Lane
Circuit Number 5102
Circuit Location 5102-McNeil Lane
Total Circuit Length (Miles) 45.863
Customer Count 386.405479
Date of Last Circuit Trim 2014
Circuit 5 Year Average (SADI) 206.3683388
Reporting Year (SAIDI) 211.508388
Circuit 5 Year Average (SAIFI) 1.792805919
Reporting Year (SAIFI) 1.676994854

Outage Causes	
Cause	Percentage (%)
000 Power supply	0
100 Construction	0.125
110 Maintenance	0
190 Other planned	0
300 Material or equipment fault/failure	0
310 Installation fault	0
320 Conductor sag or inadequate clearance	0
340 Overload	0
350 Miscoordination of protection devices	0
360 Other equipment installation/design	0
400 Decay/age of material/equipment	0
420 Tree growth	0
430 Tree failure from overhang or dead tree without ice/snow	0.25
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
490 Maintenance, other	0
500 Lightning	0.1875
510 Wind, not trees	0
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0
590 Weather, other	0
600 Animal/bird	0.0625
630 Squirrel	0.1875
690 Animal, other	0
700 Customer-caused	0
710 Motor vehicle	0
715 Farming Equipment	0
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0.0625
750 Vandalism	0
760 Switching error or caused by construction or maintenance	0
790 Public, other	0
800 Other	0.0625
999 Cause unknown	0.0625

100%

Corrective Action Plan
 Due for ROW In 2018

Substation Name Freemont
Substation Number 51
Substation County McCracken
Substation Road Hardmoney Rd
Substation Town Paducah
Circuit Name Bonds Rd
Circuit Number 5105
Circuit Location 5105-Bonds Rd
Total Circuit Length (Miles) 17.668
Customer Count 122.043835
Date of Last Circuit Trim 2014
Circuit 5 Year Average (SADI) 112.6012945
Reporting Year (SAIDI) 166.194384
Circuit 5 Year Average (SAIFI) 1.450431066
Reporting Year (SAIFI) 1.999281652

Outage Causes	
Cause	Percentage (%)
000 Power supply	0
100 Construction	0.25
110 Maintenance	0
190 Other planned	0
300 Material or equipment fault/failure	0
310 Installation fault	0
320 Conductor sag or inadequate clearance	0
340 Overload	0
350 Miscoordination of protection devices	0
380 Other equipment installation/design	0
400 Decay/age of material/equipment	0
420 Tree growth	0
430 Tree failure from overhang or dead tree without ice/snow	0.25
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
490 Maintenance, other	0
500 Lightning	0
510 Wind, not trees	0.25
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0
590 Weather, other	0.25
600 Animal/bird	0
630 Squirrel	0
690 Animal, other	0
700 Customer-caused	0
710 Motor vehicle	0
715 Farming Equipment	0
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0
750 Vandalism	0
760 Switching error or caused by construction or maintenance	0
790 Public, other	0
800 Other	0
999 Cause unknown	0

100%

Corrective Action Plan
 Due for ROW in 2018

Substation Name Kansas
Substation Number 61
Substation County Graves
Substation Road Shaw Rd
Substation Town Melber
Circuit Name Lowes
Circuit Number 6101
Circuit Location 6101-Lowes
Total Circuit Length (Miles) 58.526
Customer Count 456.531506
Date of Last Circuit Trim 2016
Circuit 5 Year Average (SADI) 57.08143493
Reporting Year (SAIDI) 97.314203
Circuit 5 Year Average (SAIFI) 0.469800427
Reporting Year (SAIFI) 1.327400173

Outage Causes

Cause	Percentage (%)
-------	----------------

000 Power supply	0
100 Construction	0.090909091
110 Maintenance	0.272727273
190 Other planned	0
300 Material or equipment fault/failure	0.045454545
310 Installation fault	0
320 Conductor sag or inadequate clearance	0
340 Overload	0
350 Miscoordination of protection devices	0
360 Other equipment installation/design	0
400 Decay/age of material/equipment	0
420 Tree growth	0
430 Tree failure from overhang or dead tree without ice/snow	0.090909091
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
490 Maintenance, other	0.136363636
500 Lightning	0.045454545
510 Wind, not trees	0
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0
590 Weather, other	0
600 Animal/bird	0
630 Squirrel	0.045454545
690 Animal, other	0
700 Customer-caused	0
710 Motor vehicle	0
715 Farming Equipment	0
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0.045454545
750 Vandalism	0
760 Switching error or caused by construction or maintenance	0
790 Public, other	0.045454545
800 Other	0.045454545
999 Cause unknown	0.136363636

100%

Corrective Action Plan
 No action needed.

Substation Name Grand Rivers
Substation Number 76
Substation County Livingston
Substation Road Vulcan Materials
Substation Town Grand Rivers
Circuit Name luka
Circuit Number 7601
Circuit Location 7601-luka
Total Circuit Length (Miles) 47.35
Customer Count 296.580821
Date of Last Circuit Trim 2016
Circuit 5 Year Average (SAIDI) 314.7510261
Reporting Year (SAIDI) 390.477036
Circuit 5 Year Average (SAIFI) 2.505294442
Reporting Year (SAIFI) 4.865452847

Outage Causes

Cause	Percentage (%)
-------	----------------

000 Power supply	0
100 Construction	0.0625
110 Maintenance	0
180 Other planned	0
300 Material or equipment fault/failure	0.0625
310 Installation fault	0
320 Conductor sag or inadequate clearance	0
340 Overload	0
350 Miscoordination of protection devices	0
360 Other equipment installation/design	0.125
400 Decay/age of material/equipment	0
420 Tree growth	0
430 Tree failure from overhang or dead tree without ice/snow	0.25
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
480 Maintenance, other	0.0625
500 Lightning	0
510 Wind, not trees	0
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0
590 Weather, other	0
600 Animal/bird	0
630 Squirrel	0.0625
690 Animal, other	0
700 Customer-caused	0
710 Motor vehicle	0
715 Farming Equipment	0
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0
750 Vandalism	0
760 Switching error or caused by construction or maintenance	0
790 Public, other	0.0625
800 Other	0.0625
999 Cause unknown	0.25

100%

Corrective Action Plan

Recloser failure that took time to diagnose and affected the whole station. Equipment replaced. No action needed.

Substation Name Grand Rivers
Substation Number 76
Substation County Livingston
Substation Road Vulcan Materials
Substation Town Grand Rivers
Circuit Name Smithland
Circuit Number 7602
Circuit Location 7602-Smithland
Total Circuit Length (Miles) 30.075
Customer Count 282.846575
Date of Last Circuit Trlm 2016
Circuit 5 Year Average (SADI) 97.19844185
Reporting Year (SAIDI) 496.707446
Circuit 5 Year Average (SAIFI) 1.059378963
Reporting Year (SAIFI) 6.809345314

Outage Causes

Cause	Percentage (%)
-------	----------------

000 Power supply	0
100 Construction	0
110 Maintenance	0.117647059
190 Other planned	0
300 Material or equipment fault/failure	0.058823529
310 Installation fault	0
320 Conductor sag or inadequate clearance	0.058823529
340 Overload	0
350 Miscoordination of protection devices	0
360 Other equipment installation/design	0.058823529
400 Decay/age of material/equipment	0
420 Tree growth	0
430 Tree failure from overhang or dead tree without ice/snow	0.058823529
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
490 Maintenance, other	0
500 Lightning	0.058823529
510 Wind, not trees	0.058823529
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0.058823529
590 Weather, other	0
600 Animal/bird	0
630 Squirrel	0
690 Animal, other	0
700 Customer-caused	0
710 Motor vehicle	0
715 Farming Equipment	0
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0
750 Vandalism	0
760 Switching error or caused by construction or maintenance	0
790 Public, other	0.058823529
800 Other	0.235294118
999 Cause unknown	0.176470588

100%

Corrective Action Plan

Recloser failure that took time to diagnose and affected the whole station. Equipment replaced. No action needed.

		Outage Causes	
		Cause	Percentage (%)
Substation Name	Grand Rivers	000 Power supply	0
Substation Number	76	100 Construction	0.071428571
Substation County	Livingston	110 Maintenance	0
Substation Road	Vulcan Materials	190 Other planned	0
Substation Town	Grand Rivers	300 Material or equipment fault/failure	0
Circuit Name	Pelican-GR #1	310 Installation fault	0
Circuit Number	7604	320 Conductor sag or inadequate clearance	0
Circuit Location	7604-Pelican GR #1	340 Overload	0
Total Circuit Length (Miles)	24.039	350 Miscoordination of protection devices	0
Customer Count	371.649315	360 Other equipment installation/design	0.071428571
Date of Last Circuit Trim	2018	400 Decay/age of material/equipment	0
Circuit 5 Year Average (SAIDI)	71.31317639	420 Tree growth	0
Reporting Year (SAIDI)	485.944659	430 Tree failure from overhang or dead tree without ice/snow	0
Circuit 5 Year Average (SAIFI)	0.631083897	440 Trees with ice/snow	0
Reporting Year (SAIFI)	4.329350103	470 Borrower crew cuts tree	0
		490 Maintenance, other	0
		500 Lightning	0
		510 Wind, not trees	0
		520 Ice, sleet, frost, not trees	0
		530 Flood	0
		540 Storm	0
		590 Weather, other	0
		600 Animal/bird	0
		630 Squirrel	0.214285714
		690 Animal, other	0
		700 Customer-caused	0
		710 Motor vehicle	0.071428571
		715 Farming Equipment	0
		720 Aircraft	0
		730 Fire	0
		740 Public cuts tree	0
		750 Vandalism	0
		760 Switching error or caused by construction or maintenance	0
		790 Public, other	0.142857143
		800 Other	0.071428571
		999 Cause unknown	0.357142857

100%

Corrective Action Plan

Recloser failure that took time to diagnose and affected the whole station. Equipment replaced. No action needed.

		Outage Causes	
		Cause	Percentage (%)
Substation Name	Grand Rivers	000 Power supply	0
Substation Number	76	100 Construction	0.076923077
Substation County	Livingston	110 Maintenance	0
Substation Road	Vulcan Materials	190 Other planned	0
Substation Town	Grand Rivers	300 Material or equipment fault/failure	0
Circuit Name	Averitt-GR #2	310 Installation fault	0
Circuit Number	7605	320 Conductor sag or inadequate clearance	0
Circuit Location	7605-Averitt GR #2	340 Overload	0
Total Circuit Length (Miles)	43.336	350 Miscoordination of protection devices	0
Customer Count	666.482191	360 Other equipment installation/design	0.076923077
Date of Last Circuit Trim	2016	400 Decay/age of material/equipment	0
Circuit 5 Year Average (SAIDI)	204.5404586	420 Tree growth	0
Reporting Year (SAIDI)	314.366989	430 Tree failure from overhang or dead tree without ice/snow	0.153846154
Circuit 5 Year Average (SAIFI)	1.842303853	440 Trees with ice/snow	0
Reporting Year (SAIFI)	4.030115187	470 Borrower crew cuts tree	0
		490 Maintenance, other	0.076923077
		500 Lightning	0
		510 Wind, not trees	0
		520 Ice, sleet, frost, not trees	0
		530 Flood	0
		540 Storm	0
		590 Weather, other	0
		600 Animal/bird	0.076923077
		630 Squirrel	0
		690 Animal, other	0
		700 Customer-caused	0
		710 Motor vehicle	0.076923077
		715 Farming Equipment	0
		720 Aircraft	0
		730 Fire	0
		740 Public cuts tree	0
		750 Vandalism	0
		760 Switching error or caused by construction or maintenance	0
		790 Public, other	0.076923077
		800 Other	0.153846154
		999 Cause unknown	0.230769231

100%

Corrective Action Plan

Recloser failure that took time to diagnose and affected the whole station. Equipment replaced. No action needed.

Substation Name Strawberry Hill
Substation Number 77
Substation County McCracken
Substation Road Hansen Rd
Substation Town Paducah
Circuit Name Walmart-Hansen Rd Bottom
Circuit Number 7703
Circuit Location 7703-Walmart
Total Circuit Length (Miles) 8.867
Customer Count 481.342465
Date of Last Circuit Trim 2015
Circuit 5 Year Average (SAIDI) 5.592629981
Reporting Year (SAIDI) 39.709772
Circuit 5 Year Average (SAIFI) 0.104800667
Reporting Year (SAIFI) 1.007598613

Outage Causes	
Cause	Percentage (%)
000 Power supply	0
100 Construction	0
110 Maintenance	0
190 Other planned	0
300 Material or equipment fault/failure	0
310 Installation fault	0
320 Conductor sag or inadequate clearance	0
340 Overload	0
350 Miscoordination of protection devices	0
360 Other equipment installation/design	0
400 Decay/age of material/equipment	0
420 Tree growth	0
430 Tree failure from overhang or dead tree without ice/snow	0
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
480 Maintenance, other	0
500 Lightning	0
510 Wind, not trees	0
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0
590 Weather, other	0
600 Animal/bird	0
630 Squirrel	0.3333333333
690 Animal, other	0
700 Customer-caused	0
710 Motor vehicle	0
715 Farming Equipment	0
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0
750 Vandalism	0
780 Switching error or caused by construction or maintenance	0
790 Public, other	0
800 Other	0
999 Cause unknown	0.6666666667

100%

Corrective Action Plan
 No action needed.

Substation Name Maxon
Substation Number 79
Substation County McCracken
Substation Road Commerce Dr
Substation Town Paducah
Circuit Name Maxon Rd
Circuit Number 7924
Circuit Location 7924-Maxon Rd
Total Circuit Length (Miles) 20.317
Customer Count 290.002739
Date of Last Circuit Trim 2013
Circuit 5 Year Average (SAIDI) 12.05954144
Reporting Year (SAIDI) 88.78192
Circuit 5 Year Average (SAIFI) 0.11466287
Reporting Year (SAIFI) 2.08273895

Outage Causes	
Cause	Percentage (%)
000 Power supply	0
100 Construction	0
110 Maintenance	0
190 Other planned	0
300 Material or equipment fault/failure	0.25
310 Installation fault	0
320 Conductor sag or inadequate clearance	0
340 Overload	0
350 Miscoordination of protection devices	0
360 Other equipment installation/design	0
400 Decay/age of material/equipment	0
420 Tree growth	0
430 Tree failure from overhang or dead tree without ice/snow	0.25
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
490 Maintenance, other	0
500 Lightning	0
510 Wind, not trees	0
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0
590 Weather, other	0
600 Animal/bird	0
630 Squirrel	0
690 Animal, other	0
700 Customer-caused	0
710 Motor vehicle	0
715 Farming Equipment	0
720 Aircraft	0
730 Fire	0
740 Public cuts tree	0.5
750 Vandalism	0
760 Switching error or caused by construction or maintenance	0
790 Public, other	0
800 Other	0
999 Cause unknown	0

100%

Corrective Action Plan
 No action needed.

Substation Name Maxon
Substation Number 79
Substation County McCracken
Substation Road Commerce Dr
Substation Town Paducah
Circuit Name Industrial Park
Circuit Number 7934
Circuit Location 7934-Industrial Park
Total Circuit Length (Miles) 0.844
Customer Count 3
Date of Last Circuit Trim 2017
Circuit 5 Year Average (SADI) 6.5128468
Reporting Year (SAIDI) 41.333333
Circuit 5 Year Average (SAIFI) 0.069950971
Reporting Year (SAIFI) 0.666666667

Outage Causes	
Cause	Percentage (%)
000 Power supply	0
100 Construction	0
110 Maintenance	0
190 Other planned	0
300 Material or equipment fault/failure	0
310 Installation fault	0
320 Conductor sag or inadequate clearance	0
340 Overload	0
350 Miscoordination of protection devices	0
360 Other equipment installation/design	0
400 Decay/age of material/equipment	0
420 Tree growth	0
430 Tree failure from overhang or dead tree without ice/snow	0
440 Trees with ice/snow	0
470 Borrower crew cuts tree	0
490 Maintenance, other	0
500 Lightning	0
510 Wind, not trees	0
520 Ice, sleet, frost, not trees	0
530 Flood	0
540 Storm	0
590 Weather, other	0
600 Animal/bird	0
630 Squirrel	0
690 Animal, other	0
700 Customer-caused	0
710 Motor vehicle	0
715 Farming Equipment	0
720 Aircraft	0
730 Fire	0
740 Public cuts tree	1
750 Vandalism	0
760 Switching error or caused by construction or maintenance	0
790 Public, other	0
800 Other	0
999 Cause unknown	0

100%

Corrective Action Plan
 No action needed.