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May 1, 2024

Ms. Linda Bridwell, Executive Director  
Kentucky Public Service Commission  
211 Sower Boulevard  
Frankfort, Kentucky 40602

RE: Case No. 2011-00450

Dear Ms. Bridwell:

Enclosed is South Kentucky's Electric Distribution Utility Annual Reliability Reports submitted pursuant to the above referenced case.

Please contact me if you have any questions.

Sincerely,

A handwritten signature in blue ink that reads 'Kevin Newton'.

Kevin Newton  
South Kentucky R.E.C.C.  
Chief Executive Officer and President

KN:agb

Enclosures

# KENTUCKY PUBLIC SERVICE COMMISSION

## Electric Distribution Utility Annual Reliability Report

### SECTION 1: CONTACT INFORMATION

UTILITY NAME	South Kentucky RECC
REPORT PREPARED BY	Dakota Brown
E-MAIL ADDRESS OF PREPARER	<a href="mailto:dakotab@skrecc.com">dakotab@skrecc.com</a>
PHONE NUMBER OF PREPARER	606-875-3262

### SECTION 2: REPORTING YEAR

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

$T_{MED}$	29.34581
FIRST DATE USED TO DETERMINE $T_{MED}$	1/1/2018
LAST DATE USED TO DETERMINE $T_{MED}$	12/31/2022
NUMBER OF MED IN REPORT YEAR	7

**NOTE: Per IEEE 1366  $T_{MED}$  should be calculated using the daily SAIDI values for the five prior years. If five years of data are not available, then utilities should use what is available until five years are accumulated.**

### SECTION 4: SYSTEM RELIABILITY INFORMATION AND RESULTS

#### System-wide Information

TOTAL CUSTOMERS	71499	TOTAL CIRCUITS	143
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#### Excluding MED

	5 YEAR AVERAGE		REPORTING YEAR
SAIDI	281.30	SAIDI	251
SAIFI	2.4142	SAIFI	1.792

#### Including MED

	5 YEAR AVERAGE		REPORTING YEAR
SAIDI	873.5	SAIDI	1714.3
SAIFI	3	SAIFI	2.953

#### Notes:

- 1) All duration indices (SAIDI) are to be reported in units of minutes.
- 2) Reports are due on the first business day of May of each year
- 3) Reports cover the calendar year ending in the December before the reports are due.
- 4) IEEE 1366 (latest version) is used to define SAIDI, SAIFI, and  $T_{MED}$

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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 #1:**

1. SUBSTATION NAME AND NUMBER
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)
3. CIRCUIT NAME AND NUMBER
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)
5. TOTAL CIRCUIT LENGTH (MILES)
6. CUSTOMER COUNT FOR THIS CIRCUIT
- 7.. DATE OF LAST CIRCUIT TRIM (VM)
8. LIST OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE N  
NUMBERS REPRESENTED BY EACH CAUSE
9. CIRCUIT 5 YEAR AVERAGE (SAIDI)
10. REPORTING YEAR (SAIDI)
11. CIRCUIT 5 YEAR AVERAGE (SAIFI)
12. REPORTING YEAR (SAIFI)
13. CORRECTIVE ACTION PLAN

**REPEAT INFORMATION FOR EACH CIRCUIT EXCEEDING ITS 5 YEAR AVERAGE  
FOR SAIDI AND/OR SAIFI**

**\*\*CIRCUIT REPORTING INFORMATION ATTACHED IN SPREADSHEET  
"PSC\_ANNUAL\_DISTRIBUTION\_RELIABILITY\_CKT INFO - 2023"**

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## SECTION 6: VEGETATION MANAGEMENT PLAN REVIEW

### INCLUDE CURRENT VEGETATION MANAGEMENT PLAN

Additional page may be attached as needed.

#### **Introduction to SKRECC's Vegetation Management Plan**

Our number one goal as an electric cooperative is to provide safe, reliable and economical electrical service to our members. Achieving this goal includes a number of programs and procedures by SKRECC. Right of Way (ROW) programs and procedures are critical support functions to SKRECC's mission. Cutting new ROW for construction of new distribution lines and maintaining those ROWs are mission critical. We cut and clear ROWs for the safety of the public and SKRECC employees, to minimize the opportunity for trees falling into our power lines which are one of the most frequent cause for outages, for access to enable our crews to find and repair damaged areas more quickly, and to prevent trees from growing into the power lines which can create a hazardous energized tree or power blinks.

The Vegetation Management Plan is intended to be a guide to the policies and procedures that South Kentucky Rural Electric Cooperative Corporation (SKRECC) are putting in place to address the many Right of Way (ROW) issues that we encounter on an almost daily basis. Communication of this Plan to our Members, Management, and Employees is an important part of the open relationship we feel to be of the utmost importance.

The diversity of the terrain along with the diversity of the development and land use within our service territory requires SKRECC to use a variety of methods and practices to provide a ROW plan that meets the needs of the cooperative and its members. These methods include mechanical cutting, trimming, bush hogging, and both low volume and high volume spraying or a combination of methods.

SKRECC members understand and accept vegetation management as a necessary task to keep the lights on, but there are always cases where our responsibility to trim trees, remove vegetation or spray brush creates conflict with members that object for some reason. This is a very common issue with all electrical utilities and one the we have experienced from our founding in 1938.

The goals of this Vegetation Management Plan are to communicate our needs to control vegetation, communicate our policies and procedures on how we accomplish that task, and the importance of each members concerns.

**\*\*SKRECC'S CURRENT VEGETATION MANAGEMENT PLAN ATTACHED  
"Vegetation Management Plan With Addendum 2 2 24"**

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## SECTION 7: UTILITY COMMENTS

South Kentucky RECC strives to provide its members with safe and reliable electric. The following report provides statistics to indicate outage causes and durations affecting SKRECC's reliability measures. Within the report, trees are calculated as the dominant source of outage causes in the SKRECC service territory. As with majority of Rural Electric Cooperatives, the result of long feeders and more exposure induces a significant impact on outage duration (SAIDI) and frequency (SAIFI).

Typically, our outage situations are caused by rural tree lined right of ways. Over the years, we've acknowledged these tree lined right of ways and have taken notion to attempt to move the line out of the tree line to a better location. In 2020, SKRECC decided it was time to investigate the use of ROW circuit bidding. Even with this addition, we plan to review our circuit trimming list for 2023/2024 and possibly even fixate on the circuits determined as worst performing in this report.

We should also note that many of the tree indicated statistics were most likely during storm situations. During these situations, the Operator is responsible for categorizing these situations and may or may not receive any details regarding the circumstance.

In April 2023, SKRECC implemented NISC's OMS software. Once experienced in this software, SKRECC will be able to utilize its capabilities, reports, & functions to better serve our members. We will recognize these measures and will determine steps for improvement and precautions regarding future outage concerns.

alpha -2.03556 T<sub>MED</sub>(2022) 29.244502  
 beta 2.1645

System Customers cons min/day SAIDI Ln(SAIDI)

date	System	Customers	cons min/day	SAIDI	Ln(SAIDI)
1/1/2022	70905	702088.0	9.901812	2.292718	
1/10/2022	70905	5054.0	0.071278	-2.64116	
1/11/2022	70905	27933.0	0.39395	-0.93153	
1/12/2022	70905	1608.0	0.022678	-3.78635	
1/13/2022	70905	2345.0	0.033072	-3.40906	
1/14/2022	70905	2827.0	0.03987	-3.22212	
1/15/2022	70905	482.0	0.006798	-4.99115	
1/16/2022	70905	958905	13.5238	2.604451	
1/17/2022	70905	1326240.0	18.70446	2.928762	
1/18/2022	70905	412690.0	5.820323	1.761356	
1/19/2022	70905	65593.0	0.925083	-0.07787	
1/2/2022	70905	101444.0	1.430703	0.358166	
1/20/2022	70905	2325.0	0.03279	-3.41762	
1/21/2022	70905	1283.0	0.018095	-4.01214	
1/22/2022	70905	98112.0	1.383711	0.324769	
1/23/2022	70905	8816.0	0.124335	-2.08477	
1/24/2022	70905	6673.0	0.094112	-2.36327	
1/25/2022	70905	4664.0	0.065778	-2.72147	
1/26/2022	70905	479525.0	6.762922	1.911455	
1/27/2022	70905	32275.0	0.455187	-0.78705	
1/28/2022	70905	255.0	0.003596	-5.62783	
1/29/2022	70905	160391	2.262055	0.816274	
1/3/2022	70905	159223	2.245582	0.808965	
1/30/2022	70905	466	0.006572	-5.02491	
1/31/2022	70905	4492	0.063352	-2.75904	
1/4/2022	70905	12627	0.178083	-1.7255	
1/5/2022	70905	204190	2.879769	1.05771	
1/6/2022	70905	102	0.001439	-6.54412	
1/7/2022	70905	12188	0.171892	-1.76089	
1/8/2022	70905	155692	2.195783	0.786539	
1/9/2022	70905	7370	0.103942	-2.26392	
10/1/2022	70905	5226	0.073704	-2.60769	
10/10/2022	70905	2465	0.034765	-3.35915	
10/11/2022	70905	2153	0.030365	-3.49448	
10/12/2022	70905	88429	1.247148	0.220859	
10/13/2022	70905	19076	0.269036	-1.31291	
10/14/2022	70905	1389	0.01959	-3.93276	
10/15/2022	70905	5362	0.075622	-2.582	
10/16/2022	70905	1079	0.015218	-4.18531	
10/17/2022	70905	8218	0.115902	-2.15501	
10/18/2022	70905	3120	0.044003	-3.12351	
10/19/2022	70905	12440	0.175446	-1.74042	
10/2/2022	70905	2499	0.035244	-3.34545	
10/20/2022	70905	19589	0.276271	-1.28637	
10/21/2022	70905	22865	0.322474	-1.13173	
10/22/2022	70905	1112	0.015683	-4.15518	
10/23/2022	70905	29745	0.419505	-0.86868	
10/24/2022	70905	2943	0.041506	-3.18191	
10/25/2022	70905	3573	0.050391	-2.98794	
10/26/2022	70905	9037	0.127452	-2.06001	
10/27/2022	70905	7009	0.098851	-2.31415	
10/28/2022	70905	1666	0.023496	-3.75092	
10/29/2022	70905	6723	0.094817	-2.35581	
10/3/2022	70905	91390	1.288908	0.253795	
10/30/2022	70905	10596	0.149439	-1.90086	
10/31/2022	70905	12960	0.18278	-1.69947	
10/4/2022	70905	2709	0.038206	-3.26476	
10/5/2022	70905	1515	0.021367	-3.84593	
10/6/2022	70905	33560	0.473309	-0.74801	
10/7/2022	70905	12732	0.179564	-1.71722	
10/8/2022	70905	2118	0.029871	-3.51087	
10/9/2022	70905	446951	6.303519	1.841108	
11/1/2022	70905	31993	0.451209	-0.79582	
11/10/2022	70905	139456	1.966801	0.676408	
11/11/2022	70905	17916	0.252676	-1.37565	
11/12/2022	70905	18823	0.285468	-1.32626	
11/13/2022	70905	15438	0.217728	-1.52451	
11/14/2022	70905	5194	0.073253	-2.61384	
11/15/2022	70905	3868	0.054552	-2.9086	
11/16/2022	70905	1863	0.026275	-3.63915	
11/17/2022	70905	154	0.002172	-6.13214	
11/18/2022	70905	138005	1.946337	0.665949	
11/19/2022	70905	2133	0.030083	-3.50381	
11/2/2022	70905	5981	0.084352	-2.47275	
11/20/2022	70905	596	0.008406	-4.77886	
11/21/2022	70905	6046	0.085269	-2.46194	
11/22/2022	70905	3120	0.044003	-3.12351	
11/23/2022	70905	8295	0.116988	-2.14569	
11/24/2022	70905	1245	0.017559	-4.04221	
11/25/2022	70905	15604	0.220069	-1.51381	
11/26/2022	70905	3217	0.045371	-3.09289	
11/27/2022	70905	1026754	14.4807	2.672817	
11/28/2022	70905	13436	0.189493	-1.86634	
11/29/2022	70905	271623	3.830802	1.343074	
11/3/2022	70905	1617	0.022805	-3.78077	
11/30/2022	70905	401590	5.663775	1.734091	
11/4/2022	70905	8402	0.118497	-2.13287	
11/5/2022	70905	586741	8.27503	2.113243	
11/6/2022	70905	2267	0.031972	-3.44288	
11/7/2022	70905	151536	2.137169	0.759482	
11/8/2022	70905	3071	0.043311	-3.13934	
11/9/2022	70905	3393	0.047853	-3.03963	
12/1/2022	70905	140764	1.985248	0.685744	
12/10/2022	70905	946	0.013342	-4.31685	
12/11/2022	70905	1046	0.014752	-4.21637	
12/12/2022	70905	4442	0.062647	-2.77024	
12/13/2022	70905	2321	0.032734	-3.41934	
12/14/2022	70905	1164	0.016416	-4.10948	
12/15/2022	70905	973	0.013723	-4.28871	
12/16/2022	70905	5497	0.077526	-2.55714	
12/19/2022	70905	6205.000001	0.087511	-2.43599	

RE-READ RUS BULLETIN.  
 Tmed IS MEANT TO BE CALCULATED (W/NATURAL LOG &  
 STD DEV USING PREVIOUS 5 YEARS WORTH OF DATA). I  
 BELIEVE PREVIOUS REPORTS ONLY USED 1 YEAR  
 WORTH & AVERAGED THE Tmed FOR THE LAST FIVE  
 (DIFFERENT ANSWER B/C OF NATURAL LOG &  
 EXPONENTIAL)  
 NISC'S Tmed = 29.34581

date System Customers cons min/day SAIDI

date	System	Customers	cons min/day	SAIDI
1/1/2023	71499	128	0.0017902	
1/10/2023	71499	2025	0.0283221	
1/11/2023	71499	59980	0.8388929	
1/12/2023	71499	7611.000002	0.106449	
1/13/2023	71499	3674	0.0513853	
1/14/2023	71499	45812	0.6407362	
1/15/2023	71499	5266	0.0736514	
1/16/2023	71499	3351	0.0468678	
1/17/2023	71499	1009	0.0141121	
1/18/2023	71499	4732.999999	0.0661967	
1/19/2023	71499	698949	9.7756472	
1/2/2023	71499	319	0.0044616	
1/20/2023	71499	8532.999999	0.1193443	
1/21/2023	71499	139	0.0019441	
1/22/2023	71499	3096	0.0433013	
1/23/2023	71499	1621	0.0226716	
1/24/2023	71499	22038	0.3082281	
1/25/2023	71499	20435	0.2858082	
1/26/2023	71499	4371	0.0611337	
1/29/2023	71499	6581	0.0920432	
1/3/2023	71499	60685	0.8487531	
1/30/2023	71499	16425	0.2297235	
1/31/2023	71499	3508	0.0490636	
1/4/2023	71499	120	0.0016783	
1/5/2023	71499	1341	0.0187555	
1/6/2023	71499	259	0.0036224	
1/7/2023	71499	49.00000002	0.0006853	
1/8/2023	71499	58090	0.8124589	
1/9/2023	71499	3444	0.0481685	
10/1/2023	71499	185.4	0.002593	
10/10/2023	71499	9220.383333	0.1289582	
10/11/2023	71499	1578.633333	0.0220791	
10/12/2023	71499	14827.6	0.2073819	
10/13/2023	71499	8783.100001	0.1228423	
10/14/2023	71499	17384.6	2.4949244	
10/15/2023	71499	93710.983333	1.3106615	
10/16/2023	71499	2006.016667	0.0280566	
10/17/2023	71499	5457.8	0.0763339	
10/18/2023	71499	6023.683333	0.0842485	
10/19/2023	71499	30312.83334	0.4239616	
10/2/2023	71499	6523.583334	0.0912402	
10/20/2023	71499	88464.3	1.2372802	
10/21/2023	71499	2582.916667	0.0361252	
10/22/2023	71499	1157.25	0.0161855	
10/23/2023	71499	11984.95	0.167624	
10/24/2023	71499	25756.43333	0.3602349	
10/25/2023	71499	7456.066667	0.1042821	
10/26/2023	71499	11013.83333	0.1540418	
10/27/2023	71499	10436.18333	0.1459626	
10/28/2023	71499	1292.583333	0.0180783	
10/29/2023	71499	16994.08333	0.2376828	
10/3/2023	71499	8144.116666	0.1139053	
10/30/2023	71499	3688.233334	0.0515844	
10/31/2023	71499	216741.8167	3.0313965	
10/4/2023	71499	3887.383333	0.0543698	
10/5/2023	71499	68953.43333	0.9643972	
10/6/2023	71499	4958.9	0.0693562	
10/7/2023	71499	8789.35	0.1229297	
10/8/2023	71499	4388.716664	0.0613815	
10/9/2023	71499	6239.016667	0.0872602	
11/1/2023	71499	43424.7	0.607347	
11/10/2023	71499	7424.733334	0.1038439	
11/11/2023	71499	167.6	0.0023441	
11/12/2023	71499	80529.09999	1.1262969	
11/13/2023	71499	4763.083333	0.0666175	
11/14/2023	71499	11642.61667	0.1628361	
11/15/2023	71499	9921.3	0.1387614	
11/16/2023	71499	118642.8	1.6593631	
11/17/2023	71499	20564.78333	0.2876234	
11/18/2023	71499	6809.066667	0.095233	
11/19/2023	71499	3157.166667	0.0441568	
11/2/2023	71499	15268.15	0.2135435	
11/20/2023	71499	5365.033333	0.0750365	
11/21/2023	71499	133967.1	1.8736919	
11/22/2023	71499	954.5833333	0.013351	
11/23/2023	71499	3655.133333	0.0511215	
11/24/2023	71499	3832.916667	0.053608	
11/25/2023	71499	10049.98333	0.1405612	
11/26/2023	71499	41129.66667	0.5752481	
11/27/2023	71499	17842.65	0.249551	
11/28/2023	71499	3381.733333	0.0472976	
11/29/2023	71499	20220.9	0.2828137	
11/3/2023	71499	6816.733333	0.0953403	
11/30/2023	71499	9927.316666	0.1388455	
11/4/2023	71499	523852.5667	7.3267118	
11/5/2023	71499	18491.51667	0.2586262	
11/6/2023	71499	40779.98333	0.5703574	
11/7/2023	71499	3911.933333	0.0547131	
11/8/2023	71499	5964.133333	0.0834156	
11/9/2023	71499	12621.51667	0.1765272	
12/1/2023	71499	69338.36667	0.9697809	
12/10/2023	71499	3945.5	0.0551826	
12/11/2023	71499	36146.18333	0.5055481	
12/12/2023	71499	178846.8167	2.5013891</	

12/2/2022	70905	48262	0.680657	-0.3847	12/2/2023	71499	72797.16667	1.0181564
12/20/2022	70905	12443	0.175488	-1.74018	12/20/2023	71499	2729.266667	0.0381721
12/21/2022	70905	2048	0.028884	-3.54448	12/21/2023	71499	804.2833333	0.0112489
12/22/2022	70905	168405	2.375079	0.865031	12/22/2023	71499	582.8166667	0.0081514
12/23/2022	70905	524974	7.403907	2.002008	12/23/2023	71499	970.1333334	0.0135685
12/24/2022	70905	113377	1.598999	0.469378	12/24/2023	71499	902.9833333	0.0126293
12/25/2022	70905	1243	0.010753	-4.04381	12/25/2023	71499	11013.78333	0.1540411
12/26/2022	70905	55076	0.776758	-0.25263	12/26/2023	71499	3004.45	0.0420209
12/27/2022	70905	25381	0.357958	-1.02734	12/27/2023	71499	3622.333333	0.0506627
12/28/2022	70905	8081	0.113969	-2.17183	12/28/2023	71499	727.4666667	0.0101745
12/29/2022	70905	1404	0.019801	-3.92202	12/29/2023	71499	24688.13333	0.3452934
12/3/2022	70905	64643	0.911685	-0.09246	12/3/2023	71499	6438.516667	0.0900504
12/30/2022	70905	13843	0.195233	-1.63356	12/30/2023	71499	849.75	0.0118848
12/4/2022	70905	2320	0.03272	-3.41977	12/31/2023	71499	1194.633333	0.0167084
12/5/2022	70905	1964	0.027699	-3.58636	12/4/2023	71499	1071.933333	0.0149923
12/6/2022	70905	21579	0.304337	-1.18962	12/5/2023	71499	189190.55	2.6460587
12/7/2022	70905	16482	0.232452	-1.45907	12/6/2023	71499	576.6333333	0.0080649
12/8/2022	70905	14666	0.20684	-1.57581	12/7/2023	71499	75375.23333	1.0542138
12/9/2022	70905	3615	0.050984	-2.97625	12/8/2023	71499	15878.05	0.2220737
2/1/2022	70905	9100	0.128341	-2.05307	12/9/2023	71499	85242.85	1.1922244
2/10/2022	70905	1963	0.027685	-3.58687	2/1/2023	71499	3856	0.0539308
2/11/2022	70905	85574.99999	1.206897	0.188052	2/10/2023	71499	7430	0.1039175
2/12/2022	70905	25751	0.363176	-1.01287	2/11/2023	71499	1203	0.0168254
2/13/2022	70905	9919	0.139891	-1.96689	2/12/2023	71499	350	0.0048952
2/14/2022	70905	7304	0.103011	-2.27292	2/13/2023	71499	6071	0.0849103
2/15/2022	70905	247663	3.492885	1.250728	2/14/2023	71499	113890	1.5928894
2/16/2022	70905	119135	1.680206	0.518916	2/15/2023	71499	26686	0.373236
2/17/2022	70905	1367762	19.29006	2.95959	2/16/2023	71499	242732	3.3949006
2/18/2022	70905	104086	1.467964	0.383877	2/17/2023	71499	21881	0.3060323
2/19/2022	70905	14817	0.20897	-1.56557	2/18/2023	71499	19767	0.2764654
2/2/2022	70905	2841	0.040068	-3.21718	2/19/2023	71499	168	0.0023497
2/20/2022	70905	1923	0.027121	-3.60745	2/2/2023	71499	5313	0.0743087
2/21/2022	70905	8335	0.117552	-2.14088	2/20/2023	71499	393	0.0054966
2/22/2022	70905	476690	6.722939	1.905525	2/21/2023	71499	1066	0.0149093
2/23/2022	70905	3928	0.055398	-2.89321	2/22/2023	71499	49008	0.6854362
2/24/2022	70905	14268	0.201227	-1.60332	2/23/2023	71499	1956	0.027357
2/25/2022	70905	19708	0.277949	-1.28032	2/24/2023	71499	106	0.0014825
2/26/2022	70905	258	0.003639	-5.61614	2/25/2023	71499	152	0.0021259
2/27/2022	70905	6170	0.087018	-2.44164	2/26/2023	71499	47494	0.664261
2/28/2022	70905	3833	0.054058	-2.91769	2/27/2023	71499	2371636	33.170198
2/3/2022	70905	139540	1.967985	0.67701	2/28/2023	71499	11254	0.1574008
2/4/2022	70905	264	0.003723	-5.59315	2/3/2023	71499	7604.000001	0.1063511
2/5/2022	70905	5798	0.081771	-2.50383	2/4/2023	71499	77.99999999	0.0010909
2/6/2022	70905	821	0.011579	-4.45857	2/5/2023	71499	785	0.0109792
2/7/2022	70905	35580	0.501798	-0.68956	2/6/2023	71499	355	0.0049651
2/8/2022	70905	295	0.004416	-5.48212	2/7/2023	71499	21010	0.2938503
2/9/2022	70905	4968	0.070066	-2.65832	2/8/2023	71499	1652	0.0231052
3/1/2022	70905	838	0.011819	-4.43808	2/9/2023	71499	1287097	18.001608
3/10/2022	70905	1193	0.016825	-4.08487	3/1/2023	71499	126003	1.7623044
3/11/2022	70905	10456	0.147465	-1.91416	3/10/2023	71499	147731	2.0661967
3/12/2022	70905	153568	2.165828	0.772803	3/11/2023	71499	67121	0.9387684
3/13/2022	70905	435	0.006135	-5.09375	3/12/2023	71499	94955	1.3280605
3/14/2022	70905	2365	0.033354	-3.40056	3/13/2023	71499	189633	2.6522469
3/15/2022	70905	8076	0.113899	-2.17244	3/14/2023	71499	2756	0.038546
3/16/2022	70905	2780	0.039207	-3.23889	3/15/2023	71499	8840	0.1236381
3/17/2022	70905	5599	0.078965	-2.53875	3/16/2023	71499	47082	0.6584987
3/18/2022	70905	30394	0.428658	-0.8471	3/17/2023	71499	5369	0.075092
3/19/2022	70905	20968	0.29572	-1.21834	3/18/2023	71499	5437	0.076043
3/2/2022	70905	5402	0.076186	-2.57457	3/19/2023	71499	1051	0.0146995
3/20/2022	70905	2690	0.037938	-3.2718	3/2/2023	71499	9397	0.1314284
3/21/2022	70905	12958	0.182752	-1.69963	3/20/2023	71499	24293	0.339767
3/22/2022	70905	12433	0.175347	-1.74099	3/21/2023	71499	3328	0.0465461
3/23/2022	70905	122773	1.731514	0.548996	3/22/2023	71499	6186	0.0865187
3/24/2022	70905	6877.000001	0.096989	-2.33316	3/23/2023	71499	43587	0.6096169
3/25/2022	70905	12279	0.173175	-1.75345	3/24/2023	71499	39152	0.5475881
3/26/2022	70905	18573	0.261942	-1.33963	3/25/2023	71499	137745	1.9265304
3/27/2022	70905	780	0.011001	-4.5098	3/26/2023	71499	6512.000001	0.0910782
3/28/2022	70905	12913	0.182117	-1.70311	3/27/2023	71499	195	0.0027273
3/29/2022	70905	784.0000001	0.011057	-4.50469	3/28/2023	71499	596056	8.3365641
3/3/2022	70905	2776	0.039151	-3.24033	3/29/2023	71499	302	0.0042238
3/30/2022	70905	1084905	15.30083	2.727907	3/3/2023	71499	58124561	812.94229
3/31/2022	70905	1003806	14.15706	2.650213	3/30/2023	71499	1044	0.0146016
3/4/2022	70905	3774	0.053226	-2.93321	3/31/2023	71499	10496	0.1467993
3/5/2022	70905	36080	0.50885	-0.6756	3/4/2023	71499	20499273	286.70713
3/6/2022	70905	3098	0.043692	-3.13058	3/5/2023	71499	3689308	51.599435
3/7/2022	70905	47037	0.663381	-0.41041	3/6/2023	71499	2201389	30.789088
3/8/2022	70905	1284	0.018109	-4.01136	3/7/2023	71499	954200	13.345641
3/9/2022	70905	15729	0.221832	-1.50583	3/8/2023	71499	181762	2.5421614
4/1/2022	70905	5949	0.083901	-2.47812	3/9/2023	71499	111961	1.56591
4/10/2022	70905	2806	0.039574	-3.22958	4/1/2023	71499	7286376	101.90878
4/11/2022	70905	14202	0.200296	-1.60796	4/10/2023	71499	7560	0.1057357
4/12/2022	70905	38373.99999	0.541203	-0.61396	4/11/2023	71499	8553	0.1196241
4/13/2022	70905	146429	2.065144	0.7252	4/12/2023	71499	3355	0.0469237
4/14/2022	70905	118495	1.67118	0.51353	4/13/2023	71499	63298.00001	0.8852991
4/15/2022	70905	97181	1.37058	0.315234	4/14/2023	71499	20200	0.2825214
4/16/2022	70905	111	0.001565	-6.45957	4/15/2023	71499	549	0.0076784
4/17/2022	70905	172	0.002426	-6.0216	4/16/2023	71499	3354	0.0469097
4/18/2022	70905	180025	2.538961	0.931755	4/17/2023	71499	41919.15	0.58629
4/19/2022	70905	8816	0.124335	-2.08477	4/18/2023	71499	81598.31666	1.1412512
4/2/2022	70905	7722	0.108906	-2.21727	4/19/2023	71499	29825.13333	0.4171406
4/20/2022	70905	1537	0.021677	-3.83151	4/2/2023	71499	264083	3.6935202
4/21/2022	70905	1061	0.014964	-4.20213	4/20/2023	71499	31053.63333	0.4343226
4/22/2022	70905	2044	0.028827	-3.54643	4/21/2023	71499	19449.55	0.2720255
4/23/2022	70905	39929	0.563134	-0.57424	4/22/2023	71499	29300.21667	0.409799
4/24/2022	70905	2997	0.042268	-3.16373	4/23/2023	71499	12902.31667	0.1804545
4/25/2022	70905	11900	0.16783	-1.7848	4/24/2023	71499	19771	0.2765213
4/26/2022	70905	113122	1.595402	0.467126	4/25/2023	71499	7120.283334	0.0995858
4/27/2022	70905	3773	0.053212	-2.93347	4/26/2023	71499	5514.133333	0.0771218
4/28/2022	70905	3399	0.047937	-3.03786	4/27/2023	71499	139183.15	1.9466447
4/29/2022	70905	655	0.009238	-4.68446	4/28/2023	71499	4698.983333	0.065721
4/3/2022	70905	38	0.000536	-7.53151	4/29/2023	71499	802.3166667	0.0112214
4/30/2022	70905	2835	0.039983	-3.2193	4/3/2023	71499	48522	0.6786389
4/4/2022	70905	36334	0.512432	-0.66859	4/30/2023	71499	117466.6333	1.642913
4/5/2022	70905	3901	0.055017	-2.90011	4/4/2023	71499	7712	0.1078616
4/6/2022	70905	283812	4.002708	1.386971	4/5/2023	71499	540979	7.5862457
4/7/2022	70905	6084	0.085805	-2.45568	4/6/2023	71499	115968	1.6219528
4/8/2022	70905	674.9999998	0.00952	-4.65438	4/7/2023	71499	53828	0.7528497

4/9/2022	70905	266	0.003751	-5.5856	4/8/2023	71499	53798	0.7524301
5/1/2022	70905	9843	0.13882	-1.97458	4/9/2023	71499	13067	0.1827578
5/10/2022	70905	4505	0.063536	-2.75615	5/1/2023	71499	121957.3167	1.7057206
5/11/2022	70905	8534	0.120358	-2.11728	5/10/2023	71499	5598.45	0.0783011
5/12/2022	70905	328790	4.63705	1.534078	5/11/2023	71499	4218.000001	0.0589938
5/13/2022	70905	569	0.008025	-4.82522	5/12/2023	71499	971.2333333	0.0135839
5/14/2022	70905	14653	0.206657	-1.5767	5/13/2023	71499	22477.73333	0.3143783
5/15/2022	70905	64960	0.916155	-0.08757	5/14/2023	71499	920	0.0128673
5/16/2022	70905	17704	0.249686	-1.38755	5/15/2023	71499	7967.866671	0.1114403
5/17/2022	70905	1441	0.020323	-3.896	5/16/2023	71499	55884.95	0.7816186
5/18/2022	70905	725997	10.23901	2.326205	5/17/2023	71499	6844.833334	0.0957333
5/19/2022	70905	137154	1.934335	0.659763	5/18/2023	71499	79959.95	1.1183366
5/2/2022	70905	4961	0.069967	-2.65973	5/19/2023	71499	11357.31667	0.1588458
5/20/2022	70905	7622	0.107496	-2.2303	5/2/2023	71499	502.85	0.0070333
5/21/2022	70905	2286	0.03224	-3.43454	5/20/2023	71499	70628.18333	0.9878206
5/22/2022	70905	49978	0.704859	-0.34976	5/21/2023	71499	7841.066667	0.1096668
5/23/2022	70905	8123	0.114562	-2.16664	5/22/2023	71499	11859.95	0.1658757
5/24/2022	70905	9985	0.140822	-1.96026	5/23/2023	71499	7482.883334	0.1046572
5/25/2022	70905	40871	0.576419	-0.55092	5/24/2023	71499	4766.466667	0.0666648
5/26/2022	70905	149010	2.101544	0.742672	5/25/2023	71499	9290.783333	0.1299428
5/27/2022	70905	16786	0.236739	-1.4408	5/26/2023	71499	5635.850002	0.0788242
5/28/2022	70905	10552	0.148819	-1.90503	5/27/2023	71499	16867.61667	0.235914
5/29/2022	70905	5107	0.072026	-2.63073	5/28/2023	71499	5684.200002	0.0795004
5/3/2022	70905	56403	0.795473	-0.22882	5/29/2023	71499	8762.066666	0.0945757
5/30/2022	70905	5659	0.079811	-2.52809	5/3/2023	71499	13416.41667	0.1876448
5/31/2022	70905	8983	0.126691	-2.06601	5/30/2023	71499	13386.05	0.1872201
5/4/2022	70905	867	0.012228	-4.40406	5/31/2023	71499	23437.93333	0.3278078
5/5/2022	70905	37100	0.523235	-0.64772	5/4/2023	71499	6879.733334	0.0962214
5/6/2022	70905	527829	7.444172	2.007431	5/5/2023	71499	16806.93334	0.2350653
5/7/2022	70905	34158	0.481743	-0.73034	5/6/2023	71499	4590.583333	0.0642049
5/8/2022	70905	943	0.013299	-4.32003	5/7/2023	71499	98019.36666	1.3709194
5/9/2022	70905	83156	1.17278	0.159377	5/8/2023	71499	73125.05	1.0227423
6/1/2022	70905	1518	0.021409	-3.84395	5/9/2023	71499	37866.35	0.5296067
6/10/2022	70905	4445	0.06269	-2.76956	6/1/2023	71499	45319.08333	0.6338422
6/11/2022	70905	5208	0.07345	-2.61115	6/10/2023	71499	5123.483333	0.0716581
6/12/2022	70905	2846	0.040138	-3.21543	6/11/2023	71499	904037	12.644051
6/13/2022	70905	79909	1.126987	0.119548	6/12/2023	71499	76026.28333	1.0633195
6/14/2022	70905	12073	0.17027	-1.77037	6/13/2023	71499	23389.35	0.3271284
6/15/2022	70905	38234	0.539229	-0.61762	6/14/2023	71499	51547.50001	0.7209541
6/16/2022	70905	132936	1.874847	0.628527	6/15/2023	71499	42216.61667	0.5904504
6/17/2022	70905	2041152	28.78714	3.359929	6/16/2023	71499	7878.483334	0.1101901
6/18/2022	70905	69026	0.9735	-0.02686	6/17/2023	71499	2922.066667	0.0408686
6/19/2022	70905	11079	0.156251	-1.85629	6/18/2023	71499	14383.43333	0.2011697
6/2/2022	70905	50146	0.707228	-0.3464	6/19/2023	71499	181302.8167	2.5357392
6/20/2022	70905	17772	0.250645	-1.38372	6/2/2023	71499	40042.1	0.5600372
6/21/2022	70905	36690	0.517453	-0.65884	6/20/2023	71499	155413.8333	2.1736504
6/22/2022	70905	80175	1.130738	0.122871	6/21/2023	71499	8804.866667	0.1231467
6/23/2022	70905	47175	0.665327	-0.40748	6/22/2023	71499	44886.73333	0.6277953
6/24/2022	70905	5260	0.074184	-2.60121	6/23/2023	71499	23834.31667	0.3333517
6/25/2022	70905	294840	4.15824	1.425092	6/24/2023	71499	44553.28333	0.6231316
6/26/2022	70905	35410	0.499401	-0.69435	6/25/2023	71499	189510.2	2.6505294
6/27/2022	70905	82043	1.157083	0.145903	6/26/2023	71499	14689142.48	205.44543
6/28/2022	70905	8215	0.115859	-2.15538	6/27/2023	71499	951615.9	13.309499
6/29/2022	70905	53105	0.74896	-0.28907	6/28/2023	71499	228476.7833	3.1955242
6/3/2022	70905	13474	0.190029	-1.66058	6/29/2023	71499	344870.5667	4.823432
6/30/2022	70905	16322	0.230195	-1.46883	6/3/2023	71499	5766.416667	0.0806503
6/4/2022	70905	33326	0.470009	-0.755	6/30/2023	71499	376010.5167	5.2589619
6/5/2022	70905	1466	0.020676	-3.8788	6/4/2023	71499	1808	0.0252871
6/6/2022	70905	25942	0.36587	-1.00548	6/5/2023	71499	54423.41667	0.7611773
6/7/2022	70905	566140	7.984486	2.0775	6/6/2023	71499	29347.13333	0.4104552
6/8/2022	70905	9175.999999	0.129413	-2.04475	6/7/2023	71499	19510.68333	0.2728805
6/9/2022	70905	89689	1.264918	0.235007	6/8/2023	71499	167499.35	2.342681
7/1/2022	70905	326403	4.603385	1.526792	6/9/2023	71499	236.9333334	0.0033138
7/10/2022	70905	4686	0.066088	-2.71676	7/1/2023	71499	35010.38333	0.4896626
7/11/2022	70905	11247	0.158621	-1.84124	7/10/2023	71499	39143.15	0.5474643
7/12/2022	70905	975482	13.75759	2.621591	7/11/2023	71499	34783.43333	0.4864884
7/13/2022	70905	207098	2.920781	1.071851	7/12/2023	71499	12288.7	0.1718723
7/14/2022	70905	8186	0.11545	-2.15892	7/13/2023	71499	3311.266667	0.0463121
7/15/2022	70905	5327	0.075129	-2.58855	7/14/2023	71499	7646.05	0.1069393
7/16/2022	70905	11369	0.160341	-1.83045	7/15/2023	71499	13402.25	0.1874467
7/17/2022	70905	16350	0.23059	-1.46711	7/16/2023	71499	1558.066667	0.0217914
7/18/2022	70905	102533	1.446062	0.368844	7/17/2023	71499	44825	0.6269318
7/19/2022	70905	341697	4.819082	1.572583	7/18/2023	71499	139473.25	1.9507021
7/2/2022	70905	1138	0.01605	-4.13207	7/19/2023	71499	3593.3	0.0502566
7/20/2022	70905	499514	7.044835	1.952295	7/2/2023	71499	731513.1167	10.231096
7/21/2022	70905	1334765	18.8247	2.93517	7/20/2023	71499	166083.4	2.3228772
7/22/2022	70905	10142	0.143036	-1.94466	7/21/2023	71499	1170.516667	0.0163711
7/23/2022	70905	64807	0.913998	-0.08993	7/22/2023	71499	153715.3	2.1498944
7/24/2022	70905	121241	1.709908	0.536439	7/23/2023	71499	9751.966667	0.136393
7/25/2022	70905	25482	0.359382	-1.02337	7/24/2023	71499	29132.96667	0.4074598
7/26/2022	70905	107098	1.510444	0.412403	7/25/2023	71499	7659.983333	0.1071341
7/27/2022	70905	16828	0.237332	-1.4383	7/26/2023	71499	33737.28333	0.4718567
7/28/2022	70905	83725	1.180805	0.166197	7/27/2023	71499	83104.71667	1.16232
7/29/2022	70905	26377	0.372005	-0.98885	7/28/2023	71499	35735.35	0.4998021
7/3/2022	70905	16932	0.238798	-1.43214	7/29/2023	71499	393960.0333	5.5100076
7/30/2022	70905	20250	0.285593	-1.25319	7/3/2023	71499	370754.1667	5.1854455
7/31/2022	70905	56921	0.802778	-0.21968	7/30/2023	71499	9403.066667	0.1315133
7/4/2022	70905	7456	0.105155	-2.25232	7/31/2023	71499	2667.5	0.0373082
7/5/2022	70905	157425	2.220224	0.797608	7/4/2023	71499	12487	0.1748458
7/6/2022	70905	201812	2.848231	1.045996	7/5/2023	71499	2689.533333	0.0376164
7/7/2022	70905	295203	4.163359	1.426322	7/6/2023	71499	30231.83334	0.4228288
7/8/2022	70905	1475371	20.80771	3.035324	7/7/2023	71499	2883.566667	0.0403302
7/9/2022	70905	177416	2.502165	0.917156	7/8/2023	71499	2274.95	0.0318179
8/1/2022	70905	8048	0.113504	-2.17592	7/9/2023	71499	20648.5	0.2887942
8/10/2022	70905	188467	2.658021	0.977582	8/1/2023	71499	23664.55	0.3309774
8/11/2022	70905	4862	0.068571	-2.67989	8/10/2023	71499	810415.15	11.334636
8/12/2022	70905	2005	0.028277	-3.5657	8/11/2023	71499	6967.9	0.0974545
8/13/2022	70905	519	0.00732	-4.91719	8/12/2023	71499	304627.1833	4.2605796
8/14/2022	70905	5834.000001	0.082279	-2.49764	8/13/2023	71499	897.3333333	0.0125503
8/15/2022	70905	24040	0.339045	-1.08162	8/14/2023	71499	43851.31667	0.6133137
8/16/2022	70905	10221	0.144151	-1.9369	8/15/2023	71499	2603.516667	0.0364133
8/17/2022	70905	7731	0.109033	-2.2161	8/16/2023	71499	6123.35	0.0856425
8/18/2022	70905	4942	0.069699	-2.66357	8/17/2023	71499	82880.3	1.1591812
8/19/2022	70905	1716	0.024201	-3.72134	8/18/2023	71499	1674.183333	0.0234155
8/2/2022	70905	1628	0.02296	-3.77399	8/19/2023	71499	19223.3	0.2688611
8/20/2022	70905	929	0.013102	-4.33499	8/2/2023	71499	12523.51667	0.1751565
8/21/2022	70905	10802	0.152345	-1.88161	8/			



8/22/2022	70905	20773	0.292969	-1.22769	8/21/2023	71499	3344.466667	0.0467764
8/24/2022	70905	8304	0.117114	-2.1446	8/22/2023	71499	5278.016666	0.0738194
8/25/2022	70905	7615.999999	0.107411	-2.23109	8/23/2023	71499	1162.283336	0.0162559
8/26/2022	70905	3356	0.047331	-3.05059	8/24/2023	71499	27711.5	0.3875788
8/27/2022	70905	9885.000001	0.139412	-1.97032	8/25/2023	71499	1963571.2	27.462918
8/28/2022	70905	9207	0.12985	-2.04138	8/26/2023	71499	102543	1.4341879
8/29/2022	70905	130089	1.834694	0.606878	8/27/2023	71499	21384.18333	0.2990837
8/30/2022	70905	144383	2.036288	0.711129	8/28/2023	71499	89211.16667	1.2477261
8/31/2022	70905	48386	0.682406	-0.38213	8/29/2023	71499	30759.58333	0.43021
8/4/2022	70905	473439	6.677089	1.898682	8/30/2023	71499	19547.78333	0.2733994
8/5/2022	70905	138976	1.960031	0.67296	8/31/2023	71499	979.4666667	0.013699
8/6/2022	70905	176448	2.488513	0.911685	8/3/2023	71499	7894.983333	0.1104209
8/7/2022	70905	305528	4.308977	1.4607	8/4/2023	71499	29380	0.4109148
8/8/2022	70905	26043	0.367294	-1.00159	8/5/2023	71499	19901.1	0.278341
8/9/2022	70905	9001	0.126945	-2.06401	8/6/2023	71499	6478.1	0.0906041
8/9/2022	70905	126047	1.777688	0.575314	8/7/2023	71499	117669.4	1.6457489
9/1/2022	70905	1881	0.026528	-3.62954	8/8/2023	71499	7049.966667	0.0986023
9/10/2022	70905	637	0.008984	-4.71233	8/9/2023	71499	23398.75	0.3272598
9/11/2022	70905	80950	1.141668	0.132491	9/1/2023	71499	76262.13333	1.0666182
9/12/2022	70905	2703	0.038121	-3.26698	9/10/2023	71499	787.3333333	0.0110118
9/13/2022	70905	97835	1.379804	0.321941	9/11/2023	71499	18613.63333	0.2603342
9/14/2022	70905	7939.999999	0.111981	-2.18943	9/12/2023	71499	27916.55	0.3904467
9/15/2022	70905	46076	0.649827	-0.43105	9/13/2023	71499	17865.73333	0.2498739
9/16/2022	70905	1548	0.021832	-3.82438	9/14/2023	71499	6848.333333	0.0957822
9/17/2022	70905	1029	0.014512	-4.23275	9/15/2023	71499	3420.349999	0.0478377
9/18/2022	70905	975	0.013751	-4.28666	9/16/2023	71499	1195.95	0.0167288
9/19/2022	70905	61885	0.872788	-0.13606	9/17/2023	71499	5049.483333	0.0706231
9/2/2022	70905	15981	0.225386	-1.48994	9/18/2023	71499	29380.3	0.410919
9/20/2022	70905	8070	0.113814	-2.17319	9/19/2023	71499	29806.81667	0.4168844
9/21/2022	70905	348896	4.920612	1.593433	9/2/2023	71499	8288.399991	0.1159233
9/22/2022	70905	42041.00001	0.59292	-0.5227	9/20/2023	71499	2745.7	0.0384019
9/23/2022	70905	3291	0.046414	-3.07015	9/21/2023	71499	25370.46667	0.3548367
9/24/2022	70905	5683	0.080149	-2.52386	9/22/2023	71499	3756.8	0.0525434
9/25/2022	70905	3827	0.053974	-2.91926	9/23/2023	71499	8122.43333	0.1136021
9/26/2022	70905	6873	0.096933	-2.33374	9/24/2023	71499	11835.56667	0.1655347
9/27/2022	70905	148916	2.100219	0.742041	9/25/2023	71499	17660.53333	0.2470039
9/28/2022	70905	88037	1.241619	0.216416	9/26/2023	71499	106328.9833	1.4871394
9/29/2022	70905	1604	0.022622	-3.78884	9/27/2023	71499	11568.88333	0.1618048
9/3/2022	70905	3229	0.04554	-3.08917	9/28/2023	71499	7182.483333	0.1004557
9/30/2022	70905	5495	0.077498	-2.5575	9/29/2023	71499	57854.66667	0.8091675
9/4/2022	70905	72241	1.018842	0.018667	9/3/2023	71499	316.25	0.0044231
9/5/2022	70905	14723	0.207644	-1.57193	9/30/2023	71499	193.8166667	0.0027108
9/6/2022	70905	47421	0.668796	-0.40228	9/4/2023	71499	79950.63333	1.1182063
9/7/2022	70905	10398	0.146647	-1.91973	9/5/2023	71499	8108.116667	0.1134018
9/8/2022	70905	930.0000001	0.013116	-4.33391	9/6/2023	71499	3352.983333	0.0468955
9/9/2022	70905	8519	0.120147	-2.11904	9/7/2023	71499	2145.216667	0.0300034
1/1/2021	69477	13689.03333	0.19703	-1.6244	9/8/2023	71499	10367.3	0.1449992
1/10/2021	69477	10646.13333	0.153232	-1.8758	9/9/2023	71499	5921.55	0.08282
1/11/2021	69477	6544.516666	0.094197	-2.36237				
1/12/2021	69477	20.11666666	0.00029	-8.1472				
1/13/2021	69477	3612.183334	0.051991	-2.95668				
1/14/2021	69477	22326.96667	0.321358	-1.1352				
1/17/2021	69477	23560.98333	0.339119	-1.0814				
1/18/2021	69477	15995.1	0.230222	-1.46871				
1/19/2021	69477	13485.58333	0.194101	-1.63937				
1/2/2021	69477	299.25	0.004307	-5.44747				
1/20/2021	69477	1486	0.021388	-3.84491				
1/21/2021	69477	122.6333333	0.001765	-6.33955				
1/22/2021	69477	130349.15	1.876148	0.629221				
1/23/2021	69477	10921.81667	0.157198	-1.85025				
1/25/2021	69477	216773.65	3.120078	1.137858				
1/26/2021	69477	10250.53333	0.147539	-1.91367				
1/27/2021	69477	34830.88333	0.50133	-0.69049				
1/28/2021	69477	55484.03333	0.798596	-0.2249				
1/29/2021	69477	214892.0833	3.092996	1.12914				
1/3/2021	69477	60.43333334	0.00087	-7.04721				
1/30/2021	69477	74012.26667	1.065277	0.063235				
1/31/2021	69477	16782.5	0.241555	-1.42066				
1/4/2021	69477	40399.33333	0.581478	-0.54218				
1/5/2021	69477	39.01666667	0.000562	-7.48476				
1/6/2021	69477	36.09999999	0.00052	-7.56246				
1/7/2021	69477	6833.766667	0.09836	-2.31912				
1/8/2021	69477	19335.7	0.278304	-1.27904				
10/1/2021	69477	2108.283333	0.030345	-3.49512				
10/10/2021	69477	4127.4	0.059407	-2.82335				
10/11/2021	69477	1907.45	0.027454	-3.59523				
10/12/2021	69477	6712.6	0.096616	-2.33701				
10/13/2021	69477	5131.483333	0.073859	-2.6056				
10/14/2021	69477	1100.933334	0.015846	-4.14484				
10/15/2021	69477	9222.1	0.132736	-2.01939				
10/16/2021	69477	76723.33333	1.104298	0.09921				
10/17/2021	69477	821.95	0.011831	-4.43707				
10/18/2021	69477	7871.933333	0.113303	-2.17769				
10/19/2021	69477	46270.76666	0.665987	-0.40649				
10/2/2021	69477	46109.81667	0.66367	-0.40997				
10/20/2021	69477	19615.11667	0.282325	-1.2647				
10/21/2021	69477	20573.7	0.296122	-1.21698				
10/22/2021	69477	9031.85	0.129998	-2.04024				
10/23/2021	69477	794.3	0.011433	-4.47129				
10/24/2021	69477	4568.716667	0.065759	-2.72176				
10/25/2021	69477	186714.35	2.687427	0.988584				
10/26/2021	69477	6033.3	0.086839	-2.4437				
10/27/2021	69477	2128.133333	0.030631	-3.48575				
10/28/2021	69477	226425.9333	3.259006	1.181422				
10/29/2021	69477	11245.3	0.161856	-1.82105				
10/3/2021	69477	26899.23333	0.387167	-0.9489				
10/30/2021	69477	21173.56666	0.304756	-1.18824				
10/31/2021	69477	9907	0.142594	-1.94775				
10/4/2021	69477	4813.316667	0.069279	-2.66961				
10/5/2021	69477	1086.783333	0.015642	-4.15777				
10/6/2021	69477	95724.26666	1.377784	0.320476				
10/7/2021	69477	22718.81667	0.326998	-1.1178				
10/8/2021	69477	6434.8	0.092618	-2.37928				
10/9/2021	69477	7772.216667	0.111867	-2.19044				
11/1/2021	69477	66.36666665	0.000955	-6.95356				
11/10/2021	69477	21148.98333	0.304403	-1.1894				
11/11/2021	69477	299699.25	4.313647	1.461784				

11/12/2021	69477	9130.65	0.13142	-2.02936
11/13/2021	69477	35119.9	0.50549	-0.68223
11/14/2021	69477	7044.033334	0.101387	-2.28881
11/15/2021	69477	41236.81667	0.593532	-0.52166
11/16/2021	69477	9874.083333	0.14212	-1.95108
11/17/2021	69477	11609.33333	0.167096	-1.78919
11/18/2021	69477	37961.45	0.546389	-0.60442
11/19/2021	69477	707.7166667	0.010186	-4.58671
11/2/2021	69477	1920.2	0.027638	-3.58857
11/20/2021	69477	4185.616667	0.060245	-2.80934
11/21/2021	69477	191.0166667	0.002749	-5.89639
11/22/2021	69477	5198.966667	0.07483	-2.59254
11/23/2021	69477	1864.116667	0.026831	-3.61821
11/24/2021	69477	17600.5	0.253328	-1.37307
11/25/2021	69477	8813.566667	0.126856	-2.0647
11/26/2021	69477	2602.983333	0.037465	-3.28434
11/27/2021	69477	6504.45	0.09362	-2.36851
11/28/2021	69477	4009.2	0.057705	-2.8524
11/29/2021	69477	9121.833333	0.131293	-2.03032
11/3/2021	69477	4712.8	0.067833	-2.69071
11/30/2021	69477	12766.76667	0.183755	-1.69415
11/4/2021	69477	84904.28334	1.222049	0.200529
11/5/2021	69477	989.4666667	0.014242	-4.25158
11/6/2021	69477	10933.71667	0.157372	-1.84914
11/7/2021	69477	883.5166667	0.012717	-4.36484
11/8/2021	69477	2746.7	0.039534	-3.2306
11/9/2021	69477	1515.016667	0.021806	-3.82557
12/1/2021	69477	5394.316667	0.077642	-2.55565
12/10/2021	69477	28732.3	0.413551	-0.88297
12/11/2021	69477	2656431.417	38.23469	3.643743
12/12/2021	69477	202344.85	2.912401	1.068978
12/13/2021	69477	7967.133334	0.114673	-2.16567
12/14/2021	69477	7477.916667	0.107632	-2.22904
12/15/2021	69477	10192.06667	0.146697	-1.91939
12/16/2021	69477	335610.5	4.830527	1.574955
12/17/2021	69477	29044.4	0.418043	-0.87217
12/18/2021	69477	1095.866667	0.015773	-4.14945
12/19/2021	69477	11244.48333	0.161845	-1.82112
12/2/2021	69477	9057.366667	0.130365	-2.03742
12/20/2021	69477	20302.43333	0.292218	-1.23026
12/21/2021	69477	5220.45	0.075139	-2.58841
12/22/2021	69477	2801.5	0.040323	-3.21084
12/23/2021	69477	91802	1.321329	0.278638
12/24/2021	69477	3930.366667	0.056571	-2.87226
12/25/2021	69477	6560.183333	0.094422	-2.35998
12/26/2021	69477	11267.31667	0.162173	-1.81909
12/27/2021	69477	3742.75	0.05387	-2.92118
12/28/2021	69477	5713.05	0.082229	-2.49824
12/29/2021	69477	3030.116667	0.043613	-3.13239
12/3/2021	69477	49504.9	0.712537	-0.33892
12/30/2021	69477	2512.516667	0.036163	-3.31971
12/31/2021	69477	4525.566667	0.065138	-2.73125
12/4/2021	69477	14678.38333	0.211127	-1.55462
12/5/2021	69477	39389.93333	0.566949	-0.56749
12/6/2021	69477	313431.75	4.511302	1.506586
12/7/2021	69477	12011.38333	0.172883	-1.75514
12/8/2021	69477	38303.86667	0.551314	-0.59545
12/9/2021	69477	25579.61667	0.368174	-0.9992
2/1/2021	69477	90.46666665	0.001302	-6.64377
2/10/2021	69477	8736.433333	0.125746	-2.07349
2/11/2021	69477	3873.933333	0.055759	-2.88673
2/13/2021	69477	10458.66667	0.150534	-1.89356
2/15/2021	69477	50022145.32	719.9814	6.579225
2/16/2021	69477	10956727.15	157.7029	5.060713
2/17/2021	69477	6527414.65	93.95073	4.54277
2/18/2021	69477	5090630.35	73.27073	4.294161
2/19/2021	69477	1359166.05	19.56282	2.973631
2/2/2021	69477	259.0666667	0.003729	-5.59167
2/20/2021	69477	377827.5167	5.438167	1.693442
2/21/2021	69477	375562.5333	5.405566	1.687429
2/22/2021	69477	157613.25	2.268567	0.819148
2/23/2021	69477	2960.416667	0.04261	-3.15567
2/24/2021	69477	8578.216667	0.123468	-2.09177
2/25/2021	69477	7010.5	0.100904	-2.29359
2/26/2021	69477	9661.516669	0.139061	-1.97285
2/27/2021	69477	111811.8167	1.609336	0.475821
2/28/2021	69477	544257.05	7.833629	2.058426
2/3/2021	69477	14791.36667	0.212896	-1.54695
2/4/2021	69477	20353.48333	0.292953	-1.22774
2/6/2021	69477	157.4	0.002265	-6.08996
2/7/2021	69477	42164.88333	0.60689	-0.49941
2/8/2021	69477	69289.41668	0.9973	-0.0027
2/9/2021	69477	80.48333333	0.001158	-6.7607
3/1/2021	69477	303942.6333	4.374723	1.475843
3/10/2021	69477	5425.516666	0.078091	-2.54988
3/11/2021	69477	467.75	0.006732	-5.00082
3/12/2021	69477	202123.3333	2.909212	1.067882
3/13/2021	69477	14680.35	0.211298	-1.55449
3/14/2021	69477	71.53333333	0.00103	-6.87859
3/15/2021	69477	16421.48333	0.236359	-1.44241
3/16/2021	69477	835.0333334	0.012019	-4.42128
3/17/2021	69477	23495.8	0.338181	-1.08417
3/18/2021	69477	1496.8	0.021544	-3.83767
3/19/2021	69477	545.9166666	0.007858	-4.84628
3/2/2021	69477	4497.333333	0.064731	-2.73751
3/20/2021	69477	3913.716667	0.056331	-2.87651
3/21/2021	69477	13218.96667	0.190264	-1.65934
3/22/2021	69477	3587.266666	0.051632	-2.96361
3/23/2021	69477	5724.65	0.082396	-2.49621
3/24/2021	69477	494.0666666	0.007111	-4.94608
3/25/2021	69477	563212.9167	8.106466	2.092662
3/26/2021	69477	16646.93333	0.239604	-1.42877
3/27/2021	69477	40029.41667	0.576153	-0.55138
3/28/2021	69477	91318.73333	1.314374	0.27336
3/29/2021	69477	3486.916667	0.050188	-2.99198
3/3/2021	69477	38009.38333	0.547079	-0.60316
3/30/2021	69477	123556.8667	1.778385	0.575706

3/31/2021	69477	8507.65	0.122453	-2.10003
3/4/2021	69477	28878.86667	0.415661	-0.87789
3/5/2021	69477	59.38333333	0.000855	-7.06474
3/7/2021	69477	136.7333333	0.001968	-6.23072
3/8/2021	69477	63.05	0.000907	-7.00482
3/9/2021	69477	13187.56667	0.189812	-1.66172
4/1/2021	69477	23770.9	0.342141	-1.07253
4/10/2021	69477	4820.7	0.069386	-2.66808
4/11/2021	69477	54965.46667	0.791132	-0.23429
4/12/2021	69477	74.8	0.001077	-6.83393
4/13/2021	69477	1036.933333	0.014925	-4.20473
4/14/2021	69477	1676.966667	0.024137	-3.72401
4/16/2021	69477	6494.400001	0.093476	-2.37006
4/17/2021	69477	5669.216667	0.081598	-2.50594
4/18/2021	69477	243.15	0.0035	-5.65507
4/19/2021	69477	682.2833333	0.00982	-4.62331
4/2/2021	69477	1165.75	0.016779	-4.08763
4/20/2021	69477	2589.4	0.03727	-3.28957
4/21/2021	69477	1765.95	0.025418	-3.67231
4/22/2021	69477	385.0666667	0.005542	-5.19533
4/23/2021	69477	346.25	0.004984	-5.30159
4/24/2021	69477	13233.43333	0.190472	-1.65825
4/25/2021	69477	60.03333333	0.000864	-7.05385
4/26/2021	69477	4078.933333	0.058709	-2.83516
4/27/2021	69477	15476.35	0.222755	-1.50168
4/28/2021	69477	1760.416667	0.025338	-3.67545
4/29/2021	69477	1480	0.021302	-3.84895
4/3/2021	69477	229.65	0.003305	-5.71219
4/30/2021	69477	17943.93333	0.258272	-1.35374
4/5/2021	69477	11160.76667	0.16064	-1.82859
4/6/2021	69477	33939.91667	0.488506	-0.7164
4/7/2021	69477	34701.13333	0.499462	-0.69422
4/8/2021	69477	45287.36667	0.651833	-0.42797
4/9/2021	69477	33762.31666	0.48595	-0.72165
5/1/2021	69477	469.2666667	0.006754	-4.99758
5/10/2021	69477	4388.866667	0.06317	-2.76192
5/11/2021	69477	172903.3833	2.488642	0.911737
5/12/2021	69477	470.7333333	0.006775	-4.99446
5/13/2021	69477	2200.333333	0.03167	-3.45239
5/14/2021	69477	24321.33333	0.350063	-1.04964
5/15/2021	69477	269.15	0.003874	-5.55348
5/16/2021	69477	20863.48333	0.300293	-1.203
5/17/2021	69477	409.8666667	0.005896	-5.13341
5/18/2021	69477	6398.933333	0.092101	-2.38486
5/19/2021	69477	3359.533333	0.048355	-3.02919
5/2/2021	69477	8409.716667	0.121043	-2.11161
5/20/2021	69477	645664.6167	9.293214	2.229284
5/21/2021	69477	7361.466667	0.105955	-2.24474
5/22/2021	69477	2509.85	0.036125	-3.32077
5/23/2021	69477	201.1666667	0.002895	-5.84462
5/24/2021	69477	2252.966667	0.032428	-3.42875
5/25/2021	69477	34820.23333	0.501176	-0.6908
5/26/2021	69477	394433.6	5.677182	1.736455
5/27/2021	69477	23701.45	0.341141	-1.07546
5/28/2021	69477	93694.88334	1.348570	0.299046
5/29/2021	69477	57744.81667	0.831133	-0.18497
5/3/2021	69477	9309.5	0.133994	-2.00996
5/30/2021	69477	10232.81667	0.147281	-1.91542
5/31/2021	69477	5863.25	0.084391	-2.47229
5/4/2021	69477	219553.9833	3.160096	1.150602
5/5/2021	69477	548.1	0.007889	-4.84229
5/6/2021	69477	12118.76667	0.174428	-1.74624
5/7/2021	69477	3049.149996	0.043887	-3.12613
5/8/2021	69477	3425.466667	0.049304	-3.00976
5/9/2021	69477	91955.33333	1.323536	0.280307
6/1/2021	69477	5605.116667	0.080676	-2.51732
6/10/2021	69477	195022.9333	2.807014	1.032121
6/11/2021	69477	302916.3	4.359951	1.472461
6/12/2021	69477	3876144.983	55.79033	4.021601
6/13/2021	69477	121652.0167	1.750968	0.560169
6/14/2021	69477	50008.88333	0.71979	-0.3288
6/15/2021	69477	165164.25	2.377251	0.865945
6/16/2021	69477	15259.6	0.219835	-1.51579
6/17/2021	69477	5368.4	0.077269	-2.56047
6/18/2021	69477	9694.966667	0.139542	-1.96939
6/19/2021	69477	418.95	0.00603	-5.111
6/2/2021	69477	17267.58333	0.248537	-1.39216
6/20/2021	69477	710.7333333	0.01023	-4.58245
6/21/2021	69477	1208540.05	17.39482	2.856173
6/22/2021	69477	68661.75	0.988266	-0.0118
6/23/2021	69477	1276.616667	0.018375	-3.99678
6/24/2021	69477	7734.816667	0.111329	-2.19526
6/25/2021	69477	15553.01667	0.223858	-1.49674
6/26/2021	69477	1972.583333	0.028392	-3.56165
6/27/2021	69477	144234.8	2.076008	0.730447
6/28/2021	69477	27407.16666	0.394478	-0.93019
6/29/2021	69477	27942.58333	0.402185	-0.91084
6/3/2021	69477	78575.71668	1.13096	0.123067
6/30/2021	69477	5448.866666	0.078427	-2.54559
6/4/2021	69477	3424.15	0.049285	-3.01014
6/5/2021	69477	7486.250001	0.107751	-2.22793
6/6/2021	69477	2237.083333	0.032199	-3.43582
6/7/2021	69477	11269.9	0.162211	-1.81886
6/8/2021	69477	50661.66667	0.729186	-0.31583
6/9/2021	69477	44544.48333	0.64114	-0.44451
7/1/2021	69477	97516.76667	1.403583	0.339029
7/10/2021	69477	652698.55	9.394455	2.24012
7/11/2021	69477	217809.4167	3.134986	1.142625
7/12/2021	69477	77461.33333	1.114921	0.108783
7/13/2021	69477	7187.7	0.103454	-2.26862
7/14/2021	69477	61923.16667	0.891276	-0.1151
7/15/2021	69477	27240.81667	0.392084	-0.93628
7/16/2021	69477	94633	1.362077	0.30901
7/17/2021	69477	51432	0.740274	-0.30074
7/18/2021	69477	50655.66667	0.7291	-0.31594
7/19/2021	69477	1491.183333	0.021463	-3.84143
7/2/2021	69477	347272.2667	4.998377	1.609113

7/20/2021	69477	4977.166667	0.071638	-2.63613
7/21/2021	69477	233619.0167	3.362537	1.212696
7/22/2021	69477	127668.2	1.837561	0.608439
7/23/2021	69477	2722.3	0.039183	-3.23952
7/24/2021	69477	5856	0.084287	-2.47353
7/25/2021	69477	3238.783333	0.046617	-3.0658
7/26/2021	69477	320172.05	4.608317	1.527863
7/27/2021	69477	34406.46667	0.495221	-0.70275
7/28/2021	69477	50647	0.728975	-0.31612
7/29/2021	69477	6131.516667	0.088252	-2.42755
7/30/2021	69477	7585.283333	0.109177	-2.21479
7/31/2021	69477	1136098.1	16.35215	2.794359
7/31/2021	69477	16159.95	0.232594	-1.45846
7/4/2021	69477	460.0333333	0.006621	-5.01745
7/5/2021	69477	15683.25	0.225733	-1.4884
7/6/2021	69477	597.3333333	0.008598	-4.75628
7/7/2021	69477	5304.766667	0.076353	-2.57239
7/8/2021	69477	14996.3	0.215846	-1.53319
7/9/2021	69477	7548.2	0.108643	-2.21969
8/1/2021	69477	3075.866667	0.044272	-3.11741
8/10/2021	69477	233174.0833	3.356133	1.21079
8/11/2021	69477	4780.483333	0.068807	-2.67645
8/12/2021	69477	254.15	0.003658	-5.61083
8/13/2021	69477	8970.25	0.129111	-2.04708
8/14/2021	69477	39688.11667	0.571241	-0.55994
8/15/2021	69477	21424.48333	0.308368	-1.17646
8/16/2021	69477	64207.85	0.92416	-0.07887
8/17/2021	69477	324470.2167	4.670182	1.541198
8/18/2021	69477	27417.15	0.394622	-0.92983
8/19/2021	69477	48868.1	0.703371	-0.35187
8/2/2021	69477	5652.516667	0.081358	-2.50889
8/20/2021	69477	3141.583333	0.045218	-3.09627
8/21/2021	69477	301.2	0.004335	-5.44098
8/22/2021	69477	21097.66667	0.303664	-1.19183
8/23/2021	69477	8948.733334	0.128801	-2.04948
8/24/2021	69477	27984.51667	0.402788	-0.90934
8/25/2021	69477	165.3166667	0.002379	-6.04089
8/26/2021	69477	5195.983333	0.074787	-2.59311
8/27/2021	69477	26126.54999	0.376046	-0.97804
8/28/2021	69477	31821.83333	0.458017	-0.78085
8/29/2021	69477	16764.23333	0.241292	-1.42175
8/3/2021	69477	7770.066667	0.111837	-2.19072
8/30/2021	69477	85243.81667	1.226936	0.20452
8/31/2021	69477	624635.8	8.990541	2.196173
8/4/2021	69477	27097.23333	0.390017	-0.94156
8/5/2021	69477	18468.66667	0.265824	-1.32492
8/6/2021	69477	13254.88333	0.190781	-1.65663
8/7/2021	69477	799.7	0.01151	-4.46451
8/8/2021	69477	4230.533334	0.060891	-2.79867
8/9/2021	69477	308932.45	4.446543	1.492127
9/1/2021	69477	28841.45	0.415122	-0.87918
9/10/2021	69477	13667.13333	0.196715	-1.626
9/11/2021	69477	16145.15	0.232381	-1.45938
9/12/2021	69477	113520.6167	1.633931	0.490989
9/13/2021	69477	812.15	0.011689	-4.44907
9/14/2021	69477	33.83333333	0.000487	-7.6273
9/15/2021	69477	20619.23333	0.296778	-1.21477
9/16/2021	69477	4791.55	0.068966	-2.67414
9/17/2021	69477	7382.566667	0.106259	-2.24187
9/18/2021	69477	17998.68333	0.25906	-1.3507
9/19/2021	69477	993.65	0.014302	-4.24737
9/2/2021	69477	5736.05	0.08256	-2.49422
9/20/2021	69477	59541.58333	0.856997	-0.15432
9/21/2021	69477	5932.15	0.085383	-2.46061
9/22/2021	69477	126447.4667	1.81999	0.598831
9/23/2021	69477	10257.06667	0.147633	-1.91303
9/24/2021	69477	23953.5	0.344769	-1.06488
9/25/2021	69477	47582.23333	0.684863	-0.37854
9/26/2021	69477	1226.616667	0.017655	-4.03674
9/27/2021	69477	1397.983333	0.020122	-3.90597
9/28/2021	69477	5476.266667	0.078821	-2.54057
9/29/2021	69477	8139.8	0.117158	-2.14423
9/3/2021	69477	15599.01667	0.224521	-1.49379
9/30/2021	69477	672.35	0.009677	-4.63797
9/4/2021	69477	2697.966667	0.038833	-3.2485
9/5/2021	69477	7965.2	0.114645	-2.16591
9/6/2021	69477	51894.76667	0.746934	-0.29178
9/7/2021	69477	8316.75	0.119705	-2.12272
9/8/2021	69477	62.76666667	0.000903	-7.00933
9/9/2021	69477	536.55	0.007723	-4.86359
1/1/2020	69477	699.2	0.010064	-4.59881
1/10/2020	69477	97004.76667	1.396214	0.333764
1/11/2020	69477	7344537.517	105.7118	4.660716
1/12/2020	69477	482813.7	6.949259	1.938635
1/13/2020	69477	5779.083333	0.08318	-2.48675
1/14/2020	69477	24056.53333	0.346252	-1.06059
1/15/2020	69477	257.8666666	0.003712	-5.59631
1/16/2020	69477	4035.116667	0.058078	-2.84596
1/17/2020	69477	4302.6	0.061928	-2.78178
1/18/2020	69477	38500.48333	0.554147	-0.59032
1/19/2020	69477	8302.566666	0.119501	-2.12443
1/2/2020	69477	30035.66667	0.432311	-0.83861
1/20/2020	69477	59104.35	0.850704	-0.16169
1/21/2020	69477	73.28333333	0.001055	-6.85442
1/22/2020	69477	52748.76667	0.759226	-0.27546
1/23/2020	69477	3995.883333	0.057514	-2.85573
1/24/2020	69477	282.9666667	0.004073	-5.50342
1/25/2020	69477	4335.25	0.062398	-2.77422
1/26/2020	69477	2318.75	0.033374	-3.39997
1/27/2020	69477	146466.8667	2.108135	0.745803
1/28/2020	69477	29370.96666	0.422744	-0.86099
1/29/2020	69477	244.0333333	0.003512	-5.65145
1/3/2020	69477	5870.75	0.084499	-2.47101
1/30/2020	69477	2265	0.032601	-3.42342
1/31/2020	69477	3717.383333	0.053505	-2.92798
1/4/2020	69477	16434.13333	0.236541	-1.44164
1/5/2020	69477	86.16666667	0.00124	-6.69247

1/6/2020	69477	1434.5	0.020647	-3.88018
1/7/2020	69477	126.1333334	0.001815	-6.31141
1/8/2020	69477	13715.06667	0.197404	-1.6225
1/9/2020	69477	10225.86667	0.147183	-1.91608
10/1/2020	69477	1440.366667	0.020732	-3.8761
10/10/2020	69477	5929.800001	0.085349	-2.46101
10/11/2020	69477	24771.05	0.356536	-1.03132
10/12/2020	69477	58889.13333	0.847606	-0.16534
10/13/2020	69477	4130.15	0.059446	-2.82268
10/14/2020	69477	2748.683333	0.039562	-3.22987
10/16/2020	69477	226.2	0.003256	-5.72733
10/17/2020	69477	374.15	0.005385	-5.22409
10/18/2020	69477	191815.7167	2.760852	1.015539
10/19/2020	69477	624095.1167	8.982759	2.195307
10/2/2020	69477	3466.833333	0.049899	-2.99775
10/20/2020	69477	140.25	0.002019	-6.20532
10/21/2020	69477	2282.033333	0.032846	-3.41593
10/22/2020	69477	639.15	0.009199	-4.68861
10/23/2020	69477	86535.96667	1.245534	0.219564
10/24/2020	69477	39640.78333	0.57056	-0.56114
10/25/2020	69477	51.31666667	0.000739	-7.21074
10/26/2020	69477	1862	0.0268	-3.61934
10/27/2020	69477	3546.583333	0.051047	-2.97501
10/28/2020	69477	55824.76667	0.8035	-0.21878
10/29/2020	69477	44121.71667	0.635055	-0.45404
10/3/2020	69477	3997.3	0.057534	-2.85538
10/30/2020	69477	21241.16667	0.305729	-1.18505
10/31/2020	69477	2593.333333	0.037327	-3.28805
10/4/2020	69477	129.6833333	0.001867	-6.28366
10/5/2020	69477	11068.1	0.159306	-1.83693
10/6/2020	69477	2653.633333	0.038194	-3.26507
10/7/2020	69477	917.9666667	0.013213	-4.32659
10/8/2020	69477	4234.783331	0.060952	-2.79766
10/9/2020	69477	1521.55	0.0219	-3.82127
11/1/2020	69477	1259651.883	18.13049	2.897595
11/10/2020	69477	7225.783333	0.104003	-2.26334
11/11/2020	69477	5439.45	0.078291	-2.54732
11/12/2020	69477	8110.649999	0.116739	-2.14782
11/13/2020	69477	5763.3	0.082953	-2.48949
11/14/2020	69477	193.5666667	0.002786	-5.88313
11/15/2020	69477	1287145.733	18.52621	2.919187
11/16/2020	69477	1677.6	0.024146	-3.72363
11/17/2020	69477	3342.3	0.048107	-3.03434
11/18/2020	69477	2101.55	0.030248	-3.49832
11/19/2020	69477	1696.933333	0.024424	-3.71217
11/2/2020	69477	9911.683334	0.142661	-1.94728
11/20/2020	69477	45.43333333	0.000654	-7.3325
11/21/2020	69477	48757.43333	0.701778	-0.35414
11/22/2020	69477	269783.6667	3.883064	1.356625
11/23/2020	69477	8139.299998	0.117151	-2.14429
11/24/2020	69477	8288.983333	0.119305	-2.12607
11/25/2020	69477	5028.533333	0.072377	-2.62587
11/26/2020	69477	4747.016667	0.068325	-2.68348
11/27/2020	69477	3528.883333	0.050792	-2.98001
11/28/2020	69477	242874.85	3.495759	1.251551
11/29/2020	69477	770.2500001	0.011086	-4.50204
11/3/2020	69477	552.1	0.007947	-4.83502
11/30/2020	69477	111012.0333	1.597824	0.468643
11/4/2020	69477	1626.216667	0.023407	-3.75474
11/5/2020	69477	999.4333336	0.014385	-4.24156
11/6/2020	69477	20941.1	0.301411	-1.19928
11/7/2020	69477	76.56666667	0.001102	-6.81059
11/8/2020	69477	745.6666667	0.010733	-4.53447
11/9/2020	69477	2544.8	0.036628	-3.30694
12/1/2020	69477	2038.15	0.029336	-3.52895
12/10/2020	69477	5943.666666	0.085549	-2.45867
12/12/2020	69477	48.23333333	0.000694	-7.2727
12/13/2020	69477	30196.46667	0.434625	-0.83327
12/14/2020	69477	25590.16667	0.368326	-0.99879
12/15/2020	69477	25782.48333	0.371094	-0.9913
12/16/2020	69477	44416.3	0.639295	-0.44739
12/17/2020	69477	573.4833333	0.008254	-4.79702
12/18/2020	69477	2987.733333	0.043003	-3.14648
12/19/2020	69477	11175.53333	0.160852	-1.82727
12/2/2020	69477	18713.35	0.269346	-1.31176
12/20/2020	69477	93.23333333	0.001342	-6.61365
12/21/2020	69477	203	0.002922	-5.83555
12/22/2020	69477	4904.333333	0.070589	-2.65088
12/23/2020	69477	7997.25	0.115106	-2.1619
12/24/2020	69477	26207.9	0.377217	-0.97493
12/25/2020	69477	1942.983333	0.027966	-3.57677
12/26/2020	69477	15176.68333	0.218442	-1.52124
12/27/2020	69477	292.8	0.004214	-5.46926
12/28/2020	69477	2026.833333	0.029173	-3.53452
12/29/2020	69477	4656.966667	0.067029	-2.70263
12/3/2020	69477	571.8333333	0.008231	-4.7999
12/30/2020	69477	14284.35	0.205598	-1.58183
12/31/2020	69477	11330.33333	0.16308	-1.81351
12/4/2020	69477	6412.75	0.0923	-2.38271
12/5/2020	69477	124.6166667	0.001794	-6.32351
12/6/2020	69477	25890.15	0.372643	-0.98713
12/7/2020	69477	1091.166667	0.015705	-4.15375
12/8/2020	69477	1195.666667	0.01721	-4.06229
12/9/2020	69477	7964.75	0.114639	-2.16597
2/1/2020	69477	129.7	0.001867	-6.28353
2/10/2020	69477	268.8333333	0.003869	-5.55466
2/11/2020	69477	37647.06667	0.541864	-0.61274
2/12/2020	69477	72099.88334	1.037752	0.037057
2/14/2020	69477	28645.81667	0.412306	-0.88599
2/15/2020	69477	296.05	0.004261	-5.45822
2/16/2020	69477	7440.633334	0.107095	-2.23404
2/17/2020	69477	2064.566667	0.029716	-3.51608
2/18/2020	69477	5750.3	0.082766	-2.49174
2/19/2020	69477	25998.08333	0.374197	-0.98297
2/2/2020	69477	9260.25	0.133285	-2.01526
2/20/2020	69477	62939.1	0.905898	-0.09883
2/21/2020	69477	35.63333333	0.000513	-7.57547

2/22/2020	69477	25825.8	0.371717	-0.98962
2/23/2020	69477	399.6	0.005752	-5.15829
2/24/2020	69477	2082.183333	0.029969	-3.50758
2/25/2020	69477	3419.783333	0.049222	-3.01142
2/26/2020	69477	106.9666667	0.00154	-6.47623
2/27/2020	69477	163.8666667	0.002359	-6.0497
2/28/2020	69477	861.4999999	0.0124	-4.39008
2/29/2020	69477	88425.31666	1.272728	0.241163
2/3/2020	69477	2826.016667	0.040676	-3.20213
2/4/2020	69477	24260	0.34918	-1.05217
2/5/2020	69477	30925.2	0.445114	-0.80942
2/6/2020	69477	857.15	0.012337	-4.39514
2/7/2020	69477	78093.05	1.124013	0.116905
2/8/2020	69477	3072.25	0.04422	-3.11859
2/9/2020	69477	230.7666667	0.003321	-5.70734
3/1/2020	69477	5281.05	0.076011	-2.57687
3/10/2020	69477	2294.2	0.033021	-3.41061
3/11/2020	69477	14802.75	0.21306	-1.54618
3/12/2020	69477	495630.2833	7.133732	1.964834
3/13/2020	69477	36644.18333	0.527429	-0.63974
3/14/2020	69477	965.4333334	0.013896	-4.27617
3/15/2020	69477	4838.15	0.069637	-2.66446
3/16/2020	69477	17788.28333	0.256031	-1.36246
3/17/2020	69477	2019.266666	0.029064	-3.53826
3/18/2020	69477	2804.2	0.040362	-3.20988
3/19/2020	69477	10798.21666	0.155421	-1.86161
3/2/2020	69477	14463.61667	0.208178	-1.56936
3/20/2020	69477	7996.2	0.115091	-2.16203
3/21/2020	69477	669.2166667	0.009632	-4.64264
3/23/2020	69477	23251.23333	0.334661	-1.09464
3/24/2020	69477	1969	0.02834	-3.56347
3/25/2020	69477	13767.18333	0.198155	-1.61871
3/26/2020	69477	37699.36666	0.542617	-0.61135
3/27/2020	69477	16475.06667	0.23713	-1.43915
3/28/2020	69477	209.55	0.003016	-5.80379
3/29/2020	69477	68279.8	0.982768	-0.01738
3/3/2020	69477	229924.2667	3.309358	1.196754
3/30/2020	69477	11503.98333	0.16558	-1.7983
3/4/2020	69477	466.4833333	0.006714	-5.00353
3/5/2020	69477	1842.066667	0.026513	-3.63011
3/6/2020	69477	8278.433333	0.119154	-2.12734
3/7/2020	69477	4199.383334	0.060443	-2.80606
3/8/2020	69477	5791	0.083351	-2.48469
3/9/2020	69477	1230.6	0.017712	-4.03349
4/1/2020	69477	13023.7	0.187453	-1.67422
4/10/2020	69477	2650.183333	0.038145	-3.26637
4/11/2020	69477	5271.05	0.075868	-2.57877
4/12/2020	69477	1729522.55	24.89345	3.214605
4/13/2020	69477	722359.9833	10.39711	2.341528
4/14/2020	69477	3162.383333	0.045517	-3.08967
4/15/2020	69477	7129.066667	0.10261	-2.27682
4/16/2020	69477	7100.533333	0.1022	-2.28083
4/17/2020	69477	25412.5	0.365769	-1.00575
4/18/2020	69477	354.4833333	0.005102	-5.27809
4/19/2020	69477	80.05	0.001152	-6.7661
4/2/2020	69477	462.9	0.006663	-5.01124
4/20/2020	69477	38445.41667	0.553355	-0.59176
4/21/2020	69477	7236	0.10415	-2.26193
4/22/2020	69477	147.2166667	0.002119	-6.15685
4/23/2020	69477	4787.133333	0.068902	-2.67506
4/24/2020	69477	520.9333333	0.007498	-4.89313
4/25/2020	69477	22935.93333	0.330123	-1.10829
4/26/2020	69477	8506.666666	0.122439	-2.10015
4/27/2020	69477	15952.48333	0.229608	-1.47138
4/28/2020	69477	486.3166667	0.007	-4.96189
4/29/2020	69477	189543.9667	2.728154	1.003625
4/3/2020	69477	9362.533333	0.134757	-2.00428
4/30/2020	69477	420.1166667	0.006047	-5.10822
4/4/2020	69477	76.41666667	0.0011	-6.81255
4/5/2020	69477	3050.433334	0.043906	-3.12571
4/6/2020	69477	631.0333333	0.009083	-4.70139
4/7/2020	69477	4497.35	0.064731	-2.73751
4/8/2020	69477	5240.266667	0.075424	-2.58462
4/9/2020	69477	65631.7	0.944654	-0.05694
5/1/2020	69477	3524.133333	0.050724	-2.98136
5/10/2020	69477	12204.06667	0.175656	-1.73923
5/11/2020	69477	1922.883333	0.027677	-3.58717
5/12/2020	69477	18204.53333	0.262022	-1.33933
5/13/2020	69477	1864.6	0.026838	-3.61795
5/14/2020	69477	675.15	0.009718	-4.63382
5/15/2020	69477	321.5	0.004627	-5.37575
5/16/2020	69477	16164.11667	0.232654	-1.4582
5/17/2020	69477	6513.366667	0.093749	-2.36714
5/18/2020	69477	38960.03333	0.560762	-0.57846
5/19/2020	69477	67491.23333	0.971418	-0.029
5/2/2020	69477	3980.766667	0.057296	-2.85952
5/20/2020	69477	13758.85	0.198035	-1.61931
5/21/2020	69477	14796.93333	0.212976	-1.54658
5/22/2020	69477	2079.05	0.029924	-3.50908
5/23/2020	69477	30416.05	0.437786	-0.82603
5/24/2020	69477	8034.099999	0.115637	-2.1573
5/25/2020	69477	192332.6	2.768292	1.01823
5/26/2020	69477	8234.933333	0.118527	-2.13261
5/27/2020	69477	1758.816667	0.025315	-3.67635
5/28/2020	69477	5697.866668	0.082011	-2.5009
5/29/2020	69477	610135.2	8.78183	2.172685
5/3/2020	69477	351218.0167	5.05517	1.620411
5/30/2020	69477	2033.566667	0.02927	-3.5312
5/31/2020	69477	16168.13333	0.232712	-1.45795
5/4/2020	69477	6095.916667	0.08774	-2.43338
5/5/2020	69477	261840.1667	3.768732	1.326739
5/6/2020	69477	9793.133333	0.140955	-1.95931
5/7/2020	69477	351.6166667	0.005061	-5.28621
5/8/2020	69477	152790.9	2.199158	0.788075
5/9/2020	69477	30540.16667	0.439572	-0.82195
6/1/2020	69477	8364.566666	0.120393	-2.11699
6/10/2020	69477	1515923.117	21.81906	3.082784

6/11/2020	69477	106937.65	1.539181	0.43125
6/12/2020	69477	8361.583333	0.12035	-2.11735
6/13/2020	69477	5810.883334	0.083638	-2.48126
6/14/2020	69477	13979.4	0.201209	-1.60341
6/15/2020	69477	2712.05	0.039035	-3.24329
6/16/2020	69477	24016.96667	0.345682	-1.06224
6/17/2020	69477	2104.433333	0.03029	-3.49695
6/18/2020	69477	10797.81667	0.155416	-1.86165
6/19/2020	69477	362908.1667	5.223429	1.653154
6/2/2020	69477	130517.0833	1.878565	0.630508
6/20/2020	69477	249395.7333	3.589616	1.278045
6/21/2020	69477	115300.5667	1.65955	0.506547
6/22/2020	69477	7418.983333	0.106783	-2.23695
6/23/2020	69477	5107.983333	0.07352	-2.61019
6/24/2020	69477	8119.133333	0.116861	-2.14677
6/25/2020	69477	4739.616667	0.068218	-2.68504
6/26/2020	69477	19803.83333	0.285042	-1.25512
6/27/2020	69477	11649.11667	0.167669	-1.78577
6/28/2020	69477	143961.9667	2.072081	0.728553
6/29/2020	69477	43068.58333	0.619897	-0.4782
6/3/2020	69477	4573.866667	0.065833	-2.72064
6/30/2020	69477	53388.16667	0.768429	-0.26341
6/4/2020	69477	367980.4167	5.296435	1.667034
6/5/2020	69477	56470.85	0.812799	-0.20727
6/6/2020	69477	12239.3	0.176163	-1.73634
6/7/2020	69477	7234.6	0.104129	-2.26212
6/8/2020	69477	4683.2	0.067406	-2.69701
6/9/2020	69477	11413.85	0.164282	-1.80617
7/1/2020	69477	36708.98333	0.528362	-0.63797
7/10/2020	69477	1420	0.020438	-3.89034
7/11/2020	69477	1509.45	0.021726	-3.82925
7/12/2020	69477	45832.13333	0.659673	-0.41601
7/13/2020	69477	8736.383334	0.125745	-2.0735
7/14/2020	69477	327.9333333	0.00472	-5.35594
7/15/2020	69477	14196.98333	0.204341	-1.58797
7/16/2020	69477	20139.53333	0.289873	-1.23831
7/17/2020	69477	823.35	0.011851	-4.43537
7/18/2020	69477	323.5	0.004656	-5.36955
7/19/2020	69477	31931.35	0.459596	-0.77741
7/2/2020	69477	4936.05	0.071046	-2.64443
7/20/2020	69477	8113.083333	0.116774	-2.14752
7/21/2020	69477	115470.9	1.662002	0.508023
7/22/2020	69477	153167.7333	2.204582	0.790538
7/23/2020	69477	11417.16666	0.16433	-1.80588
7/24/2020	69477	16310.56667	0.234762	-1.44918
7/25/2020	69477	22709.16667	0.326859	-1.11823
7/26/2020	69477	29445.25	0.423813	-0.85846
7/27/2020	69477	1423.233333	0.020485	-3.88806
7/28/2020	69477	11296.96667	0.1626	-1.81646
7/29/2020	69477	14409.21667	0.207395	-1.57313
7/3/2020	69477	2584.7	0.037202	-3.29139
7/30/2020	69477	201483.8833	2.900008	1.064714
7/31/2020	69477	60852.86667	0.875871	-0.13254
7/4/2020	69477	4209.983333	0.060595	-2.80354
7/5/2020	69477	74891.88333	1.077938	0.07505
7/6/2020	69477	273102.4833	3.930833	1.368851
7/7/2020	69477	26808.26667	0.385858	-0.95229
7/8/2020	69477	27027.25	0.38901	-0.94415
7/9/2020	69477	17796.16667	0.256145	-1.36201
8/1/2020	69477	23812.38333	0.342738	-1.07079
8/10/2020	69477	110522.7333	1.590782	0.464225
8/11/2020	69477	617.65	0.00889	-4.72283
8/12/2020	69477	16415.43333	0.236271	-1.44277
8/13/2020	69477	37250.18333	0.536151	-0.62334
8/14/2020	69477	4195.3	0.060384	-2.80703
8/15/2020	69477	217.2833333	0.003127	-5.76755
8/16/2020	69477	2673.166667	0.038476	-3.25773
8/17/2020	69477	935.2	0.013461	-4.30799
8/18/2020	69477	50138.15	0.721651	-0.32621
8/19/2020	69477	65905.11667	0.948589	-0.05278
8/2/2020	69477	4347.183333	0.06257	-2.77147
8/20/2020	69477	3403.116667	0.048982	-3.0163
8/21/2020	69477	3128.35	0.045027	-3.10049
8/22/2020	69477	28543.23333	0.41083	-0.88958
8/23/2020	69477	2246.666667	0.032337	-3.43155
8/24/2020	69477	518.85	0.007468	-4.89714
8/25/2020	69477	7859.8	0.113128	-2.17923
8/26/2020	69477	28592.6	0.411541	-0.88785
8/27/2020	69477	11018.25	0.158588	-1.84144
8/28/2020	69477	35024.66667	0.504119	-0.68494
8/29/2020	69477	99201.06667	1.427826	0.356153
8/3/2020	69477	116518.3167	1.677078	0.517053
8/30/2020	69477	55406.23334	0.797476	-0.2263
8/31/2020	69477	7369.616667	0.106073	-2.24363
8/4/2020	69477	6558.433333	0.094397	-2.36024
8/5/2020	69477	258.4	0.003719	-5.59424
8/6/2020	69477	263407.25	3.791287	1.332706
8/7/2020	69477	261.6166667	0.003766	-5.58187
8/8/2020	69477	13129.91667	0.188982	-1.6661
8/9/2020	69477	295.75	0.004257	-5.45924
9/1/2020	69477	5258.383333	0.075685	-2.58117
9/10/2020	69477	8104.616667	0.116852	-2.14856
9/11/2020	69477	131.7666667	0.001897	-6.26772
9/12/2020	69477	38059.76667	0.547804	-0.60184
9/13/2020	69477	211466.55	3.043691	1.113071
9/14/2020	69477	666.0666667	0.009587	-4.64736
9/15/2020	69477	3581.533334	0.05155	-2.9652
9/16/2020	69477	1370.85	0.019731	-3.92556
9/17/2020	69477	41833.8	0.602124	-0.50729
9/18/2020	69477	34468.05	0.496107	-0.70096
9/19/2020	69477	17503.7	0.251935	-1.37858
9/2/2020	69477	352347.8833	5.071432	1.623623
9/20/2020	69477	1066.266667	0.015347	-4.17683
9/21/2020	69477	1662.266667	0.023925	-3.73281
9/22/2020	69477	81537.06667	1.173584	0.160062
9/23/2020	69477	5919.833334	0.085206	-2.46269
9/24/2020	69477	1323.333333	0.019047	-3.96084

9/25/2020	69477	13596.33333	0.195695	-1.6312
9/26/2020	69477	201.4166667	0.002899	-5.84338
9/27/2020	69477	163.7333333	0.002357	-6.05051
9/28/2020	69477	35667.81667	0.513376	-0.66675
9/29/2020	69477	5618.149999	0.080863	-2.51499
9/30/2020	69477	59040.16666	0.84978	-0.16278
9/30/2020	69477	48965.9	0.704779	-0.34987
9/4/2020	69477	257986.5	3.713265	1.311911
9/5/2020	69477	22323.85	0.321313	-1.13534
9/6/2020	69477	372.7833333	0.005366	-5.22775
9/7/2020	69477	6292.316667	0.090567	-2.40167
9/8/2020	69477	5755.55	0.082841	-2.49083
9/9/2020	69477	11476.7	0.165187	-1.80068
1/1/2019	68950	19909.26667	0.288749	-1.2422
1/10/2019	68950	18399.68333	0.266855	-1.32105
1/11/2019	68950	49068.33333	0.711651	-0.34017
1/12/2019	68950	180051.2	2.61133	0.95986
1/13/2019	68950	157266.3	2.280875	0.824559
1/14/2019	68950	3908.25	0.056682	-2.87029
1/15/2019	68950	6888.266666	0.099902	-2.30356
1/16/2019	68950	1045.233333	0.015159	-4.18914
1/17/2019	68950	220.0166667	0.003191	-5.74743
1/18/2019	68950	116.95	0.001696	-6.37939
1/19/2019	68950	49537.85	0.71846	-0.33064
1/2/2019	68950	6642.466667	0.096337	-2.3399
1/20/2019	68950	121211.4833	1.757962	0.564155
1/21/2019	68950	5645.7	0.081881	-2.50249
1/22/2019	68950	189.05	0.002742	-5.89913
1/23/2019	68950	76432.05	1.108514	0.103021
1/24/2019	68950	24213.81667	0.351179	-1.04646
1/25/2019	68950	159.7	0.002316	-6.06784
1/26/2019	68950	100422.3167	1.456451	0.376003
1/28/2019	68950	23561.16667	0.341714	-1.07378
1/29/2019	68950	325	0.004714	-5.35731
1/3/2019	68950	22262.76667	0.322883	-1.13047
1/30/2019	68950	558.7166666	0.008103	-4.81549
1/31/2019	68950	3002.3	0.043543	-3.134
1/4/2019	68950	235.7166667	0.003419	-5.67851
1/5/2019	68950	7622.2	0.110547	-2.20232
1/6/2019	68950	6317.933333	0.091631	-2.38999
1/7/2019	68950	18611.73333	0.269931	-1.30959
1/8/2019	68950	51533.96666	0.747411	-0.29114
1/9/2019	68950	3607.55	0.052321	-2.95035
10/1/2019	68950	819.3333333	0.011883	-4.43265
10/10/2019	68950	1869.866667	0.027119	-3.60751
10/11/2019	68950	4659.583333	0.067579	-2.69446
10/12/2019	68950	645316.1833	9.35919	2.236359
10/13/2019	68950	359.6333334	0.005216	-5.25605
10/14/2019	68950	5895.183333	0.085499	-2.45925
10/15/2019	68950	7352.75	0.106639	-2.23831
10/16/2019	68950	104196.1333	1.511184	0.412893
10/17/2019	68950	675.0666667	0.009791	-4.62633
10/18/2019	68950	7802.966667	0.113168	-2.17888
10/19/2019	68950	791.5	0.011479	-4.46721
10/2/2019	68950	67808.53333	0.983445	-0.01669
10/20/2019	68950	6922.066667	0.100393	-2.29867
10/21/2019	68950	4223.283333	0.061251	-2.79277
10/22/2019	68950	9900.483334	0.143589	-1.9408
10/23/2019	68950	5635.266667	0.08173	-2.50434
10/24/2019	68950	4347.666667	0.063055	-2.76374
10/25/2019	68950	5060.016667	0.073387	-2.61201
10/26/2019	68950	188860.9	2.739099	1.007629
10/27/2019	68950	27536.01667	0.399362	-0.91789
10/28/2019	68950	16834.7	0.244158	-1.40994
10/29/2019	68950	338.7	0.004912	-5.31602
10/3/2019	68950	13611.21667	0.197407	-1.62249
10/30/2019	68950	3355.1	0.04866	-3.0229
10/31/2019	68950	74773.8	1.084464	0.081086
10/4/2019	68950	4392.916666	0.063712	-2.75339
10/5/2019	68950	14284.36667	0.20717	-1.57422
10/6/2019	68950	4834.083333	0.07011	-2.65769
10/7/2019	68950	249803.9667	3.622973	1.287295
10/9/2019	68950	45691.81667	0.66268	-0.41146
11/1/2019	68950	4930.9	0.071514	-2.63786
11/10/2019	68950	50.86666667	0.000738	-7.21193
11/11/2019	68950	8252.2	0.119684	-2.1229
11/12/2019	68950	6827.366666	0.099019	-2.31244
11/13/2019	68950	386.65	0.005608	-5.18362
11/14/2019	68950	3656.966667	0.053038	-2.93675
11/15/2019	68950	7414.166667	0.10753	-2.22999
11/16/2019	68950	888	0.012879	-4.35217
11/17/2019	68950	75.93333333	0.001101	-6.81128
11/18/2019	68950	439.6833333	0.006377	-5.05508
11/19/2019	68950	5341.916667	0.077475	-2.5578
11/2/2019	68950	1247.066667	0.018087	-4.01259
11/20/2019	68950	15309.65	0.22204	-1.5049
11/21/2019	68950	71669.11667	1.039436	0.038678
11/22/2019	68950	5235.6	0.075933	-2.5779
11/23/2019	68950	46818.38333	0.679019	-0.38711
11/24/2019	68950	2747.1	0.039842	-3.22284
11/25/2019	68950	53129.68333	0.770554	-0.26065
11/26/2019	68950	8271.366665	0.119962	-2.12058
11/27/2019	68950	295596.3333	4.287111	1.455613
11/28/2019	68950	60156.06666	0.872459	-0.13644
11/29/2019	68950	513.8666667	0.007453	-4.89917
11/3/2019	68950	1578.95	0.0229	-3.77662
11/30/2019	68950	135270.0333	1.961857	0.673891
11/4/2019	68950	5128.766667	0.074384	-2.59852
11/5/2019	68950	2281.916667	0.033095	-3.40837
11/6/2019	68950	12359.46667	0.179253	-1.71896
11/7/2019	68950	7579.800001	0.109932	-2.20789
11/8/2019	68950	1612.833333	0.023391	-3.75539
11/9/2019	68950	926.0499999	0.013431	-4.31021
12/1/2019	68950	85829.81667	1.244812	0.218985
12/10/2019	68950	126924.4833	1.840819	0.610211
12/11/2019	68950	7362.816667	0.106785	-2.23694
12/12/2019	68950	1132.45	0.016424	-4.109



12/13/2019	68950	29371.45	0.425982	-0.85336
12/14/2019	68950	11354.8	0.164682	-1.80374
12/15/2019	68950	2921.483333	0.042371	-3.16129
12/16/2019	68950	512147.1667	7.427805	2.00523
12/17/2019	68950	1149.516667	0.016672	-4.09404
12/18/2019	68950	8663.766667	0.125653	-2.07423
12/19/2019	68950	289386.2333	4.197045	1.434381
12/20/2019	68950	28121.98333	0.407861	-0.89683
12/21/2019	68950	16744.26667	0.242847	-1.41533
12/22/2019	68950	697177.3167	10.11135	2.313658
12/23/2019	68950	3069.416667	0.044517	-3.11189
12/24/2019	68950	516.1833333	0.007486	-4.89467
12/25/2019	68950	39312.63333	0.570161	-0.56184
12/26/2019	68950	1573.266667	0.022818	-3.78023
12/27/2019	68950	6420.383333	0.093117	-2.3739
12/28/2019	68950	1082.55	0.015701	-4.15406
12/29/2019	68950	119.6166667	0.001735	-6.35684
12/30/2019	68950	2035.216667	0.029517	-3.52278
12/31/2019	68950	7226.766667	0.104812	-2.25559
1/1/2019	68950	128750.3	1.867299	0.624493
1/2/2019	68950	93.4	0.001355	-6.60425
1/3/2019	68950	675.4	0.009796	-4.62583
1/4/2019	68950	2771.45	0.040195	-3.21401
1/5/2019	68950	3873.466667	0.056178	-2.87923
1/6/2019	68950	500.9166667	0.007265	-4.9247
1/7/2019	68950	3632.666667	0.052686	-2.94341
1/8/2019	68950	22134.66667	0.321025	-1.13624
1/9/2019	68950	1421.733333	0.02062	-3.8815
1/10/2019	68950	392	0.005685	-5.16988
1/11/2019	68950	2375.4	0.034451	-3.36822
1/12/2019	68950	122062.2	1.7703	0.571149
1/13/2019	68950	16358.46667	0.237251	-1.43864
1/14/2019	68950	2900.516666	0.042067	-3.16849
1/15/2019	68950	46828.31667	0.679163	-0.38689
1/16/2019	68950	176.3	0.002557	-5.96895
1/17/2019	68950	1184.166667	0.017174	-4.06434
1/18/2019	68950	3350.6	0.048595	-3.02424
1/19/2019	68950	165799.9167	2.40464	0.8774
1/20/2019	68950	8513.733331	0.123477	-2.0917
1/21/2019	68950	3532.986667	0.05124	-2.97124
1/22/2019	68950	8096.416667	0.117424	-2.14196
1/23/2019	68950	447492.9667	6.490108	1.870279
1/24/2019	68950	8318.449999	0.120645	-2.11491
1/25/2019	68950	8168.266666	0.118467	-2.13312
1/26/2019	68950	22338.86667	0.323986	-1.12705
1/27/2019	68950	50520.01667	0.732705	-0.31101
1/28/2019	68950	104.2	0.001511	-6.49482
1/29/2019	68950	3480.633333	0.050481	-2.98617
1/30/2019	68950	231696.3167	3.360353	1.212046
1/31/2019	68950	2016	0.029239	-3.53227
2/1/2019	68950	7592.916667	0.110122	-2.20617
2/2/2019	68950	210.65	0.003055	-5.79094
2/3/2019	68950	278.8333333	0.004044	-5.51052
2/4/2019	68950	2227.7	0.032309	-3.43241
2/5/2019	68950	195394.5833	2.833859	1.041639
2/6/2019	68950	898.5	0.013031	-4.34041
2/7/2019	68950	63.15	0.000916	-6.99562
2/8/2019	68950	535.3	0.007764	-4.85831
2/9/2019	68950	3593.85	0.052123	-2.95416
2/10/2019	68950	94.66666667	0.001373	-6.59077
2/11/2019	68950	1530.183333	0.022193	-3.80799
2/12/2019	68950	69888.73333	1.013615	0.013523
2/13/2019	68950	40630.18333	0.58927	-0.52887
2/14/2019	68950	166.2333333	0.002411	-6.02774
2/15/2019	68950	1546.983333	0.022436	-3.79707
2/16/2019	68950	13452.4	0.195104	-1.63422
2/17/2019	68950	19034.2	0.276058	-1.28714
2/18/2019	68950	2455.633333	0.035615	-3.335
2/19/2019	68950	981.8499999	0.01424	-4.2517
2/20/2019	68950	2280.916667	0.033081	-3.4088
2/21/2019	68950	58	0.000841	-7.08069
2/22/2019	68950	180560.3333	2.618714	0.962683
2/23/2019	68950	711.2166667	0.010315	-4.57416
2/24/2019	68950	90.43333333	0.001312	-6.63652
2/25/2019	68950	159.6666667	0.002316	-6.06805
2/26/2019	68950	228987.4333	3.321065	1.200286
2/27/2019	68950	623.4666667	0.009042	-4.70584
2/28/2019	68950	153739.7667	2.229728	0.80188
2/29/2019	68950	14465.1	0.209791	-1.56164
2/30/2019	68950	67048.55	0.972423	-0.02796
3/1/2019	68950	6359.366667	0.092232	-2.38345
3/2/2019	68950	1623.233333	0.023542	-3.74896
3/3/2019	68950	2328005.8	33.76368	3.519386
3/4/2019	68950	11353.76667	0.164667	-1.80383
3/5/2019	68950	284.9	0.004132	-5.489
3/6/2019	68950	40309.56667	0.58462	-0.53679
3/7/2019	68950	22194.51667	0.321893	-1.13354
3/8/2019	68950	35693.2	0.517668	-0.65842
3/9/2019	68950	269.7	0.003912	-5.54383
3/10/2019	68950	867.9	0.012587	-4.37506
3/11/2019	68950	488.2666667	0.007081	-4.95028
3/12/2019	68950	1290.383333	0.018715	-3.97844
3/13/2019	68950	78.06666666	0.001132	-6.78357
3/14/2019	68950	1155.35	0.016756	-4.08898
3/15/2019	68950	1972.966667	0.028614	-3.55384
3/16/2019	68950	45893.9	0.665611	-0.40705
3/17/2019	68950	3097.45	0.044923	-3.1028
3/18/2019	68950	100661.5667	1.459921	0.378382
3/19/2019	68950	25446.83333	0.369062	-0.99679
3/20/2019	68950	32.63333333	0.000473	-7.6558
3/21/2019	68950	218591.7167	3.170293	1.153824
3/22/2019	68950	36572.86667	0.530426	-0.63407
3/23/2019	68950	22925.48333	0.332494	-1.10113
3/24/2019	68950	2083.466667	0.030217	-3.49935
3/25/2019	68950	3882.8	0.056313	-2.87683
3/26/2019	68950	1129.8	0.016386	-4.11134
3/27/2019	68950	1439.933333	0.020884	-3.86878

5/1/2019	68950	7194.933333	0.10435	-2.26
5/10/2019	68950	18653.8	0.270541	-1.30733
5/11/2019	68950	21465.68333	0.311322	-1.16693
5/12/2019	68950	3162.25	0.045863	-3.0821
5/13/2019	68950	12730.75	0.184637	-1.68936
5/14/2019	68950	7953.416667	0.11535	-2.15978
5/15/2019	68950	2955.033333	0.042858	-3.14987
5/16/2019	68950	25598.33333	0.371259	-0.99085
5/17/2019	68950	5955.966667	0.086381	-2.44899
5/18/2019	68950	117084.65	1.698109	0.529516
5/19/2019	68950	79903.6	1.158863	0.147439
5/2/2019	68950	115806.35	1.67957	0.518538
5/20/2019	68950	157419.1	2.283091	0.82553
5/21/2019	68950	28914.93333	0.419361	-0.86902
5/22/2019	68950	1414.683333	0.020518	-3.88648
5/23/2019	68950	10356.61667	0.150205	-1.89576
5/24/2019	68950	3361.983333	0.04876	-3.02085
5/25/2019	68950	4550.9	0.066003	-2.71806
5/26/2019	68950	170923.4	2.478947	0.907834
5/27/2019	68950	24461.73333	0.354775	-1.03627
5/28/2019	68950	2609.366667	0.037844	-3.27427
5/29/2019	68950	125542.7833	1.82078	0.599265
5/3/2019	68950	95824.11666	1.389762	0.329133
5/30/2019	68950	36697.6	0.532235	-0.63067
5/31/2019	68950	24128.11667	0.349936	-1.05
5/4/2019	68950	1362.433333	0.01976	-3.92411
5/5/2019	68950	26703.4	0.387286	-0.94859
5/6/2019	68950	9240.550001	0.134018	-2.00978
5/7/2019	68950	6609.3	0.095856	-2.3449
5/8/2019	68950	896.95	0.013009	-4.34214
5/9/2019	68950	2916.466667	0.042298	-3.16301
6/1/2019	68950	920.2833333	0.013347	-4.31646
6/10/2019	68950	9696.516667	0.140631	-1.96161
6/11/2019	68950	6362.2	0.092273	-2.38301
6/12/2019	68950	17430.86667	0.252804	-1.37514
6/13/2019	68950	23120.86667	0.335328	-1.09265
6/14/2019	68950	103775.05	1.505077	0.408844
6/15/2019	68950	5654.85	0.082014	-2.50087
6/16/2019	68950	1410.4	0.020455	-3.88951
6/17/2019	68950	128710.0333	1.866715	0.62418
6/18/2019	68950	63148.78334	0.915863	-0.08789
6/19/2019	68950	273512.4333	3.966823	1.377965
6/2/2019	68950	2518.7	0.036529	-3.30964
6/20/2019	68950	553887.9	8.033182	2.083581
6/21/2019	68950	5753724.7	83.44778	4.424221
6/22/2019	68950	3002261.467	43.54259	3.77374
6/23/2019	68950	412454.6667	5.981939	1.788745
6/24/2019	68950	62529.63333	0.906884	-0.09774
6/25/2019	68950	16982.8	0.246306	-1.40118
6/26/2019	68950	46749.73333	0.678024	-0.38857
6/27/2019	68950	20807.81667	0.301781	-1.19805
6/28/2019	68950	55796.08333	0.809225	-0.21168
6/29/2019	68950	9505.633333	0.137863	-1.9815
6/3/2019	68950	40862.18333	0.592635	-0.52318
6/30/2019	68950	1853.25	0.026878	-3.61644
6/4/2019	68950	6311.083334	0.091531	-2.39107
6/5/2019	68950	7535.15	0.109284	-2.2138
6/6/2019	68950	105802.65	1.534484	0.428194
6/7/2019	68950	65202.53333	0.94565	-0.05588
6/8/2019	68950	91593.01667	1.328398	0.283973
6/9/2019	68950	3248.166667	0.047109	-3.05529
7/1/2019	68950	51645.26667	0.749025	-0.28898
7/10/2019	68950	10250.71667	0.148669	-1.90603
7/11/2019	68950	318767.1333	4.623164	1.531079
7/12/2019	68950	33064.61667	0.479545	-0.73492
7/15/2019	68950	81118.3	1.17648	0.162527
7/16/2019	68950	54419.48333	0.78926	-0.23666
7/17/2019	68950	983.65	0.014266	-4.24987
7/18/2019	68950	24245.8	0.351643	-1.04514
7/19/2019	68950	19278.81667	0.279606	-1.27437
7/2/2019	68950	5410.516667	0.07847	-2.54504
7/20/2019	68950	228698.4833	3.316874	1.199023
7/21/2019	68950	6405.166666	0.092896	-2.37628
7/22/2019	68950	175390.45	2.543734	0.933633
7/23/2019	68950	134664.1	1.953069	0.669402
7/24/2019	68950	7056.916667	0.102348	-2.27937
7/25/2019	68950	11944.91667	0.17324	-1.75308
7/26/2019	68950	10495.96667	0.152226	-1.88239
7/27/2019	68950	327.95	0.004756	-5.34828
7/28/2019	68950	731.4666667	0.010609	-4.54609
7/29/2019	68950	47858.73334	0.694108	-0.36513
7/3/2019	68950	21816.58333	0.316412	-1.15071
7/30/2019	68950	136567.9167	1.98068	0.68344
7/31/2019	68950	115418.35	1.673943	0.515182
7/4/2019	68950	22522.91667	0.326656	-1.11885
7/5/2019	68950	15166.85	0.219969	-1.51427
7/6/2019	68950	23661.96667	0.343176	-1.06951
7/7/2019	68950	101669.7333	1.474543	0.388348
7/8/2019	68950	4107.4	0.059571	-2.82059
7/9/2019	68950	18015.11667	0.281278	-1.34217
8/1/2019	68950	75907.8	1.100911	0.096138
8/10/2019	68950	784.9166668	0.011384	-4.47556
8/11/2019	68950	5215.333333	0.075639	-2.58178
8/12/2019	68950	5209.1	0.075549	-2.58297
8/13/2019	68950	268403.1667	3.892722	1.359109
8/14/2019	68950	40044.15	0.580771	-0.5434
8/15/2019	68950	720.4833332	0.010449	-4.56121
8/16/2019	68950	8194.816667	0.118852	-2.12988
8/17/2019	68950	184.1	0.00267	-5.92566
8/18/2019	68950	2404.766667	0.034877	-3.35593
8/19/2019	68950	5376.833334	0.077982	-2.55128
8/2/2019	68950	60571.6	0.878486	-0.12956
8/20/2019	68950	209920.9833	3.044539	1.11335
8/21/2019	68950	7606.05	0.110313	-2.20444
8/22/2019	68950	6863.4	0.099542	-2.30718
8/23/2019	68950	4034.516667	0.058514	-2.8385
8/24/2019	68950	40550.16667	0.58811	-0.53084

8/25/2019	68950	12591.28333	0.182615	-1.70038
8/26/2019	68950	6640.95	0.096315	-2.34013
8/27/2019	68950	11131.45	0.161442	-1.82361
8/28/2019	68950	11552.51667	0.167549	-1.78648
8/29/2019	68950	8486.533334	0.123082	-2.0949
8/30/2019	68950	106.1833333	0.00154	-6.47597
8/31/2019	68950	195304.05	2.832546	1.041176
8/31/2019	68950	8092.533333	0.117368	-2.14244
8/4/2019	68950	924.3333333	0.013406	-4.31206
8/5/2019	68950	9224.566667	0.133786	-2.01151
8/6/2019	68950	16351.2	0.237146	-1.43908
8/7/2019	68950	5666.816667	0.082187	-2.49875
8/8/2019	68950	1503.8	0.02181	-3.82539
8/9/2019	68950	9638.416666	0.139788	-1.96762
9/1/2019	68950	12386.78333	0.179649	-1.71675
9/10/2019	68950	2761.316667	0.040048	-3.21767
9/11/2019	68950	62860.01667	0.911675	-0.09247
9/12/2019	68950	7796.883333	0.11308	-2.17966
9/13/2019	68950	1154.633333	0.016746	-4.0896
9/14/2019	68950	35888.8	0.520505	-0.65296
9/15/2019	68950	3347.816667	0.048554	-3.02507
9/16/2019	68950	460813.7	6.683302	1.899612
9/17/2019	68950	56641.58333	0.821488	-0.19664
9/18/2019	68950	3601.383333	0.052232	-2.95206
9/19/2019	68950	990.95	0.014372	-4.24247
9/2/2019	68950	1134.633333	0.016456	-4.10707
9/20/2019	68950	16939.68333	0.245681	-1.40372
9/21/2019	68950	5472.733333	0.079372	-2.5336
9/22/2019	68950	23965.25	0.347574	-1.05678
9/23/2019	68950	20607.11667	0.29887	-1.20775
9/24/2019	68950	35262.88333	0.511427	-0.67055
9/25/2019	68950	8958.833334	0.129932	-2.04074
9/26/2019	68950	3079.733334	0.044666	-3.10854
9/27/2019	68950	3893.6	0.05647	-2.87405
9/28/2019	68950	23358.23333	0.338771	-1.08243
9/29/2019	68950	6318.433333	0.091638	-2.38991
9/3/2019	68950	1073.7	0.015572	-4.16227
9/30/2019	68950	15255.68333	0.221257	-1.50843
9/4/2019	68950	1550.783333	0.022491	-3.79462
9/5/2019	68950	40431.66667	0.586391	-0.53377
9/6/2019	68950	60.25	0.000874	-7.04263
9/7/2019	68950	961.3833333	0.013943	-4.27276
9/8/2019	68950	4339.666667	0.062939	-2.76558
9/9/2019	68950	10377.21667	0.150504	-1.89377
1/1/2018	68560	510.05	0.007439	-4.90096
1/10/2018	68560	266.6333333	0.003889	-5.54959
1/11/2018	68560	1311.216666	0.019125	-3.95675
1/12/2018	68560	1297.5	0.018925	-3.96727
1/13/2018	68560	42949.23333	0.626447	-0.46769
1/14/2018	68560	1669.266667	0.024348	-3.71532
1/15/2018	68560	28373.26667	0.413846	-0.88226
1/16/2018	68560	15498.3	0.226055	-1.48698
1/17/2018	68560	15978.51667	0.233059	-1.45646
1/18/2018	68560	2789.883333	0.040693	-3.20171
1/19/2018	68560	14452.11667	0.210795	-1.55687
1/2/2018	68560	329472.6333	4.80561	1.569784
1/22/2018	68560	419678.4	6.12133	1.811779
1/23/2018	68560	8918.1	0.130077	-2.03963
1/24/2018	68560	494.7666667	0.007217	-4.93138
1/25/2018	68560	918.65	0.013399	-4.31256
1/26/2018	68560	1276.933333	0.018625	-3.98325
1/28/2018	68560	43.56666667	0.000635	-7.36117
1/29/2018	68560	12998.18333	0.189588	-1.6629
1/3/2018	68560	230.3833334	0.00336	-5.69572
1/30/2018	68560	369.05	0.005383	-5.22453
1/31/2018	68560	6294.716667	0.091813	-2.388
1/4/2018	68560	6066.433333	0.088484	-2.42494
1/5/2018	68560	89525.85	1.305803	0.266818
1/6/2018	68560	184243.55	2.687333	0.988549
1/7/2018	68560	844.3	0.012315	-4.39696
1/8/2018	68560	45769.28333	0.66758	-0.4041
1/9/2018	68560	1784.85	0.026033	-3.64837
10/1/2018	68560	48534.53333	0.707913	-0.34543
10/10/2018	68560	24896.4	0.363133	-1.01299
10/11/2018	68560	59597.88333	0.869281	-0.14009
10/12/2018	68560	9561.983333	0.139469	-1.96991
10/13/2018	68560	2840.466667	0.04143	-3.18374
10/14/2018	68560	4778.466667	0.069698	-2.66359
10/15/2018	68560	3987.133333	0.058155	-2.84464
10/16/2018	68560	2966.7	0.043272	-3.14026
10/17/2018	68560	9582.9	0.139774	-1.96773
10/18/2018	68560	9610.183333	0.140172	-1.96489
10/19/2018	68560	1765.466667	0.025751	-3.65929
10/2/2018	68560	5306.033333	0.077393	-2.55886
10/20/2018	68560	85762.71667	1.250915	0.223875
10/21/2018	68560	44966.55	0.655871	-0.42179
10/22/2018	68560	87.16666666	0.001271	-6.66764
10/23/2018	68560	112.85	0.001646	-6.40941
10/24/2018	68560	2011.266667	0.029336	-3.52894
10/25/2018	68560	10349.98333	0.150962	-1.89072
10/26/2018	68560	9248.183333	0.134892	-2.00328
10/27/2018	68560	2003.233333	0.029219	-3.53295
10/28/2018	68560	43172.83333	0.629709	-0.4625
10/29/2018	68560	5606.466667	0.081775	-2.50379
10/3/2018	68560	25533.13333	0.37242	-0.98773
10/30/2018	68560	2380.616666	0.034723	-3.36035
10/31/2018	68560	2229.683333	0.032522	-3.42585
10/4/2018	68560	77169.23334	1.125572	0.118292
10/5/2018	68560	2894.433333	0.042218	-3.16492
10/6/2018	68560	7982.783344	0.116435	-2.15042
10/7/2018	68560	21401.4	0.312156	-1.16425
10/8/2018	68560	6127.633333	0.089376	-2.4149
10/9/2018	68560	1045.516667	0.01525	-4.1832
11/1/2018	68560	113652.5333	1.657709	0.505437
11/10/2018	68560	1310.75	0.019118	-3.95711
11/11/2018	68560	4200.066667	0.061261	-2.79261
11/12/2018	68560	11437.06667	0.166818	-1.79085

11/13/2018	68560	16625.68333	0.242498	-1.41676
11/14/2018	68560	11692.38333	0.170542	-1.76877
11/15/2018	68560	130141.1333	1.898208	0.64091
11/16/2018	68560	52	0.000758	-7.18422
11/17/2018	68560	23145.93333	0.337601	-1.08589
11/19/2018	68560	3151.083333	0.045961	-3.07996
11/2/2018	68560	7339.766667	0.107056	-2.2344
11/20/2018	68560	1158.833333	0.016902	-4.0803
11/21/2018	68560	9834.433334	0.143443	-1.94182
11/22/2018	68560	2287.916667	0.033371	-3.40007
11/23/2018	68560	426.9833333	0.006228	-5.07872
11/25/2018	68560	641049.5334	9.350197	2.235397
11/26/2018	68560	11534.16667	0.168235	-1.7824
11/27/2018	68560	5646.05	0.082352	-2.49675
11/28/2018	68560	1167.533333	0.017029	-4.07282
11/29/2018	68560	7399.266667	0.107924	-2.22633
11/3/2018	68560	5285.6	0.077095	-2.56272
11/30/2018	68560	7825.916666	0.114147	-2.17027
11/4/2018	68560	165.8333333	0.002419	-6.02448
11/5/2018	68560	196492.7167	2.865996	1.052916
11/6/2018	68560	148802.6833	2.170401	0.774912
11/7/2018	68560	117031.0333	1.706987	0.53473
11/8/2018	68560	7795.6	0.113705	-2.17415
11/9/2018	68560	30.35	0.000443	-7.72287
12/1/2018	68560	7679.95	0.112018	-2.1891
12/10/2018	68560	6116.6	0.089215	-2.4167
12/11/2018	68560	2894.75	0.042222	-3.16481
12/12/2018	68560	20425.4	0.29792	-1.21093
12/13/2018	68560	23351.6	0.340601	-1.07704
12/14/2018	68560	42160.2	0.614939	-0.48623
12/15/2018	68560	205207.95	2.993115	1.096315
12/16/2018	68560	498.25	0.007267	-4.92436
12/17/2018	68560	25174.96667	0.367196	-1.00186
12/18/2018	68560	4572.5	0.066693	-2.70765
12/19/2018	68560	3971.2	0.057923	-2.84864
12/2/2018	68560	25952.85	0.378542	-0.97143
12/20/2018	68560	409.5666667	0.005974	-5.12036
12/21/2018	68560	87443.3	1.275427	0.243281
12/22/2018	68560	9671.950001	0.141073	-1.95848
12/23/2018	68560	60554.40001	0.883232	-0.12417
12/24/2018	68560	276.5666667	0.004034	-5.51301
12/25/2018	68560	121.05	0.001766	-6.33926
12/26/2018	68560	392.7333333	0.005728	-5.16233
12/27/2018	68560	987217.6667	14.39932	2.667181
12/28/2018	68560	167249.3167	2.439459	0.891776
12/29/2018	68560	5100.716666	0.074398	-2.59833
12/3/2018	68560	5943.283333	0.086687	-2.44545
12/30/2018	68560	231.35	0.003374	-5.69153
12/31/2018	68560	83425.13333	1.216819	0.19624
12/4/2018	68560	129549.8667	1.889584	0.636357
12/5/2018	68560	378.1833333	0.005516	-5.20009
12/6/2018	68560	3510.95	0.05121	-2.97182
12/7/2018	68560	424.1666667	0.006187	-5.08534
12/9/2018	68560	427636.2333	6.237401	1.830564
2/1/2018	68560	24697.9	0.360238	-1.02099
2/10/2018	68560	119986.5333	1.750095	0.55967
2/12/2018	68560	2615.633333	0.038151	-3.2662
2/13/2018	68560	159.1333333	0.002321	-6.06572
2/14/2018	68560	4169.333333	0.060813	-2.79995
2/15/2018	68560	42493.15	0.619795	-0.47837
2/16/2018	68560	475267.2333	6.932136	1.936168
2/17/2018	68560	5706.966666	0.08324	-2.48602
2/18/2018	68560	8009.8	0.116829	-2.14704
2/19/2018	68560	4166.216667	0.060767	-2.8007
2/2/2018	68560	1561.6	0.022777	-3.782
2/20/2018	68560	2175.266667	0.031728	-3.45056
2/21/2018	68560	6769.716667	0.098741	-2.31525
2/22/2018	68560	24104.43333	0.351582	-1.04531
2/23/2018	68560	14438.8	0.210601	-1.55779
2/24/2018	68560	18021.93333	0.262864	-1.33612
2/25/2018	68560	53665.6	0.782754	-0.24494
2/26/2018	68560	1705.85	0.024881	-3.69365
2/27/2018	68560	2205.433333	0.032168	-3.43679
2/28/2018	68560	2863.883333	0.041772	-3.17553
2/3/2018	68560	137.9333333	0.002012	-6.20869
2/4/2018	68560	113378.1167	1.653706	0.503019
2/5/2018	68560	19908.35	0.290379	-1.23657
2/6/2018	68560	28373.13333	0.413844	-0.88227
2/7/2018	68560	844.6	0.012319	-4.3966
2/8/2018	68560	4579.916667	0.066802	-2.70603
2/9/2018	68560	1372.483333	0.020019	-3.91109
3/1/2018	68560	3309.566667	0.048273	-3.03089
3/11/2018	68560	10084.48333	0.14709	-1.91671
3/12/2018	68560	18086.26667	0.263802	-1.33256
3/13/2018	68560	434.5166667	0.006338	-5.06123
3/15/2018	68560	1236.633333	0.018037	-4.01532
3/16/2018	68560	984.2	0.014355	-4.24364
3/17/2018	68560	10261.83333	0.149677	-1.89928
3/18/2018	68560	149.2	0.002176	-6.13018
3/19/2018	68560	1885.816667	0.027506	-3.59335
3/2/2018	68560	608.8833333	0.008881	-4.72384
3/20/2018	68560	1866.2	0.02722	-3.6038
3/22/2018	68560	4491.616667	0.065514	-2.7255
3/23/2018	68560	475.6166667	0.006937	-4.97085
3/24/2018	68560	1038.466667	0.015147	-4.18996
3/25/2018	68560	496.9833334	0.007249	-4.92691
3/26/2018	68560	168.65	0.00246	-6.00764
3/27/2018	68560	12785.51667	0.186487	-1.6794
3/28/2018	68560	6102.433333	0.089009	-2.41902
3/29/2018	68560	5606.466667	0.081775	-2.50379
3/3/2018	68560	6706.45	0.097819	-2.32464
3/30/2018	68560	21.1	0.000308	-8.08619
3/31/2018	68560	419.6833334	0.006121	-5.09596
3/4/2018	68560	89.94999999	0.001312	-6.63621
3/5/2018	68560	515.8333333	0.007524	-4.88968
3/6/2018	68560	582.4	0.008495	-4.78831
3/7/2018	68560	301.7333328	0.004401	-5.42592

3/8/2018	68560	188.8166667	0.002754	-5.89469
3/9/2018	68560	1392.5333333	0.020311	-3.89658
4/1/2018	68560	193.0666667	0.002816	-5.87243
4/10/2018	68560	229125.9833	3.341978	1.206563
4/11/2018	68560	3047.116667	0.044445	-3.11351
4/12/2018	68560	3179.683333	0.046378	-3.07093
4/13/2018	68560	4300.783333	0.06273	-2.76891
4/14/2018	68560	52383.76667	0.764057	-0.26911
4/15/2018	68560	82421.05	1.202174	0.184132
4/17/2018	68560	105.6666667	0.001541	-6.47518
4/18/2018	68560	4300.183332	0.062721	-2.76905
4/19/2018	68560	170.7833333	0.002491	-5.99507
4/2/2018	68560	229.9666667	0.003354	-5.69753
4/20/2018	68560	36.63333334	0.000534	-7.53451
4/21/2018	68560	443	0.006461	-5.04189
4/22/2018	68560	499.7	0.007289	-4.92146
4/23/2018	68560	21671.26667	0.316092	-1.15172
4/24/2018	68560	815.0166667	0.011888	-4.43226
4/25/2018	68560	9196.966667	0.134145	-2.00884
4/26/2018	68560	4443.333334	0.064809	-2.7363
4/27/2018	68560	956.0166667	0.013944	-4.27269
4/28/2018	68560	2182.416667	0.031832	-3.44728
4/3/2018	68560	186354.3833	2.718121	0.999941
4/30/2018	68560	3413.116667	0.049793	-3.00008
4/4/2018	68560	2794425.033	40.75882	3.707672
4/5/2018	68560	42373.16667	0.618045	-0.48119
4/6/2018	68560	532.2	0.007763	-4.85845
4/7/2018	68560	31722.56667	0.462698	-0.77068
4/8/2018	68560	233.2	0.003401	-5.68357
4/9/2018	68560	2486.833333	0.036272	-3.3167
5/1/2018	68560	1774.733334	0.025886	-3.65406
5/10/2018	68560	288278.45	4.204762	1.436218
5/11/2018	68560	50099.55	0.73074	-0.3137
5/12/2018	68560	15161.55	0.221143	-1.50895
5/13/2018	68560	47011.65	0.685701	-0.37731
5/14/2018	68560	6709.516667	0.097863	-2.32418
5/15/2018	68560	128460.2833	1.873691	0.627911
5/16/2018	68560	29020.95	0.423293	-0.85969
5/17/2018	68560	11835.61667	0.172632	-1.7566
5/18/2018	68560	6337.45	0.092437	-2.38123
5/19/2018	68560	211.4	0.003083	-5.78171
5/2/2018	68560	8352	0.12182	-2.10521
5/20/2018	68560	2798.55	0.040819	-3.19861
5/21/2018	68560	8656.533334	0.126262	-2.06939
5/22/2018	68560	202723.0167	2.95687	1.084131
5/23/2018	68560	107034.8333	1.561185	0.445445
5/24/2018	68560	45300.35	0.66074	-0.41439
5/25/2018	68560	1989.433333	0.029017	-3.53986
5/26/2018	68560	16422.16667	0.23953	-1.42908
5/27/2018	68560	14852.3	0.216632	-1.52955
5/28/2018	68560	3183.133333	0.046428	-3.06984
5/29/2018	68560	9596.466667	0.139972	-1.96631
5/3/2018	68560	38042.1	0.554873	-0.58902
5/30/2018	68560	8717.950001	0.127158	-2.06233
5/31/2018	68560	737814.4833	10.76159	2.375983
5/4/2018	68560	7710.616667	0.112465	-2.18511
5/5/2018	68560	29699.11667	0.433184	-0.83659
5/6/2018	68560	22565.86667	0.32914	-1.11127
5/7/2018	68560	5475.2	0.07986	-2.52748
5/8/2018	68560	10611.36667	0.154775	-1.86578
5/9/2018	68560	15826.71667	0.230845	-1.46601
6/1/2018	68560	4392.066667	0.064062	-2.74791
6/10/2018	68560	9995.683333	0.145795	-1.92556
6/11/2018	68560	38965.75	0.568345	-0.56503
6/12/2018	68560	8091.016667	0.118014	-2.13695
6/13/2018	68560	38187.7	0.556997	-0.5852
6/14/2018	68560	5082.95	0.074139	-2.60182
6/15/2018	68560	17038.38333	0.248518	-1.39224
6/16/2018	68560	3018.316667	0.044024	-3.12301
6/17/2018	68560	29798.88333	0.434639	-0.83324
6/18/2018	68560	7932.416667	0.1157	-2.15675
6/19/2018	68560	4050.1	0.059074	-2.82897
6/2/2018	68560	16339.65	0.238326	-1.43411
6/20/2018	68560	33151.58333	0.483541	-0.72662
6/21/2018	68560	39924.63333	0.582331	-0.54072
6/22/2018	68560	80403.23333	1.172743	0.159345
6/23/2018	68560	2541.616667	0.037071	-3.29491
6/24/2018	68560	25060.1	0.365521	-1.00643
6/25/2018	68560	287019.3	4.186396	1.43184
6/26/2018	68560	1044499.517	15.23482	2.723584
6/27/2018	68560	60194.43333	0.877982	-0.13013
6/28/2018	68560	26965.81666	0.393317	-0.93314
6/29/2018	68560	16017.46667	0.233627	-1.45403
6/3/2018	68560	6162.366667	0.089883	-2.40925
6/30/2018	68560	58444.61667	0.852459	-0.15963
6/4/2018	68560	932.8	0.013606	-4.29727
6/5/2018	68560	97404.45	1.420718	0.351163
6/6/2018	68560	15812.98333	0.230644	-1.46688
6/7/2018	68560	16492.18333	0.240551	-1.42482
6/8/2018	68560	14765.03334	0.215359	-1.53545
6/9/2018	68560	306531.95	4.471003	1.497613
7/1/2018	68560	16150.18333	0.235563	-1.44578
7/10/2018	68560	1487.7	0.021699	-3.83048
7/11/2018	68560	264398.6833	3.856457	1.349749
7/12/2018	68560	112469.9333	1.64046	0.494977
7/13/2018	68560	1572.3	0.022933	-3.77517
7/14/2018	68560	8282.516667	0.120807	-2.11356
7/15/2018	68560	17213.53333	0.251073	-1.38201
7/16/2018	68560	2061.033333	0.030062	-3.5045
7/17/2018	68560	2653.7	0.038706	-3.25175
7/18/2018	68560	4401.983333	0.064206	-2.74565
7/19/2018	68560	522.0333334	0.007614	-4.87773
7/2/2018	68560	50518.46667	0.73685	-0.30537
7/20/2018	68560	1393440.583	20.3244	3.011822
7/21/2018	68560	521021.5167	7.599497	2.028082
7/22/2018	68560	11935.66667	0.174091	-1.74818
7/23/2018	68560	11800.95	0.172126	-1.75953

7/24/2018	68560	58027.35	0.846373	-0.16679
7/25/2018	68560	62538.13333	0.912166	-0.09193
7/26/2018	68560	13996.26667	0.204146	-1.58892
7/27/2018	68560	29393.11667	0.428721	-0.84695
7/28/2018	68560	179.0833333	0.002612	-5.94761
7/29/2018	68560	263.05	0.003837	-5.56312
7/30/2018	68560	110774.6833	1.615733	0.479789
7/31/2018	68560	639.5333334	0.009328	-4.67473
7/31/2018	68560	12145.56667	0.177152	-1.73075
7/4/2018	68560	23669.53333	0.345238	-1.06352
7/5/2018	68560	174812.1333	2.549769	0.936003
7/6/2018	68560	179822	2.622841	0.964258
7/7/2018	68560	26616.01666	0.388215	-0.9462
7/8/2018	68560	890.2833333	0.012985	-4.34392
7/9/2018	68560	17741.58334	0.258775	-1.3518
8/1/2018	68560	91635.18333	1.336569	0.290106
8/10/2018	68560	219166.2333	3.196707	1.162121
8/11/2018	68560	11547.33333	0.168427	-1.78125
8/12/2018	68560	3744.583333	0.054618	-2.9074
8/13/2018	68560	1421	0.020726	-3.87635
8/14/2018	68560	1789.983333	0.026108	-3.6455
8/15/2018	68560	20442.23333	0.298166	-1.21011
8/16/2018	68560	4969.916667	0.072249	-2.62431
8/17/2018	68560	29114.96667	0.424664	-0.85646
8/18/2018	68560	59227.10001	0.863873	-0.14633
8/19/2018	68560	6254.533333	0.091227	-2.3944
8/2/2018	68560	12648.5	0.184488	-1.69017
8/20/2018	68560	64449.95	0.940052	-0.06182
8/21/2018	68560	1037.15	0.015128	-4.19123
8/22/2018	68560	12374.85	0.180497	-1.71204
8/23/2018	68560	16548.15	0.241367	-1.42143
8/24/2018	68560	3707.116667	0.054071	-2.91745
8/25/2018	68560	3232.966666	0.047155	-3.05431
8/26/2018	68560	17683.4	0.257926	-1.35508
8/27/2018	68560	7551.6	0.110146	-2.20595
8/28/2018	68560	21563.76667	0.314524	-1.15669
8/29/2018	68560	698.8666667	0.010194	-4.586
8/30/2018	68560	27697.06667	0.403983	-0.90638
8/30/2018	68560	133147.7667	1.942062	0.66375
8/31/2018	68560	81557.71667	1.189582	0.173602
8/4/2018	68560	1166.216667	0.01701	-4.07394
8/5/2018	68560	6081.733333	0.088707	-2.42242
8/6/2018	68560	768263.6833	11.20571	2.416424
8/7/2018	68560	39809.81667	0.580657	-0.5436
8/8/2018	68560	207552.0833	3.027306	1.107673
8/9/2018	68560	18587.16667	0.271108	-1.30524
9/1/2018	68560	28178.01667	0.410998	-0.88917
9/10/2018	68560	9214.033334	0.134394	-2.00698
9/11/2018	68560	1649.716667	0.024062	-3.72711
9/12/2018	68560	2162.033333	0.031535	-3.45666
9/13/2018	68560	30605.75	0.446408	-0.80652
9/14/2018	68560	15312.63333	0.223346	-1.49903
9/15/2018	68560	9746.483333	0.14216	-1.9508
9/16/2018	68560	14036.7	0.204736	-1.58603
9/17/2018	68560	11650.1	0.169926	-1.77239
9/18/2018	68560	151913.4667	2.215774	0.795602
9/19/2018	68560	77530.4	1.13084	0.122961
9/2/2018	68560	2368.233333	0.034542	-3.36557
9/20/2018	68560	7543.516667	0.110028	-2.20702
9/21/2018	68560	20099.43333	0.293166	-1.22702
9/22/2018	68560	5812.766666	0.084784	-2.46765
9/23/2018	68560	98322.25	1.434105	0.360541
9/24/2018	68560	49357.76666	0.719921	-0.32861
9/25/2018	68560	131876.2167	1.923515	0.654154
9/26/2018	68560	137108.3167	1.99983	0.693062
9/27/2018	68560	1557.866667	0.022723	-3.78439
9/28/2018	68560	12361.46667	0.180301	-1.71313
9/29/2018	68560	51682.28333	0.753826	-0.28259
9/30/2018	68560	722.3833333	0.010537	-4.55291
9/30/2018	68560	50896.45	0.742364	-0.29792
9/4/2018	68560	3328.95	0.048555	-3.02505
9/5/2018	68560	62371.88333	0.909742	-0.09459
9/6/2018	68560	41055.61667	0.598828	-0.51278
9/7/2018	68560	7073.616667	0.103174	-2.27134
9/8/2018	68560	240.3333333	0.003505	-5.65344
9/9/2018	68560	306225.2	4.466529	1.496612

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #0102:**

1. SUBSTATION NAME AND NUMBER

**01/RUSSELL SPRINGS #1**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**64 Old Sano Road, Russell Springs, Ky 42642**

3. CIRCUIT NAME AND NUMBER

**BERNARD RIDGE / #0102**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS TOWARD BERNARD RIDGE**

5. TOTAL CIRCUIT LENGTH (MILES)

**25.52**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**498**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2010**

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

Animal - Small	16.67%
Line Down - Historical	6.67%
Major Storm - Historical	16.67%
Other	6.67%
Other Animal - Historical	3.33%
Trees	13.33%
Trees - Historical	16.67%
Unknown	3.33%
Vehicle	3.33%
Wind - Historical	6.67%
Wind - No Trees	6.67%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**0.488772872**

10. REPORTING YEAR (SAIDI)

**0.594917877**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.006761302**

12. REPORTING YEAR (SAIFI)

**0.003774165**

13. CORRECTIVE ACTION PLAN

**CIRCUIT WILL BE CONSIDERED FOR ROW INSPECTION AND/OR CONSIDERED FOR SECTIONALIZING STUDY**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #0106:**

1. SUBSTATION NAME AND NUMBER

**01/RUSSELL SPRINGS #2**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**64 Old Sano Road, Russell Springs, Ky 42642**

3. CIRCUIT NAME AND NUMBER

**SANO / #0106**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS NORTH ON OLD SANO RD**

5. TOTAL CIRCUIT LENGTH (MILES)

**60.22**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**765**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2021**

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

Animal - Small	17.78%
Customer Side	4.44%
Equipment Failure	8.89%
Lightning	2.22%
Line Down - Historical	4.44%
Major Storm - Historical	6.67%
Other	8.89%
Power Supply	2.22%
Transformer Fuse Blown - Hi	2.22%
Trees - Historical	6.67%
Trees - w/ Ice	13.33%
Planned	8.89%
Unknown	8.89%
Wind - No Trees	2.22%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**1.109028657**

10. REPORTING YEAR (SAIDI)

**1.596976194**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.014137192**

12. REPORTING YEAR (SAIFI)

**0.010707446**

13. CORRECTIVE ACTION PLAN

**CIRCUIT NEEDS TO BE VISUALLY INSPECTED**



**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #0202:**

1. SUBSTATION NAME AND NUMBER

**02/WINDSOR**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**1905 Highway 80, Windsor, KY 42565**

3. CIRCUIT NAME AND NUMBER

**CAINTOWN / #0202**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS EAST TOWARD MT. OLIVE**

5. TOTAL CIRCUIT LENGTH (MILES)

**121.02**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**1061**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2023**

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

Animal - Small	13.85%
Blink	4.62%
Customer Side	1.54%
Line Down - Historical	3.08%
Line Fuse - Historical	4.62%
Major Storm - Historical	20.00%
Other	4.62%
Other Animal - Historical	3.08%
Tornado/Hurricane	1.54%
Trees	6.15%
Trees - Historical	12.31%
Trees - w/ Ice	7.69%
Planned	4.62%
Unknown	7.69%
Wind - Historical	3.08%
Wind - No Trees	1.54%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**2.811318761**

10. REPORTING YEAR (SAIDI)

**2.959716426**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.021995802**

12. REPORTING YEAR (SAIFI)

**0.016764749**

13. CORRECTIVE ACTION PLAN

**CIRCUIT ROW TO BE CUT ON CIRCUIT BID 2023. EKPC TO UPGRADE CONTROLS AT SUB TO PERFORM FAULT LOCATION, ETC..**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #0203:**

1. SUBSTATION NAME AND NUMBER

**02/WINDSOR**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**1905 Highway 80, Windsor, KY 42565**

3. CIRCUIT NAME AND NUMBER

**GOSSER RIDGE / #0203**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS SOUTH ON HIGHWAY 910**

5. TOTAL CIRCUIT LENGTH (MILES)

**64.2**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**538**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2020**

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

Animal - Small	30.00%
Blink	3.33%
Customer Side	3.33%
Lightning	6.67%
Major Storm - Historical	10.00%
Other	13.33%
Tornado/Hurricane	3.33%
Transformer Fuse Blown - H	3.33%
Trees	10.00%
Trees - Historical	3.33%
Trees - w/ Ice	3.33%
Undefined - Historical	3.33%
Unknown	6.67%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**1.142172233**

10. REPORTING YEAR (SAIDI)

**1.262734639**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.011670457**

12. REPORTING YEAR (SAIFI)

**0.008978786**

13. CORRECTIVE ACTION PLAN

**CIRCUIT ROW TO BE CUT ON CIRCUIT BID 2023. EKPC TO UPGRADE CONTROLS AT SUB TO PERFORM FAULT LOCATION, ETC..**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #0203:**

1. SUBSTATION NAME AND NUMBER  
**02/WINDSOR**
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)  
**1905 Highway 80, Windsor, KY 42565**
3. CIRCUIT NAME AND NUMBER  
**GOSSER RIDGE / #0203**
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)  
**FEEDS SOUTH ON HIGHWAY 910**
5. TOTAL CIRCUIT LENGTH (MILES)  
**18.08**
6. CUSTOMER COUNT FOR THIS CIRCUIT  
**215**
- 7.. DATE OF LAST CIRCUIT TRIM (VM)  
**2019**
8. LIST OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS  
NUMBERS REPRESENTED BY EACH CAUSE

Animal - Small	60.00%
Broke Pole - Historical	10.00%
Blink	20.00%
Trees - Historical	10.00%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)  
**0.447592799**
10. REPORTING YEAR (SAIDI)  
**1.07144066**
11. CIRCUIT 5 YEAR AVERAGE (SAIFI)  
**0.00437835**
12. REPORTING YEAR (SAIFI)  
**0.007399228**
13. CORRECTIVE ACTION PLAN

**CIRCUIT ROW TO BE CUT ON CIRCUIT BID 2023. EKPC TO UPGRADE CONTROLS AT SUB TO PERFORM FAULT LOCATION, ETC..**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #0301:**

1. SUBSTATION NAME AND NUMBER

**03/NANCY**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**995 HWY 196, Nancy, KY 42544**

3. CIRCUIT NAME AND NUMBER

**NAOMI / #0301**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS SOUTH SIEVERS RD**

5. TOTAL CIRCUIT LENGTH (MILES)

**65.08**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**898**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2020**

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

Animal - Small	29.49%
Equipment Failure	1.28%
Ice/Snow - No Trees	1.28%
Lightning	5.13%
Major Storm - Historical	15.38%
Other	15.38%
Other Animal - Historical	1.28%
Tornado/Hurricane	2.56%
Transformer Fuse Blown - Hi	1.28%
Trees	3.85%
Trees - Historical	3.85%
Trees - w/ Ice	14.10%
Unknown	1.28%
Wind - Historical	2.56%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**3.835354485**

10. REPORTING YEAR (SAIDI)

**3.560741693**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.023806223**

12. REPORTING YEAR (SAIFI)

**0.035071779**

13. CORRECTIVE ACTION PLAN

**CIRCUIT EXPERIENCED EXTENDED OUTAGES DURING COLD SNAP.**

**CURRENTLY WORKING WITH MEMBERS TO UPGRADE RECLOSERS & INSPECT SPECIFIC ROW.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #0303:**

1. SUBSTATION NAME AND NUMBER

**03/NANCY**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**995 HWY 196, Nancy, KY 42544**

3. CIRCUIT NAME AND NUMBER

**HICKORY NUT / #0303**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS WEST ON HWY 80**

5. TOTAL CIRCUIT LENGTH (MILES)

**55.53**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**539**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2016**

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

Animal - Small	16.67%
Broke Pole - Historical	5.56%
Blinks	5.56%
Equipment Failure	1.85%
Line Down - Historical	9.26%
Line Fuse - Historical	1.85%
Major Storm - Historical	12.96%
Other	5.56%
Tornado/Hurricane	5.56%
Trees	7.41%
Trees - Historical	11.11%
Trees - w/ Ice	5.56%
Planned	3.70%
Unknown	5.56%
Vehicle	1.85%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**1.246437617**

10. REPORTING YEAR (SAIDI)

**2.67299473**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.013604457**

12. REPORTING YEAR (SAIFI)

**0.030990089**

13. CORRECTIVE ACTION PLAN

**CIRCUIT NEEDS TO BE ANALYZED IN REGARDS TO SECTIONALIZING.**

**CURRENTLY IN PLAN TO UPGRADE FEEDER CONTROLS, WILL HELP WITH FAULT LOCATION.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #0304:**

1. SUBSTATION NAME AND NUMBER

**03/NANCY**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**995 HWY 196, Nancy, KY 42544**

3. CIRCUIT NAME AND NUMBER

**LANETOWN-PINEY GROVE / #0304**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS EAST ON HWY 80**

5. TOTAL CIRCUIT LENGTH (MILES)

**38.92**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**555**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2016**

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

Animal - Small	15.09%
Equipment Failure	1.89%
Lightning	1.89%
Line Down - Historical	3.77%
Major Storm - Historical	15.09%
Other	11.32%
Other Animal - Historical	3.77%
Tornado/Hurricane	7.55%
Trees	3.77%
Trees - Historical	3.77%
Trees - w/ Ice	13.21%
Planned	11.32%
Unknown	5.66%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**1.842596379**

10. REPORTING YEAR (SAIDI)

**1.8595861**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.020524338**

12. REPORTING YEAR (SAIFI)

**0.013475167**

13. CORRECTIVE ACTION PLAN

**CIRCUIT NEEDS TO BE ANALYZED IN REGARDS TO SECTIONALIZING.**

**CURRENTLY IN PLAN TO UPGRADE FEEDER CONTROLS, WILL HELP WITH FAULT LOCATION.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #0501:**

1. SUBSTATION NAME AND NUMBER

**05/SOMERSET**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**105 Jared Lane, Somerset, KY 42501**

3. CIRCUIT NAME AND NUMBER

**INDUSTRIAL PARK / #0501**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS TOWARD CABIN HOLLOW IND PARK**

5. TOTAL CIRCUIT LENGTH (MILES)

**3.05**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**18**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2024**

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

Trees - Historical	50.00%
Unknown	50.00%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**0.009620857**

10. REPORTING YEAR (SAIDI)

**0.016284824**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**8.83781E-05**

12. REPORTING YEAR (SAIFI)

**0.000195697**

13. CORRECTIVE ACTION PLAN

**ADDRESSED CONCERN WITH "UNKNOWN" CAUSES. VERY SMALL CIRCUIT. NEED TO INSPECT ROW.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #0503:**

1. SUBSTATION NAME AND NUMBER

**05/SOMERSET**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**105 Jared Lane, Somerset, KY 42501**

3. CIRCUIT NAME AND NUMBER

**SOMERSET BOAT DOCK / #0503**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS DOWN HWY 914 TOWARD SOMERSET BOAT DOCK**

5. TOTAL CIRCUIT LENGTH (MILES)

**14.24**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**652**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2024**

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

Animal - Small	10.13%
Blink	2.53%
Customer Side	1.27%
Equipment Failure	3.80%
Lightning	1.27%
Line Down - Historical	1.27%
Line Fuse - Historical	1.27%
Load	1.27%
Major Storm - Historical	11.39%
Other	3.80%
Power Supply	1.27%
Tornado/Hurricane	1.27%
Transformer Fuse Blown - Historical	2.53%
Trees	3.80%
Trees - Contractor	1.27%
Trees - Historical	2.53%
Trees - w/ Ice	7.59%
Planned	22.78%
Unknown	15.19%
Wind - Historical	3.80%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**1.190515105**

10. REPORTING YEAR (SAIDI)

**1.644207076**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.012315882**

12. REPORTING YEAR (SAIFI)

**0.011685934**

13. CORRECTIVE ACTION PLAN

**CIRCUIT NEEDS TO BE INSPECTED FOR ROW. ALSO, IN COMMUNICATION WITH EKPC ABOUT UPGRADES.**



**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #0505:**

1. SUBSTATION NAME AND NUMBER

**05/SOMERSET**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**105 Jared Lane, Somerset, KY 42501**

3. CIRCUIT NAME AND NUMBER

**OAK HILL RD / #0505**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS TOWARD HWY 27, ENDS AT KROGER**

5. TOTAL CIRCUIT LENGTH (MILES)

**6.01**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**98**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2024**

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

Animal - Small	16.13%
Choose Cause Code	6.45%
Major Storm - Historical	41.94%
Other	3.23%
Trees - w/ Ice	3.23%
Planned	19.35%
Unknown	9.68%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**0.633473996**

10. REPORTING YEAR (SAIDI)

**1.0509414**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.006596665**

12. REPORTING YEAR (SAIFI)

**0.008123546**

13. CORRECTIVE ACTION PLAN

**CIRCUIT WAS ONE OF FIRST INSPECTED BY GEOFORCE. POLES CURRENTLY BEING REPLACED.  
POSSIBLE SECTIONALIZING STUDY. NEED TO LOOK AT INDIVIDUALS FRAMING.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #0601:**

1. SUBSTATION NAME AND NUMBER  
**06/EAST SOMERSET**
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)  
**126 Garner School Road, Somerset, KY 42503**
3. CIRCUIT NAME AND NUMBER  
**TIE TO NELSON VALLEY / #0601**
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)  
**BACKFEED FOR NELSON VALLEY/EAST SOMERSET**
5. TOTAL CIRCUIT LENGTH (MILES)  
**2.18**
6. CUSTOMER COUNT FOR THIS CIRCUIT  
**15**
- 7.. DATE OF LAST CIRCUIT TRIM (VM)  
**2019 (SPRAY)**
8. LIST OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS  
NUMBERS REPRESENTED BY EACH CAUSE

Animal - Small	33.33%
Other	66.66%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)  
**0.036262988**
10. REPORTING YEAR (SAIDI)  
**0.085665162**
11. CIRCUIT 5 YEAR AVERAGE (SAIFI)  
**0.000159371**
12. REPORTING YEAR (SAIFI)  
**0.000279568**
13. CORRECTIVE ACTION PLAN  
**"OTHER" WAS BROKE POLE, CAUSE OF BROKE POLE WAS UNKNOWN**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #0602:**

1. SUBSTATION NAME AND NUMBER  
**06/EAST SOMERSET**
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)  
**126 Garner School Road, Somerset, KY 42503**
3. CIRCUIT NAME AND NUMBER  
**BOLTON SUBDIVISION / #0602**
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)  
**FEEDS BOLTON SUBDIVISION**
5. TOTAL CIRCUIT LENGTH (MILES)  
**6.58**
6. CUSTOMER COUNT FOR THIS CIRCUIT  
**123**
- 7.. DATE OF LAST CIRCUIT TRIM (VM)  
**2019 (SPRAY)**
8. LIST OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS  
NUMBERS REPRESENTED BY EACH CAUSE

Animal - Small	34.62%
Choose Cause Code	3.85%
Equipment Failure	3.85%
Lightning	15.38%
Line Down - Historical	3.85%
Major Storm - Historical	3.85%
Other	11.54%
Transformer - Historical	3.85%
Trees - w/ Ice	7.69%
Planned	3.85%
Unknown	7.69%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)  
**0.243846666**
10. REPORTING YEAR (SAIDI)  
**0.277965166**
11. CIRCUIT 5 YEAR AVERAGE (SAIFI)  
**0.00204059**
12. REPORTING YEAR (SAIFI)  
**0.002124715**
13. CORRECTIVE ACTION PLAN

**CIRCUIT NEEDS TO BE VISUALLY INSPECTED. POSSBLE FAULT LOCATION HISTORY TO DETERMINE AREA SPECIFIC.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #0605:**

1. SUBSTATION NAME AND NUMBER

**06/EAST SOMERSET**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**126 Garner School Road, Somerset, KY 42503**

3. CIRCUIT NAME AND NUMBER

**GOFFTOWN / #0605**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS GRUNDY RD AREA**

5. TOTAL CIRCUIT LENGTH (MILES)

**41.35**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**560**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2015**

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

Animal - Small	10.71%
Broke Pole - Historical	3.57%
Customer Side	3.57%
Equipment Failure	1.79%
Lightning	1.79%
Line Down - Historical	10.71%
Line Fuse - Historical	1.79%
Major Storm - Historical	10.71%
Other	8.93%
Other Animal - Historical	1.79%
Trees	10.71%
Trees - Historical	10.71%
Trees - w/ Ice	3.57%
Planned	10.71%
Unknown	7.14%
Wind - Historical	1.79%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**4.409421117**

10. REPORTING YEAR (SAIDI)

**8.419574638**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.024590456**

12. REPORTING YEAR (SAIFI)

**0.035183606**

13. CORRECTIVE ACTION PLAN

**CIRCUIT IS UNDERGOING RELOCATION AT BEGINNING. CIRCUIT IS BEING CONSIDERED FOR ROW TRIM.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #0701:**

1. SUBSTATION NAME AND NUMBER

**07/SHOPVILLE**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**130 Dahl Road, Somerset, KY 42501**

3. CIRCUIT NAME AND NUMBER

**STAB / #0701**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS EAST HWY 80**

5. TOTAL CIRCUIT LENGTH (MILES)

**118.45**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**875**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2019**

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

Animal - Small	11.54%
Broke Pole - Historical	0.96%
Equipment Failure	3.85%
Lightning	0.96%
Line Down - Historical	6.73%
Major Storm - Historical	25.00%
Other	8.65%
Power Supply	0.96%
Trees	5.77%
Trees - Historical	16.35%
Trees - w/ Ice	5.77%
Undefined - Historical	0.96%
Planned	5.77%
Unknown	5.77%
Wind - Historical	0.96%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**7.335628909**

10. REPORTING YEAR (SAIDI)

**9.74568585**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.04180284**

12. REPORTING YEAR (SAIFI)

**0.050000699**

13. CORRECTIVE ACTION PLAN

**VERY LARGE CIRCUIT. NEEDS ROW INSPECTED AGAIN BUT ALSO NEEDS COORDINATION PERFORMED  
AND POSSIBLY SECTIONALIZING RECONFIGURED.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #0805:**

1. SUBSTATION NAME AND NUMBER

**08/NORWOOD**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**279 West Racetrak Road, Somerset, KY 42501**

3. CIRCUIT NAME AND NUMBER

**NORTH HIGHWAY 27 / #0805**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS NORTH PARALLEL TO HWY 27**

5. TOTAL CIRCUIT LENGTH (MILES)

**3.5**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**210**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2014**

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

Animal - Small	11.11%
Blinks	33.33%
Equipment Failure	11.11%
Major Storm - Historical	11.11%
Other	11.11%
Trees - Historical	11.11%
Planned	11.11%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**0.031111326**

10. REPORTING YEAR (SAIDI)

**0.060753155**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.000539667**

12. REPORTING YEAR (SAIFI)

**0.000978487**

13. CORRECTIVE ACTION PLAN

**CIRCUIT WILL BE CONSIDERED FOR INSPECTION.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #0901:**

1. SUBSTATION NAME AND NUMBER

**09/FLOYD**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**859 Old Somerset Standford Road, Somerset, KY**

3. CIRCUIT NAME AND NUMBER

**ESTESBURG / #0901**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS BACK TOWARD WOODSTOCK CHARLES ELGIN**

5. TOTAL CIRCUIT LENGTH (MILES)

**15.45**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**206**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2016**

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

Animal - Small	36.36%
Choose Cause Code	13.64%
Major Storm - Historical	9.09%
Other	4.55%
Transformer Fuse Blown - Hi	4.55%
Trees	13.64%
Trees - Historical	4.55%
Unknown	13.64%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**0.157633865**

10. REPORTING YEAR (SAIDI)

**0.047143935**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.00224455**

12. REPORTING YEAR (SAIFI)

**0.002711808**

13. CORRECTIVE ACTION PLAN

**CIRCUIT SEEMS TO FACE SEVERAL SMALL ANIMAL OUTAGES.**

**NEED TO USE HISTORICAL FAULT LOCATION TO DEPICT POSSIBLE AREAS OF CONCERN.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #1002:**

1. SUBSTATION NAME AND NUMBER

**10/NORTH ALBANY**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**1028 Third Street, Albany, KY 42602**

3. CIRCUIT NAME AND NUMBER

**DUVALL VALLEY / #1002**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS TOWARD DUVALL VALLEY**

5. TOTAL CIRCUIT LENGTH (MILES)

**51.97**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**746**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2015**

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

Animal - Small	11.90%
Customer Side	4.76%
Equipment Failure	4.76%
Lightning	2.38%
Line Down - Historical	2.38%
Line Fuse - Historical	2.38%
Major Storm - Historical	9.52%
Other	14.29%
Power Supply	2.38%
Trees	4.76%
Trees - Historical	14.29%
Trees - w/ Ice	7.14%
Unknown	19.05%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**2.708067739**

10. REPORTING YEAR (SAIDI)

**3.486718992**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.054309342**

12. REPORTING YEAR (SAIFI)

**0.017920295**

13. CORRECTIVE ACTION PLAN

**CIRCUIT WILL BE CONSIDERED FOR ROW INSPECTION AND/OR CONSIDERED FOR ENHANCED SECTIONALIZING.  
NEED TO RESEARCH ON POSSIBLE "OTHER/UNKN" CAUSES.**



**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #1004:**

1. SUBSTATION NAME AND NUMBER

**10/NORTH ALBANY**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**1028 Third Street, Albany, KY 42602**

3. CIRCUIT NAME AND NUMBER

**CLINTON CO SCHOOL / #1004**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS CLINTON CO HIGH SCHOOL**

5. TOTAL CIRCUIT LENGTH (MILES)

**4.66**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**55**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2022**

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

Animal - Small 50.00%

Unknown 50.00%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**0.000835771**

10. REPORTING YEAR (SAIDI)

**0.000864563**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**1.96948E-05**

12. REPORTING YEAR (SAIFI)

**0.000027957**

13. CORRECTIVE ACTION PLAN

**ONLY OUTAGE CAUSE LAST YEAR WAS ALSO SMALL ANIMAL.**

**MAY LOOK AT OUTAGE AREAS W/ FAULT LOCATION TO DETERMINE NEXT STEP.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #1101:**

1. SUBSTATION NAME AND NUMBER

**11/SOUTH ALBANY**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**235 West Harper Lane, Albany, KY 42602**

3. CIRCUIT NAME AND NUMBER

**ADAMS DOCK / #1101**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS ADAMS DOCK**

5. TOTAL CIRCUIT LENGTH (MILES)

**50.43**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**970**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2022**

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

Animal - Small	11.27%
Broke Pole - Historical	1.41%
Choose Cause Code	9.86%
Customer Side	2.82%
Equipment Failure	4.23%
Lightning	5.63%
Line Fuse - Historical	2.82%
Major Storm - Historical	14.08%
Other	8.45%
Power Supply	1.41%
Trees	5.63%
Trees - w/ Ice	19.72%
Planned	4.23%
Unknown	5.63%
Vehicle	1.41%
Wind - No Trees	1.41%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**7.158610317**

10. REPORTING YEAR (SAIDI)

**9.762800849**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.031020879**

12. REPORTING YEAR (SAIFI)

**0.033981465**

13. CORRECTIVE ACTION PLAN

**CIRCUIT TRIMMED IN 2022. "TREES W/ ICE" NOT CORRECT. ACTUALLY JUST TREES.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #1102:**

1. SUBSTATION NAME AND NUMBER  
**11/SOUTH ALBANY**
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)  
**235 West Harper Lane, Albany, KY 42602**
3. CIRCUIT NAME AND NUMBER  
**WISDOM DOCK / #1102**
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)  
**FEEDS WISDOM DOCK**
5. TOTAL CIRCUIT LENGTH (MILES)  
**57.92**
6. CUSTOMER COUNT FOR THIS CIRCUIT  
**772**
- 7.. DATE OF LAST CIRCUIT TRIM (VM)  
**2021**
8. LIST OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS  
NUMBERS REPRESENTED BY EACH CAUSE

Animal - Small	18.57%
Blink	7.14%
Customer Side	4.29%
Lightning	7.14%
Major Storm - Historical	15.71%
Other	10.00%
Trees	11.43%
Trees - Historical	4.29%
Trees - w/ Ice	8.57%
Planned	2.86%
Unknown	8.57%
Wind - Historical	1.43%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)  
**2.304281081**
10. REPORTING YEAR (SAIDI)  
**2.756149373**
11. CIRCUIT 5 YEAR AVERAGE (SAIFI)  
**0.024114913**
12. REPORTING YEAR (SAIFI)  
**0.013293448**
13. CORRECTIVE ACTION PLAN  
**CIRCUIT WILL BE VISUALLY INSPECTED.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #1104:**

1. SUBSTATION NAME AND NUMBER  
**11/SOUTH ALBANY**
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)  
**235 West Harper Lane, Albany, KY 42602**
3. CIRCUIT NAME AND NUMBER  
**DOWNTOWN / #1104**
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)  
**FEEDS NORTH INTO DOWNTOWN ALBANY**
5. TOTAL CIRCUIT LENGTH (MILES)  
**3.14**
6. CUSTOMER COUNT FOR THIS CIRCUIT  
**173**
- 7.. DATE OF LAST CIRCUIT TRIM (VM)  
**2022**
8. LIST OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS  
NUMBERS REPRESENTED BY EACH CAUSE

Animal - Small	22.39%
Blink	5.97%
Customer Side	4.48%
Lightning	7.46%
Line Down - Historical	1.49%
Major Storm - Historical	4.48%
Other	13.43%
Tornado/Hurricane	4.48%
Trees	10.45%
Trees - Historical	1.49%
Trees - w/ Ice	14.93%
Unknown	4.48%
Vehicle	1.49%
Wind - No Trees	2.99%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**0.87201781**

10. REPORTING YEAR (SAIDI)

**3.858850837**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.00725795**

12. REPORTING YEAR (SAIFI)

**0.025873999**

13. CORRECTIVE ACTION PLAN

**TREES W/ ICE IS INCORRECT. ACTUALLY JUST TREES. CIRCUIT NEEDS TO BE INSPECTED VISUALLY.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #1105:**

1. SUBSTATION NAME AND NUMBER  
**11/SOUTH ALBANY**
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)  
**235 West Harper Lane, Albany, KY 42602**
3. CIRCUIT NAME AND NUMBER  
**STATIC / #1105**
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)  
**FEEDS TOWARD STATIC AREA**
5. TOTAL CIRCUIT LENGTH (MILES)  
**57.79**
6. CUSTOMER COUNT FOR THIS CIRCUIT  
**745**
- 7.. DATE OF LAST CIRCUIT TRIM (VM)  
**2019**
8. LIST OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS  
NUMBERS REPRESENTED BY EACH CAUSE

Animal - Small	20.00%
Blink	2.86%
Customer Side	1.43%
Equipment Failure	1.43%
Lightning	4.29%
Line Down - Historical	1.43%
Line Fuse - Historical	1.43%
Major Storm - Historical	14.29%
Other	10.00%
Power Supply	2.86%
Transformer - Historical	2.86%
Trees	4.29%
Trees - Historical	5.71%
Trees - w/ Ice	12.86%
Planned	2.86%
Unknown	8.57%
Vehicle	2.86%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)  
**3.681799818**
10. REPORTING YEAR (SAIDI)  
**4.54406897**
11. CIRCUIT 5 YEAR AVERAGE (SAIFI)  
**0.029240535**
12. REPORTING YEAR (SAIFI)  
**0.01709557**
13. CORRECTIVE ACTION PLAN  
**CIRCUIT WILL BE CONSIDERED FOR ROW & VISUAL INSPECTION.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #1201:**

1. SUBSTATION NAME AND NUMBER

**12/SEWELLTON**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**44 Highway 55, Jamestown, KY 42629**

3. CIRCUIT NAME AND NUMBER

**STORY LANE / #1201**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS NORTH ON HWY 127**

5. TOTAL CIRCUIT LENGTH (MILES)

**20.58**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**198**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2016**

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

Animal - Small	3.92%
Blink	7.84%
Equipment Failure	1.96%
Lightning	1.96%
Line Down - Historical	1.96%
Major Storm - Historical	5.88%
Other	7.84%
Tornado/Hurricane	3.92%
Trees	35.29%
Trees - Historical	7.84%
Trees - w/ Ice	11.76%
Planned	1.96%
Unknown	1.96%
Wind - No Trees	5.88%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**0.25841177**

10. REPORTING YEAR (SAIDI)

**0.660824446**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.002492935**

12. REPORTING YEAR (SAIFI)

**0.003718252**

13. CORRECTIVE ACTION PLAN

**AREA HIT HARD BY WIND STORM. ROW NEEDS TO BE INSPECTED.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #1204:**

1. SUBSTATION NAME AND NUMBER

**12/SEWELLTON**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**44 Highway 55, Jamestown, KY 42629**

3. CIRCUIT NAME AND NUMBER

**HIGHWAY 55 / #1204**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS HWY 55**

5. TOTAL CIRCUIT LENGTH (MILES)

**109.76**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**900**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2023**

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

Animal - Small	5.22%
Broke Pole - Historical	1.49%
Customer Side	1.49%
Equipment Failure	0.75%
Lightning	2.24%
Line Down - Historical	2.24%
Major Storm - Historical	7.46%
Other	5.97%
Other Animal - Historical	1.49%
Power Supply	0.75%
Tornado/Hurricane	5.97%
Transformer Fuse Blown - Hi	1.49%
Trees	13.43%
Trees - Contractor	0.75%
Trees - Historical	8.21%
Trees - w/ Ice	23.13%
Planned	2.99%
Unknown	8.21%
Vehicle	0.75%
Wind - Historical	0.75%
Wind - No Trees	4.48%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**4.318008932**

10. REPORTING YEAR (SAIDI)

**7.868985169**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.029740589**

12. REPORTING YEAR (SAIFI)

**0.036399726**

13. CORRECTIVE ACTION PLAN

**CIRCUIT NEEDS ROW INSPECTED.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #1502:**

1. SUBSTATION NAME AND NUMBER  
**15/BRONSTON #1**
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)  
**2373 HWY 790, Somerset, KY 42501**
3. CIRCUIT NAME AND NUMBER  
**TWIN RIVERS / #1502**
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)  
**FEEDS TOWARD TWIN RIVERS**
5. TOTAL CIRCUIT LENGTH (MILES)  
**27.16**
6. CUSTOMER COUNT FOR THIS CIRCUIT  
**836**
- 7.. DATE OF LAST CIRCUIT TRIM (VM)  
**2024**
8. LIST OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS  
NUMBERS REPRESENTED BY EACH CAUSE

Animal - Large	1.67%
Animal - Small	26.67%
Choose Cause Code	1.67%
Customer Side	3.33%
Equipment Failure	1.67%
Fire	1.67%
Lightning	3.33%
Major Storm - Historical	5.00%
Other	20.00%
Transformer - Historical	1.67%
Trees	10.00%
Trees - Historical	5.00%
Trees - w/ Ice	6.67%
Planned	6.67%
Unknown	3.33%
Wind - Historical	1.67%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)  
**1.287500659**
10. REPORTING YEAR (SAIDI)  
**1.617777296**
11. CIRCUIT 5 YEAR AVERAGE (SAIFI)  
**0.013167045**
12. REPORTING YEAR (SAIFI)  
**0.010316051**
13. CORRECTIVE ACTION PLAN

**CIRCUIT WILL BE CONSIDERED FOR INSPECTION FOR ANIMAL GAURDS & FURTHER EXAMINATION ON OTHER, ETC.**



**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #1507:**

1. SUBSTATION NAME AND NUMBER

**15/BRONSTON #2**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**2373 HWY 790, Somerset, KY 42501**

3. CIRCUIT NAME AND NUMBER

**JACKSBORO / #1507**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS JACKSBORO RD AND TOWARD 90**

5. TOTAL CIRCUIT LENGTH (MILES)

**32.45**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**612**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2023**

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

Animal - Small	32.81%
Choose Cause Code	23.44%
Customer Side	1.56%
Lightning	4.69%
Load	1.56%
Major Storm - Historical	6.25%
Other	10.94%
Trees	7.81%
Trees - Contractor	1.56%
Trees - Historical	3.13%
Planned	1.56%
Unknown	3.13%
Wind - Historical	1.56%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**1.553647939**

10. REPORTING YEAR (SAIDI)

**1.097107452**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.017235913**

12. REPORTING YEAR (SAIFI)

**0.028697633**

13. CORRECTIVE ACTION PLAN

**CIRCUIT WILL BE CONSIDERED FOR INSPECTION FOR ANIMAL GAURDS & FURTHER EXAMINATION ON OTHER, ETC.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #1601:**

1. SUBSTATION NAME AND NUMBER  
**16/MT. VICTORY**
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)  
**2444 Old Whitney Rd., Somerset, KY 42501**
3. CIRCUIT NAME AND NUMBER  
**HWY 192 / #1601**
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)  
**FEEDS ALL MT. VICTORY AREA**
5. TOTAL CIRCUIT LENGTH (MILES)  
**75.56**
6. CUSTOMER COUNT FOR THIS CIRCUIT  
**723**
- 7.. DATE OF LAST CIRCUIT TRIM (VM)  
**2023**
8. LIST OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS  
NUMBERS REPRESENTED BY EACH CAUSE

Animal - Small	6.52%
Broke Pole - Historical	1.09%
Blink	22.83%
Customer Side	1.09%
Lightning	2.17%
Line Down - Historical	1.09%
Line Fuse - Historical	1.09%
Major Storm - Historical	21.74%
Other	4.35%
Trees	14.13%
Trees - Contractor	2.17%
Trees - Historical	7.61%
Trees - w/ Ice	2.17%
Planned	6.52%
Unknown	4.35%
Wind - Historical	1.09%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)  
**6.455036749**
10. REPORTING YEAR (SAIDI)  
**0.028656966**
11. CIRCUIT 5 YEAR AVERAGE (SAIFI)  
**0.038802202**
12. REPORTING YEAR (SAIFI)  
**0.050318811**
13. CORRECTIVE ACTION PLAN  
**CIRCUIT WILL BE CONSIDERED FOR ROW INSPECTION AND/OR CONSIDERED FOR FUTURE SECTIONALIZING ADDITIONS**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #1703:**

1. SUBSTATION NAME AND NUMBER

**17/WHITLEY CITY**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**15 Taylor Road Other, Whitley City, KY 42653**

3. CIRCUIT NAME AND NUMBER

**NORTH HIGHWAY 27 / #1703**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS NORTH ON HIGHWAY 27**

5. TOTAL CIRCUIT LENGTH (MILES)

**12.75**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**336**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2018**

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

Animal - Small	14.29%
Broke Pole - Historical	3.57%
Blink	7.14%
Equipment Failure	3.57%
Lightning	17.86%
Major Storm - Historical	3.57%
Other	14.29%
Other Animal - Historical	3.57%
Trees	3.57%
Trees - w/ Ice	10.71%
Planned	3.57%
Unknown	14.29%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**0.470940424**

10. REPORTING YEAR (SAIDI)

**0.522039027**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.004216213**

12. REPORTING YEAR (SAIFI)

**0.005773075**

13. CORRECTIVE ACTION PLAN

**NEED TO INVESTIGATE FURTHER "UNKNOWN" CAUSES.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #1902:**

1. SUBSTATION NAME AND NUMBER

**19/OAKHILL**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**230 North Nomans Lane, Somerset, KY 42501**

3. CIRCUIT NAME AND NUMBER

**GREEN MEADOWS / #1902**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS GREEN MEADOWS SUBDIVISION**

5. TOTAL CIRCUIT LENGTH (MILES)

**14.67**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**762**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2021**

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

Animal - Small	9.38%
Broke Pole - Historical	1.56%
Blinks	3.13%
Customer Side	1.56%
Installation - Switching Error	1.56%
Lightning	1.56%
Line Down - Historical	1.56%
Major Storm - Historical	3.13%
Other	15.63%
Trees	3.13%
Trees - Historical	7.81%
Planned	39.06%
Unknown	10.94%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**0.711129478**

10. REPORTING YEAR (SAIDI)

**1.446028321**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.007496792**

12. REPORTING YEAR (SAIFI)

**0.017095571**

13. CORRECTIVE ACTION PLAN

**LIKELY MOSTLY PLANNED DUE TO POLE INSPECTION/REPLACEMENT PROGRAM**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #1903:**

1. SUBSTATION NAME AND NUMBER

**19/OAKHILL**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**230 North Nomans Lane, Somerset, KY 42501**

3. CIRCUIT NAME AND NUMBER

**OAK VALLEY / #1903**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS TOWARD SOUTH OAKHILL**

5. TOTAL CIRCUIT LENGTH (MILES)

**1.71**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**15**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2023**

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

Blinks	20.00%
Other	20.00%
Transformer Fuse Blown - Hi	20.00%
Planned	40.00%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**0.042153374**

10. REPORTING YEAR (SAIDI)

**0.117642265**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.001717646**

12. REPORTING YEAR (SAIFI)

**0.007967682**

13. CORRECTIVE ACTION PLAN

**SEVERAL BLINKS DUE TO SECTIONLIZING ISSUE. ALSO PLANNED DUE TO POLE INSPECTION/REPLACEMENT PROGRAM.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #2002:**

1. SUBSTATION NAME AND NUMBER

**20/ASAHI**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**1272 HWY 461, Somerset, KY 42503**

3. CIRCUIT NAME AND NUMBER

**TOYOTETSU / #2002**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS TTAI**

5. TOTAL CIRCUIT LENGTH (MILES)

**0.2**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**1**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2018 (SPRAY)**

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

Planned

100.00%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**0.000348538**

10. REPORTING YEAR (SAIDI)

**0.000829338**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.000005694**

12. REPORTING YEAR (SAIFI)

**0.000013978**

13. CORRECTIVE ACTION PLAN

**ANNUAL PLANNED OUTAGE**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #2102:**

1. SUBSTATION NAME AND NUMBER

**21/WEST SOMERSET**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**160 Patterson Branch Road, Somerset, KY 42501**

3. CIRCUIT NAME AND NUMBER

**WOODRIDGE / #2102**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS EAST ON HWY 80**

5. TOTAL CIRCUIT LENGTH (MILES)

**26.46**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**896**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2024**

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

Animal - Small	22.22%
Broke Pole - Historical	3.70%
Blink	1.85%
Customer Side	5.56%
Equipment Failure	3.70%
Lightning	7.41%
Major Storm - Historical	11.11%
Other	16.67%
Trees	9.26%
Trees - Historical	7.41%
Trees - w/ Ice	1.85%
Planned	1.85%
Unknown	3.70%
Vehicle	1.85%
Wind - Historical	1.85%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**1.202079405**

10. REPORTING YEAR (SAIDI)

**1.542038329**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.019102559**

12. REPORTING YEAR (SAIFI)

**0.016536435**

13. CORRECTIVE ACTION PLAN

**FAULT LOCATION ADDED TO THIS CIRCUIT.**

**NEED TO INVESTIGATE IND OUTAGES AND POSSIBLY INSPECT IND SERVICE FRAMING.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #2103:**

1. SUBSTATION NAME AND NUMBER

**21/WEST SOMERSET**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**160 Patterson Branch Road, Somerset, KY 42501**

3. CIRCUIT NAME AND NUMBER

**OAK HILL SCHOOL / #2103**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS MOST PATTERSON BRANCH AREA**

5. TOTAL CIRCUIT LENGTH (MILES)

**14.63**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**605**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2024**

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

Animal - Small	12.90%
Blink	3.23%
Customer Side	3.23%
Lightning	4.84%
Line Down - Historical	1.61%
Major Storm - Historical	6.45%
Other	6.45%
Tornado/Hurricane	9.68%
Trees	4.84%
Trees - Historical	17.74%
Trees - w/ Ice	14.52%
Planned	4.84%
Unknown	9.68%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**0.777338157**

10. REPORTING YEAR (SAIDI)

**2.178414571**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.007162301**

12. REPORTING YEAR (SAIFI)

**0.009868743**

13. CORRECTIVE ACTION PLAN

**CIRCUIT ROW NEEDS INSPECTED.**



**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #2202:**

1. SUBSTATION NAME AND NUMBER

**22/SALEM**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**1313 S. Highway 76, Russell Springs, Ky 42642**

3. CIRCUIT NAME AND NUMBER

**TO ONO / #2202**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS SOUTH ON HWY 76**

5. TOTAL CIRCUIT LENGTH (MILES)

**51.7**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**634**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2010**

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

Animal - Small	4.44%
Blink	4.44%
Customer Side	4.44%
Equipment Failure	2.22%
Lightning	11.11%
Major Storm - Historical	4.44%
Other	6.67%
Power Supply	2.22%
Trees	24.44%
Trees - Historical	6.67%
Trees - w/ Ice	8.89%
Undefined - Historical	2.22%
Planned	6.67%
Unknown	8.89%
Wind - No Trees	2.22%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**1.096746798**

10. REPORTING YEAR (SAIDI)

**2.980148171**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.013425325**

12. REPORTING YEAR (SAIFI)

**0.033128783**

13. CORRECTIVE ACTION PLAN

**CIRCUIT WILL NEED TO BE INSPECTED FOR ROW**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #2203:**

1. SUBSTATION NAME AND NUMBER

**22/SALEM**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**1313 S. Highway 76, Russell Springs, Ky 42642**

3. CIRCUIT NAME AND NUMBER

**ALLIGATOR DOCK / #2203**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS SOUTH TOWARD ELI/ALLIGATOR DOCK**

5. TOTAL CIRCUIT LENGTH (MILES)

**42.01**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**852**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2020 (SPRAY)**

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

Animal - Small	9.26%
Broke Pole - Historical	1.85%
Blink	3.70%
Customer Side	1.85%
Equipment Failure	1.85%
Lightning	11.11%
Line Down - Historical	1.85%
Line Fuse - Historical	1.85%
Major Storm - Historical	11.11%
Other	1.85%
Power Supply	1.85%
Trees	18.52%
Trees - Historical	11.11%
Trees - w/ Ice	3.70%
Planned	5.56%
Unknown	11.11%
Wind - No Trees	1.85%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**3.193385819**

10. REPORTING YEAR (SAIDI)

**4.170073387**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.03107559**

12. REPORTING YEAR (SAIFI)

**0.051789933**

13. CORRECTIVE ACTION PLAN

**CIRCUIT WILL NEED TO BE INSPECTED FOR ROW.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #2204:**

1. SUBSTATION NAME AND NUMBER

**22/SALEM**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**1313 S. Highway 76, Russell Springs, Ky 42642**

3. CIRCUIT NAME AND NUMBER

**SUPERIOR BATTER / #2204**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS SEVERAL SUPERIOR BATTERY SERVICES**

5. TOTAL CIRCUIT LENGTH (MILES)

**3.58**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**42**

7.. DATE OF LAST CIRCUIT TRIM (VM)

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

Animal - Small	16.67%
Lightning	16.67%
Major Storm - Historical	16.67%
Other	16.67%
Power Supply	16.67%
Trees	16.67%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**0.093249388**

10. REPORTING YEAR (SAIDI)

**0.10608018**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.000729527**

12. REPORTING YEAR (SAIFI)

**0.001160206**

13. CORRECTIVE ACTION PLAN

**AREA WAS HIT WITH HIGH WINDS (HISTORICAL MAJOR STORM). RELATIVELY SHORT CIRCUIT, NEEDS TO BE INSPECTED.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #2205:**

1. SUBSTATION NAME AND NUMBER  
**22/SALEM**
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)  
**1313 S. Highway 76, Russell Springs, Ky 42642**
3. CIRCUIT NAME AND NUMBER  
**TO HIGHWAY 80 / #2205**
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)  
**FEEDS BACK TOWARD OLD HIGHWAY 80**
5. TOTAL CIRCUIT LENGTH (MILES)  
**25.19**
6. CUSTOMER COUNT FOR THIS CIRCUIT  
**436**
- 7.. DATE OF LAST CIRCUIT TRIM (VM)  
**2020**
8. LIST OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS  
NUMBERS REPRESENTED BY EACH CAUSE

Animal - Small	18.75%
Broke Pole - Historical	9.38%
Blink	12.50%
Equipment Failure	3.13%
Line Down - Historical	3.13%
Major Storm - Historical	6.25%
Power Supply	3.13%
Trees	12.50%
Trees - Historical	12.50%
Trees - w/ Ice	6.25%
Planned	6.25%
Unknown	6.25%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)  
**0.426139238**
10. REPORTING YEAR (SAIDI)  
**1.444053453**
11. CIRCUIT 5 YEAR AVERAGE (SAIFI)  
**0.007781636**
12. REPORTING YEAR (SAIFI)  
**0.0137128**
13. CORRECTIVE ACTION PLAN  
**CIRCUIT NEEDS TO BE INSPECTED, PARTICULARLY FOR POSSIBLE FRAMING STYLES ON INDIVIDUAL SERVICES. ALSO, REVIEW ROW.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #2304:**

1. SUBSTATION NAME AND NUMBER  
**23/CABIN HOLLOW**
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)  
**50 Commerce Lane, Somerset, KY 42501**
3. CIRCUIT NAME AND NUMBER  
**HARTCO / #2304**
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)  
**FEEDS OLD HARTCO; ARMSTRONG**
5. TOTAL CIRCUIT LENGTH (MILES)  
**0.82**
6. CUSTOMER COUNT FOR THIS CIRCUIT  
**4**
- 7.. DATE OF LAST CIRCUIT TRIM (VM)  
**2013 - 2020 (SPRAY)**
8. LIST OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS  
NUMBERS REPRESENTED BY EACH CAUSE

Animal - Small	33.33%
Other	33.33%
Unknown	33.33%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)  
**0.002489824**
10. REPORTING YEAR (SAIDI)  
**0.003686521**
11. CIRCUIT 5 YEAR AVERAGE (SAIFI)  
**3.44785E-05**
12. REPORTING YEAR (SAIFI)  
**0.000027957**

13. CORRECTIVE ACTION PLAN

**I'M AWARE THEY DID SOME UPGRADES AT ARMSTRONG, THIS UNKNOWN MAY HAVE BEEN PLANNED. ADDRESSED THAT CONCERN. ALSO ADDRESSED CONCERN OF "OTHER".**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #2402:**

1. SUBSTATION NAME AND NUMBER

**24/SOUTH FLOYD**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**355 West Todd Road, Somerset, KY 42501**

3. CIRCUIT NAME AND NUMBER

**TO BULL RD. / #2402**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS OLD BULL RD.**

5. TOTAL CIRCUIT LENGTH (MILES)

**28.89**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**337**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2015**

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

Animal - Small	4.00%
Customer Side	4.00%
Lightning	4.00%
Major Storm - Historical	28.00%
Other	4.00%
Trees	16.00%
Trees - Historical	8.00%
Trees - w/ Ice	4.00%
Unknown	4.00%
Vehicle	16.00%
Wind - Historical	8.00%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**0.728380137**

10. REPORTING YEAR (SAIDI)

**1.514357903**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.008020838**

12. REPORTING YEAR (SAIFI)

**0.013880541**

13. CORRECTIVE ACTION PLAN

**MOST OF CAUSES WERE DUE TO LARGE WIND STORM, HOWEVER, ROW NEEDS TO BE VISUALLY INSPECTED.  
POSSIBLY EVEN LOCATION OF VEHICLE INCIDENTS.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #2403:**

1. SUBSTATION NAME AND NUMBER

**24/SOUTH FLOYD**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**355 West Todd Road, Somerset, KY 42501**

3. CIRCUIT NAME AND NUMBER

**TO CIRCLEVILLE / #2403**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS EAST ON HWY 635**

5. TOTAL CIRCUIT LENGTH (MILES)

**29.68**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**366**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2024**

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

Animal - Small	25.00%
Blink	2.78%
Equipment Failure	2.78%
Lightning	5.56%
Major Storm - Historical	11.11%
Other	8.33%
Transformer - Historical	2.78%
Transformer Fuse Blown - Hi	2.78%
Trees	5.56%
Trees - Historical	5.56%
Trees - w/ Ice	2.78%
Planned	13.89%
Unknown	5.56%
Wind - Historical	5.56%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**0.499148118**

10. REPORTING YEAR (SAIDI)

**0.762970827**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.00339002**

12. REPORTING YEAR (SAIFI)

**0.003354813**

13. CORRECTIVE ACTION PLAN

**CIRCUIT SPLITS ODDLY AT BEGINNING OF FEEDER. ON LIST TO LOOK AT POSSIBLE FEEDER BAY ADDITION.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #2404:**

1. SUBSTATION NAME AND NUMBER

**24/SOUTH FLOYD**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**355 West Todd Road, Somerset, KY 42501**

3. CIRCUIT NAME AND NUMBER

**MT ZION / #2404**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS TOWARD MT ZION**

5. TOTAL CIRCUIT LENGTH (MILES)

**46.54**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**713**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2015**

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

Animal - Small	15.09%
Broke Pole - Historical	1.89%
Choose Cause Code	3.77%
Equipment Failure	3.77%
Lightning	3.77%
Line Down - Historical	3.77%
Major Storm - Historical	18.87%
Other	9.43%
Other Animal - Historical	1.89%
Trees	5.66%
Trees - Historical	13.21%
Planned	7.55%
Unknown	1.89%
Wind - Historical	9.43%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**0.961306358**

10. REPORTING YEAR (SAIDI)

**2.619495659**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.008575141**

12. REPORTING YEAR (SAIFI)

**0.017053635**

13. CORRECTIVE ACTION PLAN

**CIRCUIT HIT WITH LARGE WIND STORM. ALSO, A PART OF LARGER CONDUCTOR REPLACEMENT, LOOKING AT POSSIBLE RELOCATIONS.**



**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #2503:**

- 1. SUBSTATION NAME AND NUMBER  
**25/SOUTH OAK HILL**
- 2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)  
**78 Ferry Hill Drive, Somerset, KY 42501**
- 3. CIRCUIT NAME AND NUMBER  
**TO PRATHER RD. / #2503**
- 4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)  
**FEEDS PRATHER RD.**
- 5. TOTAL CIRCUIT LENGTH (MILES)  
**25.26**
- 6. CUSTOMER COUNT FOR THIS CIRCUIT  
**853**
- 7.. DATE OF LAST CIRCUIT TRIM (VM)  
**2023**
- 8. LIST OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS  
NUMBERS REPRESENTED BY EACH CAUSE

Animal - Small	29.73%
Blink	8.11%
Customer Side	2.70%
Lightning	5.41%
Line Down - Historical	8.11%
Major Storm - Historical	8.11%
Other	16.22%
Other Animal - Historical	2.70%
Trees - Historical	5.41%
Planned	5.41%
Unknown	8.11%

- 9. CIRCUIT 5 YEAR AVERAGE (SAIDI)  
**4.623914761**
- 10. REPORTING YEAR (SAIDI)  
**1.777746579**
- 11. CIRCUIT 5 YEAR AVERAGE (SAIFI)  
**0.018772889**
- 12. REPORTING YEAR (SAIFI)  
**0.024692825**
- 13. CORRECTIVE ACTION PLAN

**CIRCUIT NEEDS TO BE LOOKED AT IN REGARDS TO INDIVIDUAL SERVICES & THEIR FRAMING.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #2504:**

1. SUBSTATION NAME AND NUMBER  
**25/SOUTH OAK HILL**
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)  
**78 Ferry Hill Drive, Somerset, KY 42501**
3. CIRCUIT NAME AND NUMBER  
**TO HERALD PLANTATION / #2504**
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)  
**FEEDS FERRY RD.**
5. TOTAL CIRCUIT LENGTH (MILES)  
**7.91**
6. CUSTOMER COUNT FOR THIS CIRCUIT  
**263**
- 7.. DATE OF LAST CIRCUIT TRIM (VM)  
**2023**
8. LIST OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS  
NUMBERS REPRESENTED BY EACH CAUSE

Animal - Large	20.00%
Animal - Small	20.00%
Blink	20.00%
Other	20.00%
Unknown	20.00%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)  
**0.306452062**
10. REPORTING YEAR (SAIDI)  
**0.640072303**
11. CIRCUIT 5 YEAR AVERAGE (SAIFI)  
**0.003906624**
12. REPORTING YEAR (SAIFI)  
**0.009861753**
13. CORRECTIVE ACTION PLAN  
**NEED TO FURTHER INVESTIGATE THE CAUSES FOR THIS CIRCUIT.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #2505:**

- 1. SUBSTATION NAME AND NUMBER  
**25/SOUTH OAK HILL**
- 2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)  
**78 Ferry Hill Drive, Somerset, KY 42501**
- 3. CIRCUIT NAME AND NUMBER  
**LAKWOOD HAVEN / #2505**
- 4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)  
**FEEDS FERRY RD.**
- 5. TOTAL CIRCUIT LENGTH (MILES)  
**7.34**
- 6. CUSTOMER COUNT FOR THIS CIRCUIT  
**368**
- 7.. DATE OF LAST CIRCUIT TRIM (VM)  
**2023**
- 8. LIST OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS  
NUMBERS REPRESENTED BY EACH CAUSE

Animal - Small	33.33%
Broke Pole - Historical	3.03%
Blink	3.03%
Lightning	6.06%
Major Storm - Historical	12.12%
Other	15.15%
Trees	6.06%
Trees - Contractor	6.06%
Trees - Historical	3.03%
Trees - w/ Ice	3.03%
Unknown	6.06%
Wind - Historical	3.03%

- 9. CIRCUIT 5 YEAR AVERAGE (SAIDI)  
**0.783513476**
- 10. REPORTING YEAR (SAIDI)  
**0.900051196**
- 11. CIRCUIT 5 YEAR AVERAGE (SAIFI)  
**0.008891885**
- 12. REPORTING YEAR (SAIFI)  
**0.013146675**
- 13. CORRECTIVE ACTION PLAN

**SAME CASE AS OTHER SOUTH OAKHILL CIRCUIT, TO REVIEW POSSIBLE INSPECTION OF IND SERVICE FRAMING.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #2604:**

1. SUBSTATION NAME AND NUMBER

**26/SNOW**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**2694 KY HWY 90 W, Albany, KY 42602**

3. CIRCUIT NAME AND NUMBER

**HWY 1590 / #2604**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS HWY 1590**

5. TOTAL CIRCUIT LENGTH (MILES)

**51.69**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**579**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2014**

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

Animal - Small	25.40%
Blink	19.05%
Customer Side	1.59%
Equipment Failure	3.17%
Lightning	4.76%
Line Down - Historical	1.59%
Other	11.11%
Other Animal - Historical	1.59%
Transformer - Historical	1.59%
Transformer Fuse Blown - Hi	1.59%
Trees	1.59%
Trees - Historical	4.76%
Trees - w/ Ice	12.70%
Unknown	4.76%
Wind - Historical	1.59%
Wind - No Trees	3.17%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**0.877984792**

10. REPORTING YEAR (SAIDI)

**1.628329582**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.008546537**

12. REPORTING YEAR (SAIFI)

**0.010274116**

13. CORRECTIVE ACTION PLAN

**CIRCUIT NEEDS TO BE INSPECTED FOR FRAMING ON INDIVIDUALS (SMALL ANIMALS).  
ALSO NEED TO RESEARCH TIME/DATES OF BLINKS.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #2702:**

1. SUBSTATION NAME AND NUMBER

**27/SLAT**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**101 Whispering Pines, Monticello, KY 42633**

3. CIRCUIT NAME AND NUMBER

**PARNELL / #2702**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS BACK NORTH EAST FROM SUBSTATION, VERY RURAL**

5. TOTAL CIRCUIT LENGTH (MILES)

**104.15**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**1573**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2023**

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

Animal - Small	7.89%
Blink	2.63%
Equipment Failure	9.21%
Installation - Switching Error	1.32%
Lightning	3.95%
Major Storm - Historical	9.21%
Other	10.53%
Power Supply	1.32%
Transformer Fuse Blown - Historica	1.32%
Trees	5.26%
Trees - Historical	3.95%
Trees - w/ Ice	18.42%
Planned	6.58%
Unknown	13.16%
Wind - Historical	2.63%
Wind - No Trees	2.63%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**5.521312695**

10. REPORTING YEAR (SAIDI)

**8.946357231**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.055342542**

12. REPORTING YEAR (SAIFI)

**0.041767428**

13. CORRECTIVE ACTION PLAN

**CIRCUIT IS PART OF SECTIONALIZING PILOT. THREE-WAY TIE BETWEEN MONTICELLO & HOMESTEAD.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #3002:**

1. SUBSTATION NAME AND NUMBER  
**30/JAMESTOWN**
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)  
**764 S. Main Street, Jamestown, KY 42629**
3. CIRCUIT NAME AND NUMBER  
**MOORE SCHOOL ROAD / #3002**
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)  
**FEEDS WEST TOWARD HWY 127**
5. TOTAL CIRCUIT LENGTH (MILES)  
**25.82**
6. CUSTOMER COUNT FOR THIS CIRCUIT  
**403**
- 7.. DATE OF LAST CIRCUIT TRIM (VM)  
**2009**
8. LIST OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS  
NUMBERS REPRESENTED BY EACH CAUSE

Animal - Small	7.59%
Blinks	10.13%
Customer Side	7.59%
Equipment Failure	1.27%
Lightning	2.53%
Major Storm - Historical	6.33%
Other	6.33%
Power Supply	13.92%
Trees	21.52%
Trees - Historical	3.80%
Trees - w/ Ice	12.66%
Unknown	2.53%
Wind - No Trees	3.80%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)  
**0.821560875**
10. REPORTING YEAR (SAIDI)  
**2.652260678**
11. CIRCUIT 5 YEAR AVERAGE (SAIFI)  
**0.007757437**
12. REPORTING YEAR (SAIFI)  
**0.014332508**
13. CORRECTIVE ACTION PLAN

**JAMESTOWN SUBSTATION EXPERIENCED LARGE MISOPERATION BY HIGH SIDE BREAKER, G&T.  
LIKELY CAUSE OF TRIGGER OF REPORT. ALSO, JAMESTOWN EXPERIENCED LARGE STORM EVENT, POSSIBLE TORNADO.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #3003:**

1. SUBSTATION NAME AND NUMBER

**30/JAMESTOWN**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**764 S. Main Street, Jamestown, KY 42629**

3. CIRCUIT NAME AND NUMBER

**PLEASANT HILL / #3003**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS TOWARDS PLEASANT HILL RD**

5. TOTAL CIRCUIT LENGTH (MILES)

**56.9**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**904**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2017**

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

Animal - Small	11.27%
Broke Pole - Historical	2.82%
Choose Cause Code	4.23%
Customer Side	2.82%
Equipment Failure	4.23%
Lightning	4.23%
Line Down - Historical	7.04%
Major Storm - Historical	8.45%
Other	4.23%
Transformer Fuse Blown - Hi	1.41%
Trees	12.68%
Trees - Historical	15.49%
Trees - w/ Ice	15.49%
Unknown	4.23%
Wind - No Trees	1.41%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**2.299710743**

10. REPORTING YEAR (SAIDI)

**3.505339139**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.020887393**

12. REPORTING YEAR (SAIFI)

**0.020720632**

13. CORRECTIVE ACTION PLAN

**JAMESTOWN SUBSTATION EXPERIENCED LARGE MISOPERATION BY HIGH SIDE BREAKER, G&T.**

**LIKELY CAUSE OF TRIGGER OF REPORT. ALSO, JAMESTOWN EXPERIENCED LARGE STORM EVENT, POSSIBLE TORNADO.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #3005:**

1. SUBSTATION NAME AND NUMBER

**30/JAMESTOWN**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**764 S. Main Street, Jamestown, KY 42629**

3. CIRCUIT NAME AND NUMBER

**JAMESTOWN DOCK / #3005**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS JAMESTOWN DOCK**

5. TOTAL CIRCUIT LENGTH (MILES)

**20.52**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**590**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2017**

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

Broke Pole - Historical	1.90%
Choose Cause Code	4.76%
Customer Side	2.86%
Equipment Failure	1.90%
Lightning	1.90%
Line Down - Historical	4.76%
Line Fuse - Historical	0.95%
Major Storm - Historical	3.81%
Other	8.57%
Power Supply	5.71%
Tornado/Hurricane	2.86%
Transformer Fuse Blown - Hi	1.90%
Trees	13.33%
Trees - Historical	7.62%
Trees - w/ Ice	10.48%
Planned	1.90%
Unknown	4.76%
Wind - No Trees	20.00%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**4.85731449**

10. REPORTING YEAR (SAIDI)

**14.28157951**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.031385672**

12. REPORTING YEAR (SAIFI)

**0.026954994**

13. CORRECTIVE ACTION PLAN

**JAMESTOWN SUBSTATION EXPERIENCED LARGE MISOPERATION BY HIGH SIDE BREAKER, G&T.**

**LIKELY CAUSE OF TRIGGER OF REPORT. ALSO, JAMESTOWN EXPERIENCED LARGE STORM EVENT, POSSIBLE TORNADO.**



**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #3303:**

1. SUBSTATION NAME AND NUMBER  
**33/ZOLLICOFFER**
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)  
**2675 HWY 235, Nancy, KY 42544**
3. CIRCUIT NAME AND NUMBER  
**NORTH TO NANCY / #3303**
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)  
**FEEDS NORTH ON 235 BACK TO NANCY**
5. TOTAL CIRCUIT LENGTH (MILES)  
**35.79**
6. CUSTOMER COUNT FOR THIS CIRCUIT  
**573**
- 7.. DATE OF LAST CIRCUIT TRIM (VM)  
**2020**
8. LIST OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS  
NUMBERS REPRESENTED BY EACH CAUSE

Animal - Small	8.11%
Blink	2.70%
Customer Side	8.11%
Equipment Failure	2.70%
Lightning	5.41%
Major Storm - Historical	10.81%
Other	8.11%
Tornado/Hurricane	16.22%
Trees	2.70%
Trees - Historical	2.70%
Trees - w/ Ice	21.62%
Planned	8.11%
Wind - Historical	2.70%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)  
**0.65477384**
10. REPORTING YEAR (SAIDI)  
**1.268349153**
11. CIRCUIT 5 YEAR AVERAGE (SAIFI)  
**0.008340099**
12. REPORTING YEAR (SAIFI)  
**0.018940718**
13. CORRECTIVE ACTION PLAN  
**CIRCUIT NEEDS ROW INSPECTED.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #3304:**

1. SUBSTATION NAME AND NUMBER  
**33/ZOLLICOFFER**
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)  
**2675 HWY 235, Nancy, KY 42544**
3. CIRCUIT NAME AND NUMBER  
**JOHN ANDY MEECE / #3304**
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)  
**FEEDS SOUTH ON HWY 235**
5. TOTAL CIRCUIT LENGTH (MILES)  
**47.02**
6. CUSTOMER COUNT FOR THIS CIRCUIT  
**638**
- 7.. DATE OF LAST CIRCUIT TRIM (VM)  
**2019**
8. LIST OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS  
NUMBERS REPRESENTED BY EACH CAUSE

Animal - Small	11.36%
Blink	2.27%
Customer Side	2.27%
Equipment Failure	2.27%
Fire	2.27%
Lightning	4.55%
Line Down - Historical	13.64%
Line Fuse - Historical	2.27%
Major Storm - Historical	11.36%
Other	4.55%
Power Supply	2.27%
Tornado/Hurricane	2.27%
Trees	11.36%
Trees - Historical	11.36%
Trees - w/ Ice	4.55%
Planned	6.82%
Unknown	4.55%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)  
**2.06224095**
10. REPORTING YEAR (SAIDI)  
**1.908690785**
11. CIRCUIT 5 YEAR AVERAGE (SAIFI)  
**0.013081336**
12. REPORTING YEAR (SAIFI)  
**0.01666224**
13. CORRECTIVE ACTION PLAN  
**CIRCUIT NEEDS ROW INSPECTED.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #3403:**

1. SUBSTATION NAME AND NUMBER  
**34/GAP OF RIDGE**
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)  
**71 Power Station Lane, Monticello, KY 42633**
3. CIRCUIT NAME AND NUMBER  
**STUBENVILLE / #3403**
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)  
**FEEDS WEST ON HWY 90**
5. TOTAL CIRCUIT LENGTH (MILES)  
**19.98**
6. CUSTOMER COUNT FOR THIS CIRCUIT  
**413**
- 7.. DATE OF LAST CIRCUIT TRIM (VM)  
**2020**
8. LIST OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS  
NUMBERS REPRESENTED BY EACH CAUSE

Animal - Small	9.09%
Blinks	31.82%
Equipment Failure	9.09%
Lightning	9.09%
Major Storm - Historical	9.09%
Trees - Historical	4.55%
Trees - w/ Ice	13.64%
Unknown	4.55%
Wind - Historical	9.09%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)  
**0.58679893**
10. REPORTING YEAR (SAIDI)  
**1.93040747**
11. CIRCUIT 5 YEAR AVERAGE (SAIFI)  
**0.007238513**
12. REPORTING YEAR (SAIFI)  
**0.014621395**
13. CORRECTIVE ACTION PLAN

**CIRCUIT EXPERIENCED SEVERAL BLINKS, ISSUE OF NO-CAUSE ON BLINK ADDRESSING. EXAMINE FAULT HISTORY.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #3503:**

1. SUBSTATION NAME AND NUMBER  
**35/UPCHURCH**
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)  
**594 Wray Ridge Road, Albany, KY 42602**
3. CIRCUIT NAME AND NUMBER  
**MT. VIEW PARK / #3503**
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)  
**FEEDS OUT OF SUBSTATION, TOWARD ALBANY**
5. TOTAL CIRCUIT LENGTH (MILES)  
**26.81**
6. CUSTOMER COUNT FOR THIS CIRCUIT  
**331**
- 7.. DATE OF LAST CIRCUIT TRIM (VM)  
**2015**
8. LIST OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS  
NUMBERS REPRESENTED BY EACH CAUSE

Animal - Small	25.00%
Blink	7.14%
Customer Side	3.57%
Equipment Failure	7.14%
Line Fuse - Historical	3.57%
Major Storm - Historical	14.29%
Other	3.57%
Other Animal - Historical	3.57%
Trees	10.71%
Trees - Historical	3.57%
Trees - w/ Ice	10.71%
Planned	3.57%
Unknown	3.57%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)  
**0.545080009**
10. REPORTING YEAR (SAIDI)  
**1.009641361**
11. CIRCUIT 5 YEAR AVERAGE (SAIFI)  
**0.006734099**
12. REPORTING YEAR (SAIFI)  
**0.011737188**
13. CORRECTIVE ACTION PLAN  
**AREA HIT BY WIND STORM. NEEDS TO HAVE ROW INSPECTED.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #3504:**

1. SUBSTATION NAME AND NUMBER  
**35/UPCHURCH**
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)  
**594 Wray Ridge Road, Albany, KY 42602**
3. CIRCUIT NAME AND NUMBER  
**GRIDER HILL DOCK / #3504**
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)  
**FEEDS GRIDER HILL DOCK**
5. TOTAL CIRCUIT LENGTH (MILES)  
**86.25**
6. CUSTOMER COUNT FOR THIS CIRCUIT  
**1021**
- 7.. DATE OF LAST CIRCUIT TRIM (VM)  
**2023**
8. LIST OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS  
NUMBERS REPRESENTED BY EACH CAUSE

Animal - Large	1.14%
Animal - Small	10.23%
Broke Pole - Historical	2.27%
Blink	4.55%
Customer Side	1.14%
Lightning	6.82%
Line Down - Historical	1.14%
Line Fuse - Historical	1.14%
Major Storm - Historical	2.27%
Other	10.23%
Power Supply	1.14%
Transformer - Historical	1.14%
Transformer Fuse Blown - Hi	1.14%
Trees	17.05%
Trees - Contractor	4.55%
Trees - Historical	15.91%
Trees - w/ Ice	13.64%
Planned	3.41%
Unknown	1.14%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)  
**7.031746039**
10. REPORTING YEAR (SAIDI)  
**8.372037816**
11. CIRCUIT 5 YEAR AVERAGE (SAIFI)  
**0.048589299**
12. REPORTING YEAR (SAIFI)  
**0.057292759**
13. CORRECTIVE ACTION PLAN

**CIRCUIT NEEDS TO BE INSPECTED FOR ROW. ALSO, SECTIONALIZING NEEDS TO BE REVIEWED.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #3601:**

1. SUBSTATION NAME AND NUMBER

**36/WEBBS CROSSROADS**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**2925 N. Highway 127, Russell Springs, KY 42642**

3. CIRCUIT NAME AND NUMBER

**DECATUR / #3601**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS NORTH HWY 127**

5. TOTAL CIRCUIT LENGTH (MILES)

**28.06**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**330**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2014**

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

Animal - Small	12.12%
Broke Pole - Historical	3.03%
Customer Side	3.03%
Line Down - Historical	6.06%
Major Storm - Historical	3.03%
Other	15.15%
Power Supply	6.06%
Transformer - Historical	3.03%
Trees	12.12%
Trees - Historical	3.03%
Planned	6.06%
Unknown	27.27%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**0.384303493**

10. REPORTING YEAR (SAIDI)

**1.170647618**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.005414356**

12. REPORTING YEAR (SAIFI)

**0.008736493**

13. CORRECTIVE ACTION PLAN

**CIRCUIT ROW NEEDS INSPECTED. NEED TO FURTHER INVESTIGATE "UNKNOWN" CAUSES.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #3602:**

1. SUBSTATION NAME AND NUMBER  
**36/WEBBS CROSSROADS**
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)  
**2925 N. Highway 127, Russell Springs, KY 42642**
3. CIRCUIT NAME AND NUMBER  
**EAST HIGHWAY 76 / #3602**
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)  
**FEEDS N 127 THEN EAST ON 76**
5. TOTAL CIRCUIT LENGTH (MILES)  
**19.12**
6. CUSTOMER COUNT FOR THIS CIRCUIT  
**304**
- 7.. DATE OF LAST CIRCUIT TRIM (VM)  
**2014**
8. LIST OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS  
NUMBERS REPRESENTED BY EACH CAUSE

Animal - Small	6.67%
Equipment Failure	6.67%
Major Storm - Historical	20.00%
Other	20.00%
Power Supply	20.00%
Trees	13.33%
Unknown	13.33%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)  
**0.542218396**
10. REPORTING YEAR (SAIDI)  
**0.628373055**
11. CIRCUIT 5 YEAR AVERAGE (SAIFI)  
**0.00662407**
12. REPORTING YEAR (SAIFI)  
**0.007785963**
13. CORRECTIVE ACTION PLAN  
**NEED TO INVESTIGATE "POWER SUPPLY" CAUSES.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #3603:**

1. SUBSTATION NAME AND NUMBER

**36/WEBBS CROSSROADS**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**2925 N. Highway 127, Russell Springs, KY 42642**

3. CIRCUIT NAME AND NUMBER

**OWENSTOWN SCHOOL RD. / #3603**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS SOUTH ON 127**

5. TOTAL CIRCUIT LENGTH (MILES)

**27.56**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**654**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2014**

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

Animal - Small	12.07%
Broke Pole - Historical	1.72%
Blink	3.45%
Line Down - Historical	3.45%
Load	1.72%
Major Storm - Historical	12.07%
Other	8.62%
Power Supply	1.72%
Trees	27.59%
Trees - Historical	5.17%
Trees - w/ Ice	1.72%
Planned	1.72%
Unknown	15.52%
Vehicle	1.72%
Wind - Historical	1.72%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**2.669964539**

10. REPORTING YEAR (SAIDI)

**3.89130013**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.015033043**

12. REPORTING YEAR (SAIFI)

**0.043668489**

13. CORRECTIVE ACTION PLAN

**THIS CIRCUIT NEEDS ITS ROW INSPECTED.**



**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #3604:**

1. SUBSTATION NAME AND NUMBER

**36/WEBBS CROSSROADS**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**2925 N. Highway 127, Russell Springs, KY 42642**

3. CIRCUIT NAME AND NUMBER

**HUMBLE / #3604**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS SOUTH ON HIGHWAY 127**

5. TOTAL CIRCUIT LENGTH (MILES)

**13.55**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**317**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2015**

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

Animal - Small	3.85%
Equipment Failure	15.38%
Line Down - Historical	3.85%
Major Storm - Historical	30.77%
Other	3.85%
Power Supply	3.85%
Trees	7.69%
Trees - Historical	7.69%
Unknown	23.08%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**0.637298749**

10. REPORTING YEAR (SAIDI)

**0.674710717**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.007715366**

12. REPORTING YEAR (SAIFI)

**0.009365521**

13. CORRECTIVE ACTION PLAN

**AREA HIT BY MAJOR STORMS. NEED TO FURTHER INVESTIGATE "UNKNOWN" CAUSES.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #3704:**

1. SUBSTATION NAME AND NUMBER

**37/WOODSTOCK**

2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)

**12472 HWY. 39, Somerset, KY 42501**

3. CIRCUIT NAME AND NUMBER

**BANDY / #3704**

4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)

**FEEDS NORTH HWY 39**

5. TOTAL CIRCUIT LENGTH (MILES)

**12.31**

6. CUSTOMER COUNT FOR THIS CIRCUIT

**108**

7.. DATE OF LAST CIRCUIT TRIM (VM)

**2013**

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

Animal - Small	0.96%
Blink (FALSE)	90.38%
Other	1.92%
Power Supply	0.48%
Trees - Historical	0.48%
Planned	0.48%
Unknown	5.29%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)

**0.505380702**

10. REPORTING YEAR (SAIDI)

**0.48370418**

11. CIRCUIT 5 YEAR AVERAGE (SAIFI)

**0.003378794**

12. REPORTING YEAR (SAIFI)

**0.007711411**

13. CORRECTIVE ACTION PLAN

**SAIFI TRIGGERED THIS CIRCUIT. IT SHOULD NOT HAVE BEEN TRIGGERED, SOFTWARE ISSUE.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #3704:**

1. SUBSTATION NAME AND NUMBER  
**37/WOODSTOCK**
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)  
**12472 HWY. 39, Somerset, KY 42501**
3. CIRCUIT NAME AND NUMBER  
**BANDY / #3704**
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)  
**FEEDS NORTH HWY 39**
5. TOTAL CIRCUIT LENGTH (MILES)  
**92.47**
6. CUSTOMER COUNT FOR THIS CIRCUIT  
**908**
- 7.. DATE OF LAST CIRCUIT TRIM (VM)  
**2013**
8. LIST OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS  
NUMBERS REPRESENTED BY EACH CAUSE

Animal - Small	2.33%
Choose Cause Code	71.76%
Customer Side	0.33%
Equipment Failure	1.00%
Lightning	1.00%
Line Down - Historical	1.66%
Line Fuse - Historical	0.33%
Major Storm - Historical	2.33%
Other	5.65%
Trees	2.99%
Trees - Historical	1.33%
Trees - w/ Ice	1.66%
Planned	2.33%
Unknown	4.65%
Wind - Historical	0.66%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)  
**7.658002057**
10. REPORTING YEAR (SAIDI)  
**9.227859535**
11. CIRCUIT 5 YEAR AVERAGE (SAIFI)  
**0.046205883**
12. REPORTING YEAR (SAIFI)  
**0.06187767**
13. CORRECTIVE ACTION PLAN

**NUMBERS ARE SKEWED DUE TO SOFTWARE ISSUE.**

**CIRCUIT HAS RELATIVELY BEEN HIGH IN SAIDI, PLANS FOR ROW/SECTIONALIZING.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #3902:**

1. SUBSTATION NAME AND NUMBER  
**39/JABEZ**
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)  
**57 Red Oak Drive, Nancy, KY 42544**
3. CIRCUIT NAME AND NUMBER  
**4H CAMP / #3902**
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)  
**FEEDS TOWARDS THE 4H CAMP ON SOUTH HWY 196**
5. TOTAL CIRCUIT LENGTH (MILES)  
**26.92**
6. CUSTOMER COUNT FOR THIS CIRCUIT  
**276**
- 7.. DATE OF LAST CIRCUIT TRIM (VM)  
**2018**
8. LIST OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS  
NUMBERS REPRESENTED BY EACH CAUSE

Animal - Small	5.13%
Choose Cause Code	7.69%
Customer Side	2.56%
Lightning	2.56%
Major Storm - Historical	7.69%
Other	5.13%
Trees	17.95%
Trees - Historical	15.38%
Trees - w/ Ice	10.26%
Planned	20.51%
Wind - Historical	5.13%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)  
**1.883986354**
10. REPORTING YEAR (SAIDI)  
**2.188750193**
11. CIRCUIT 5 YEAR AVERAGE (SAIFI)  
**0.009260452**
12. REPORTING YEAR (SAIFI)  
**0.013992368**
13. CORRECTIVE ACTION PLAN  
**CIRCUIT NEEDS TO BE CONSIDERED FOR ROW INSPECTION.**

**SECTION 5: CIRCUIT REPORTING**

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

**(CIRCUIT NUMBERS SHOULD BE REPORTED EXCLUDING MED)**

**CIRCUIT #3904:**

1. SUBSTATION NAME AND NUMBER  
**39/JABEZ**
2. SUBSTATION LOCATION (COUNTY-ROAD-TOWN)  
**57 Red Oak Drive, Nancy, KY 42544**
3. CIRCUIT NAME AND NUMBER  
**COOKS CHAPEL / #3904**
4. CIRCUIT LOCATION (TOWN-ROAD-GENERAL AREA)  
**FEEDS EAST HWY 196**
5. TOTAL CIRCUIT LENGTH (MILES)  
**42**
6. CUSTOMER COUNT FOR THIS CIRCUIT  
**687**
- 7.. DATE OF LAST CIRCUIT TRIM (VM)  
**2019**
8. LIST OUTAGE CAUSES FOR CIRCUIT ALONG WITH PERCENTAGE OF TOTAL OUTAGE NUMBERS  
NUMBERS REPRESENTED BY EACH CAUSE

Animal - Small	14.29%
Customer Side	2.38%
Equipment Failure	4.76%
Lightning	2.38%
Major Storm - Historical	4.76%
Other	19.05%
Trees	16.67%
Trees - Contractor	2.38%
Trees - Historical	14.29%
Trees - w/ Ice	7.14%
Undefined - Historical	2.38%
Planned	2.38%
Unknown	7.14%

9. CIRCUIT 5 YEAR AVERAGE (SAIDI)  
**3.162427911**
10. REPORTING YEAR (SAIDI)  
**3.396729057**
11. CIRCUIT 5 YEAR AVERAGE (SAIFI)  
**0.022034501**
12. REPORTING YEAR (SAIFI)  
**0.019136415**
13. CORRECTIVE ACTION PLAN  
**CIRCUIT WILL BE CONSIDERED FOR ROW INSPECTION.**

# Vegetation Management Plan 2023-2024



As an electric distribution cooperative, South Kentucky Rural Electric Cooperative Corporation (“SKRECC” or “Cooperative”) is owned by the members it serves. An essential component of that relationship is the provision of safe, reliable, and economical electrical service to those members. A mission critical function to ensuring safe and reliable service is a robust and closely managed Right of Way (“ROW”) program. The program includes first-time cutting of ROW for construction of new distribution lines as well as periodically maintaining existing ROW throughout the service territory. SKRECC cuts and clears ROWs for the safety of the public and SKRECC employees, for access to enable our crews to find and repair damaged areas more quickly, and to minimize the opportunity for vegetation such as trees, brush, and vines from contacting our power lines thereby creating hazardous energized vegetation, power blinks and outages and other unwanted events. A robust ROW program is required by virtue of accepted and customary rules within the electric utility industry, such as the National Electric Safety Code, and is further mandated by SKRECC’s regulator, the Kentucky Public Service Commission.

This Vegetation Management Plan is intended to be a general guide of important policies and procedures necessary to address the many ROW issues that are encountered on an almost daily basis. Communication of this Plan to SKRECC’s members, management and employees is essential to promote an open relationship between all stakeholders on this very important subject.

The diversity of terrain, development, and land use within our service territory requires SKRECC to employ a variety of methods and practices to provide a ROW plan that meets the needs of the Cooperative and its members. These methods include, but are not necessarily limited to, hand cutting, mechanical cutting, trimming, bush hogging and both low-volume and high-volume herbicide spraying, or a combination of some or all of these methods.

SKRECC members should understand and accept vegetation management as a necessary task to keep the lights on, but sometimes there are cases where our responsibility to trim or cut trees, remove vegetation, or spray brush within a member’s property creates tension and conflict. This situation is not unique to SKRECC, and in fact is a very common issue for a majority of electrical utilities.

The primary goals of this Vegetation Management Plan are: (1) to communicate our needs to control vegetation growth, (2) communicate our policies and procedures on how best to accomplish that task, and, (3) to balance our need of promoting system reliability with the concerns of our members that vegetation management activities be reasonable and as non-intrusive as possible.

## **Access to Member Owned Property to Conduct Vegetation Management Activities**

In order to efficiently carry out any Vegetation Management Plan an electric utility such as SKRECC must have reasonable access to the location of the vegetation to be trimmed. The vast majority of this vegetation is located under or very near SKRECC’s power lines on property which is owned by our members who, by virtue of their receiving electric service, have granted SKRECC permission to enter upon their property to complete any needed vegetation management work. This permission is given by each member when he/she enters into the original application for electric service and is also part of SKRECC’s

# Vegetation Management Plan 2023-2024



corporate bylaws and its tariff on file with the Kentucky Public Service Commission. The extent of vegetation management work undertaken by SKRECC at a particular location will depend upon many factors such as the extent of vegetation growth, its proximity to SKRECC's power lines, the ability of equipment and personnel to access the location, the degree such vegetation poses a risk to SKRECC's power lines, and the continued reliability of its system. SKRECC and any contractors it has engaged to assist with this work shall exercise the absolute discretion on a case-by-case basis to determine the type and extent of vegetation management practices needed at a particular location in order to mitigate the risk of unnecessary service outages.

## **ROW Cutting and Maintenance**

Many power outages are caused by vegetation growing into the power lines. Providing quality power to our members requires that we maintain our powerline ROWs. Tree removal, trimming, and cutting brush and vines is a very expensive process for SKRECC. In order to reduce costs and decrease outages thereby improving the Cooperative's reliability measures, we have implemented significant procedures in our Right of Way program.

South Ky RECC has committed to a six-year rotation on the vegetation management of our individual ROW circuits. Under this commitment, our entire 7,000 miles of power lines will be cut and maintained on a rotational basis, every six years, resulting in cleaner right of ways giving fewer total outages and blinks and increased accessibility in the event of need. We are also introducing modern power line trimming techniques such as directional trimming, which have been developed resulting in healthier, safer trees. However, these new techniques may make the tree look much different than if traditional techniques were employed.

## **ROW Cutting - Overhead Primary Distribution Lines**

**Overhead primary distribution lines** are the uncoated wires that bring high voltage power from the substation to the transformers where it is reduced to normal voltages for use in homes, businesses, barns, etc. This voltage is very dangerous and deadly. For safety and line integrity, cutouts and breakers sectionalize the circuit to localize any line integrity issues that may arise. The sensitivity of these interrupters is such that voltages can escape through vegetation and become a safety hazard to people and animals if there is contact with the vegetation. Dead and dying trees and limbs, along with trees blown over by winds, touching the lines and causing outages are also primary distribution line events. Adequate ROW cutting and trimming is essential in order to supply safe and reliable power.

New primary distribution Line ROWs are cut according to the line type. A single-phase line (1 conductor on top, 1 underneath) is cut and maintained with a minimum distance of 15' on each side of the centerline, 30' total. Two or three phase lines (2 or 3 conductors on top, one underneath) are cut with a minimum distance of 22.5' on each side of the centerline with a minimum of 45' total. Double circuit lines (2 sets of 3 conductors on top, 1 underneath) are cut with the same specs as a three-phase line. Any trees, saplings,

etc., growing within these distances will need to be cleared to provide present and future line clearance and proper ground access to the lines and equipment.

As in cutting new ROW, periodic maintenance is equally important for the identical reasons. Trees fronting each side of the ROW shall be trimmed symmetrically, earth to sky, unless otherwise specified. Dead trees beyond the ROW that would strike the line in falling or could cause other trees to strike the line, shall be removed, leaning trees beyond the ROW which would strike the line in falling shall either be topped beyond the line striking level, or in appropriate cases, removed.

### **ROW Cutting - Overhead Service and Secondary Lines**

**Overhead service lines** are the coated conductors that run between the transformer pole and an outdoor light or the weather head on a structure or meter pole. These coated lines are energized at lower nominal service voltages and are less sensitive to contact from vegetation than the uncoated high voltage primary conductors. Due to this coating, limbs occasionally “bumping” these lines will not result in power quality issues, but if the limb lays on the line it may rub the protective cover leading to exposure of the conductor, and over time cause power quality issues. These service lines typically run through yards and spaces near the member being served.

**Secondary lines** are typically uncoated conductors that run for longer distances than service lines but, like service lines are energized at nominal service voltages. The service and secondary conductor ROW is trimmed generously during initial installation, but over time the open lines are affected by tree or brush growth that must be addressed by trimming and/or spraying.

New ROW for service lines or secondary lines are cut with a minimum of 5 ft. clearance on each side, which includes trimming or cutting down trees.

In maintaining service conductors, it is the policy of SKRECC to trim or cut the tree only if there is immediate danger to the service or secondary conductors and attachment points, or if there is significant contact with limbs and the service or secondary conductors. The disposition of any tree, cut or trimmed branches, and brush are the responsibility of the member.

If the tree is not an immediate danger to the line or attachment points, SKRECC will aid any tree cutter in the felling of the tree by disconnecting the service conductor to allow the tree to be cut without affecting the conductor, replacing that conductor when the tree is on the ground and it is safe for the conductor connection to be restored.

Any tree or vegetation that presents a hazard to any SKRECC service pole will be cut by SKRECC or its contractor representative and left for member clean up.

### **ROW Maintenance - Directional Trimming**

**Directional trimming** is an alternative that could be utilized on previously trimmed trees, leaving the tree healthier and will result in reduced line trimming costs. In directional trimming, only branches that grow towards the lines are trimmed. Branches that are growing out and away from the lines are left alone to



continue growth. Also, no stubs are left to foster regrowth as the trimming is at another branch or crotch. These cuts heal well and minimize sprouting and decay when properly made.

Trees that are pruned with this method do not have the familiar shape. These trees will have a “V” shape if the lines are directly overhead or an “L” shape if the lines are to one side. Though this may appear to create an unbalanced look or weak looking crown, the healthy tree will grow to correct any lack of balance compared to topping the tree. Trees cut with this method have many advantages over topping. It leaves the tree nearly as healthy as before it was trimmed and the tree will not need to be trimmed as often as there are less sprouts growing towards the lines. This method also saves the Co-op expense by reducing trimming times and reducing the number of “wounds” to the tree that heal much better. This method also works well on young trees, allowing the crown to grow while removing just those branches growing towards the lines.

Spreading crown trees benefit the most from this technique of pruning, Conifers and other strong central leader trees are more difficult to trim with this method. Directional tree trimming does not solve all of the line clearance problems, it does not work well on older trees that have had many trimmings or have central leaders like conifers and Lombardy poplars. In these situations, continued “flat topping” and tree growth regulator treatment may be used. However, tree removal and replacement, at a location that would eliminate any further issues, are preferable to the Co-op and may be very acceptable to the owner.

#### **ROW Maintenance - Flat Topping**

Topping is a traditional method of trimming that has been used to clear tree branches from the lines. It involves “flat topping” the tree at a certain level below the power lines, usually below the designated communication space reserved on the pole for telephone, cable, etc. This is a method that can be fairly quick; however, it leaves many stubs that can have a quick regrowth of the sprouts back into the lines. If this topping method is used, a growth regulator should be used to slow down that regrowth so that the tree would not require another trimming until the next circuit trimming cycle.

#### **ROW Maintenance - Tree Growth Regulators**

In order to maintain different species of trees on a circuit within a specified ROW maintenance cycle, a tree growth regulator or inhibitor may be used. Typically, these trees are yard trees that have been planted so that their growth intrudes on the ROW distances of the power lines. Tree Growth Regulator or TGR is not an herbicide. In fact, it’s use is actually beneficial for trees by decreasing the amount of woody growth. TGR also promotes an increased root density, improved drought and heat resistance, and higher tolerance to insects and diseases. The TGR is injected into the soil around the base of the tree where it is readily absorbed by the roots, and it has a low mobility in the soil to maintain the integrity of ground water.

#### **ROW Maintenance - Bush Hogging and Mowing**

Although heavy vegetation growth in our right of ways sometimes requires bush hogging or manual cutting of the growths, this is an expensive and time-consuming solution in keeping ROWs clear. However, herbicide usage in the Daniel Boone National Forrest is banned, so all right of way brush clearing and

maintenance must be completed by hand or mechanical means in those areas. Right of way mechanical or manual cutting and brush clearing has several undesirable maintenance results. Rapid regrowth often results in greater stem numbers, desirable vegetation being cut, and mechanical or hand maintenance is expensive versus herbicide use.

### **ROW Maintenance - Herbicides**

SKRECC may utilize herbicides in maintenance of its right of ways. Applying herbicides within correct time periods after cutting can decrease or even eliminate future mechanical or manual cutting. We do not use Glyphosate (Roundup) herbicide. The herbicide mixtures used are effective, versatile, and pose minimal risks to non-target species. The mixture targets undesirable species, leaving grasses and desirable plant growth while affecting woody brush and saplings. The mixture is approved for spray right up to the water's edge.

There are two methods that may be used to apply the herbicide mixture, high volume, and low volume. Time and volume of application of herbicides is important to minimize relocation of herbicides onto unintended areas.

High volume application utilizes a vehicle with a mixture tank and pump to blanket spray the complete ROW area. This method is not selective and larger volumes of mixture are used.

Low volume utilizes a smaller vehicle and tank or backpack sprayers. The smaller vehicle allows the applicator to be somewhat more selective, resulting in greater accuracy and lower spray volumes.

Backpack spraying utilizes a number of individuals with small volume backpack sprayers that travel the right of ways, spot spraying as they go. This is the most efficient method in select ability and reduced spray volumes. This method provides greatest operator control and least danger of spray being misdirected, over-sprayed, or of unwanted relocation of herbicide.

### **Power Restoration Events and Vegetation**

During unanticipated power outages SKRECC's sole focus is to restore service to its members as quickly as possible. Many of these outages are caused by vegetation either contacting or destroying the distribution lines that provide the power.

SKRECC's linemen are highly trained and experienced professionals that work very hard to restore power during these outages and it is very hard and dangerous work. Often times they find it necessary to trim or completely cut vegetation in order to complete power restoration safely and quickly.

Due to these circumstances any limbs, brush, whole or partial trees, and other vegetation trimmed or cut in SKRECC's ROW during restoration events will be left where they fell and not removed by the Cooperative.