



Ameren Missouri 20 CSR 4240-23.010 Electric Utility System Reliability Monitoring and Reporting Submission Requirements – Annual Reliability Report

Introduction

This report details Union Electric (dba Ameren Missouri) Company's annual reliability metrics and worst performing circuits for calendar year 2022 as required by Missouri Public Service Commission Rule 20 CSR 4240-23.020, Electric Utility System Reliability Monitoring and Reporting Submission Requirements (referred to in the remainder of this document as "the Rule"). This report is required by Sections (2), (7), and (8) of the Rule which state, "*The information required by section (1) shall be filed annually by the last business day of April of the calendar year following the calendar year for which the information was accumulated.... The information developed in accordance with section (6) shall be reported as part of the annual report required by section (2).... If on or after the time the annual report required by section (7) for calendar year 2011 is filled, a circuit has been on the worst performing circuit list for two (2) of the three (3) most recent consecutive calendar years the electrical corporation shall include detailed plans and schedules for improving the performance of that circuit in addition to the other information required by section (7).*" This report will provide the reliability measures requested by the Rule, the list of Worst Performing Circuits (WPCs), including Multi-Year Worst Performing Circuits (MWPCs), and the actions taken or planned to improve the performance of these circuits.

Definitions

For the purposes of this report, the following definitions shall apply:

1. System Average Interruption Frequency Index (SAIFI) – The average frequency of service interruptions in number of occurrences per customer (total number of customer interruptions divided by the total number of customers served).
2. Customer Average Interruption Frequency Index (CAIFI) – The average number of interruptions per customer interrupted (total number of customer interruptions divided by the total number of customers affected).
3. System Average Interruption Duration Index (SAIDI) – The average interruption in minutes per customer served (sum of all customer interruption durations divided by the total number of customers served).
4. Customer Average Interruption Duration Index (CAIDI) – The average interruption duration (sum of all customer interruption durations divided by the total number of customers interrupted).

5. Worst Performing Circuit (WPC) – A distribution circuit whose SAIFI value, adjusted to exclude major storm events per IEEE Standard 1366-2012, when compared to the SAIFI values for the other circuits in the Ameren Missouri system places it among the 5% of circuits with the highest SAIFI values in the Ameren Missouri system.
6. Multi-Year Worst Performing Circuit (MWPC) – A distribution circuit whose SAIFI value has ranked it as a Worst Performing Circuit for any two (2) of the three (3) most recent consecutive calendar years.

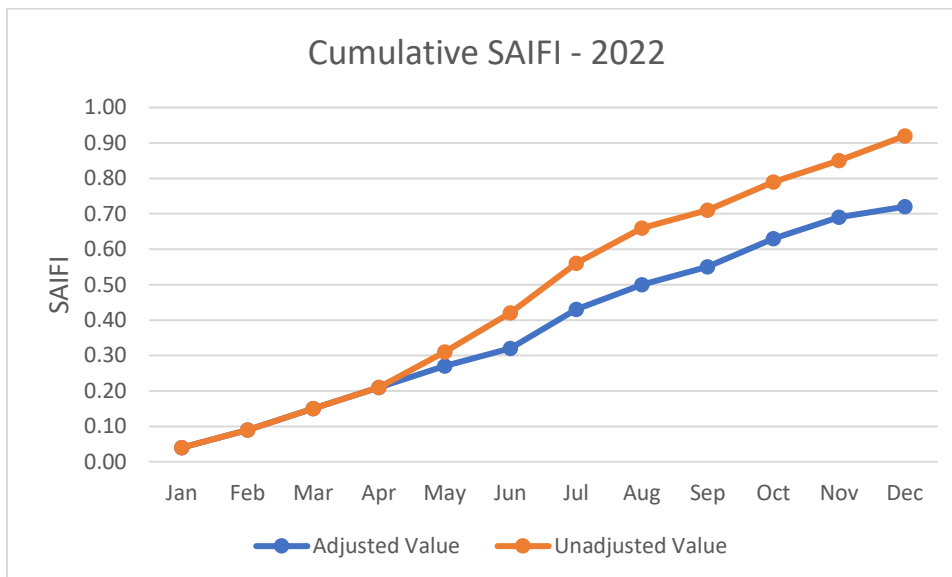


Reliability Metrics

20 CSR 4240-23.020, section 3 states “The information required by section (1) shall be filed both unadjusted and adjusted to exclude major storm events per IEEE Standard 1366-2012, Guide for Electric Power Distribution Reliability Indices.” The following tables and graphs show Ameren Missouri’s unadjusted and adjusted reliability metrics for calendar year 2022:

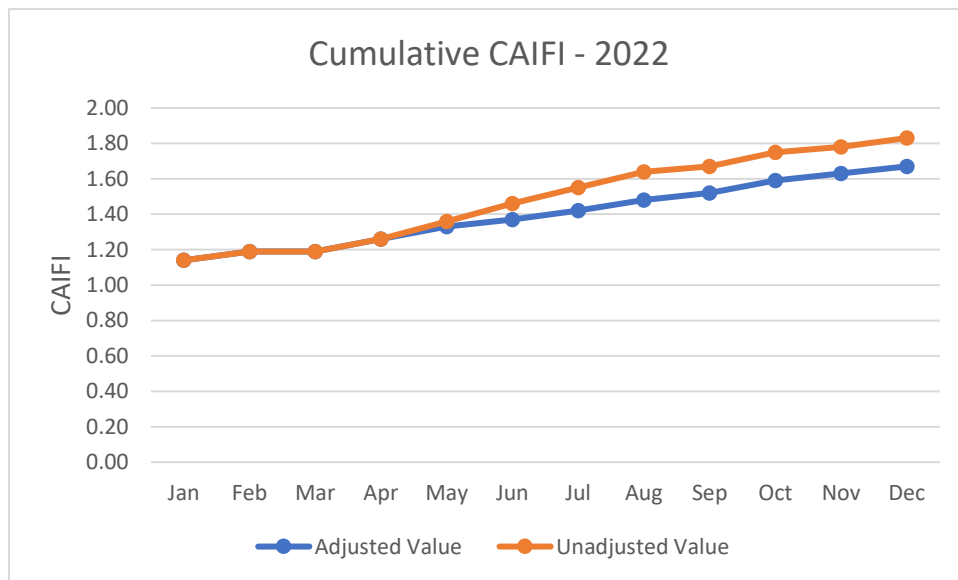
SAIFI:

Month	Adjusted Value	Unadjusted Value
Jan	0.04	0.04
Feb	0.09	0.09
Mar	0.15	0.15
Apr	0.21	0.21
May	0.27	0.31
Jun	0.32	0.42
Jul	0.43	0.56
Aug	0.50	0.66
Sep	0.55	0.71
Oct	0.63	0.79
Nov	0.69	0.85
Dec	0.72	0.92



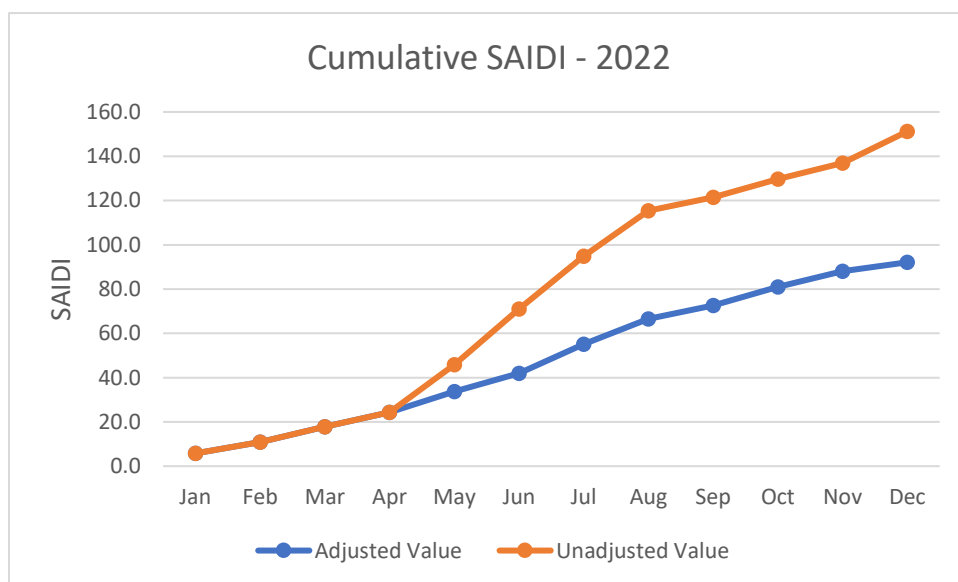
CAIFI:

Month	Adjusted Value	Unadjusted Value
Jan	1.14	1.14
Feb	1.19	1.19
Mar	1.19	1.19
Apr	1.26	1.26
May	1.33	1.36
Jun	1.37	1.46
Jul	1.42	1.55
Aug	1.48	1.64
Sep	1.52	1.67
Oct	1.59	1.75
Nov	1.63	1.78
Dec	1.67	1.83



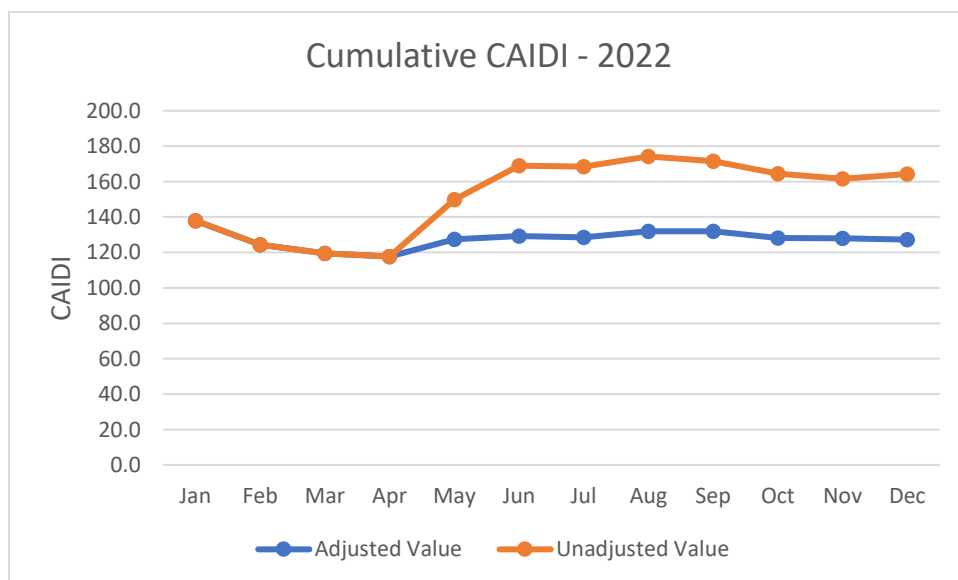
SAIDI:

Month	Adjusted Value	Unadjusted Value
Jan	5.8	5.8
Feb	10.9	10.9
Mar	17.9	17.9
Apr	24.4	24.4
May	33.8	45.8
Jun	41.9	71.0
Jul	55.1	94.8
Aug	66.6	115.4
Sep	72.6	121.4
Oct	81.0	129.7
Nov	88.1	136.9
Dec	92.1	151.2



CAIDI:

Month	Adjusted Value	Unadjusted Value
Jan	137.9	137.9
Feb	124.3	124.3
Mar	119.5	119.5
Apr	117.7	117.7
May	127.4	149.9
Jun	129.2	169.0
Jul	128.5	168.4
Aug	132.0	174.2
Sep	132.0	171.5
Oct	128.2	164.4
Nov	127.9	161.6
Dec	127.2	164.3





Ameren Missouri 2022 Worst Performing Circuits

Ameren Missouri has performed SAIFI calculations on all of its distribution circuits in accordance with section (6) of the Rule. The circuits have been ranked in order of descending SAIFI and the 5 percent of the circuits with the highest SAIFI values have been designated as Worst Performing Circuits (WPCs). Multi-Year Worst Performing Circuits (MWPCs) have also been identified. The 2022 WPCs, including those designated as MWPCs are listed in Appendix A. The circuit numbers for the MWPCs have been highlighted in red.

Ameren Missouri has analyzed each of the WPCs for the reasons the circuit qualifies as a WPC and the actions planned or taken to improve the WPC's performance have been included in Appendix B. Each of the MWPCs in Appendix B is identified with the title "Single-Year or Multi-Year WPC Analysis and Remedial Action Report". The MWPC reports contain detailed information regarding work completed or planned to improve the performance of each of the MWPCs as required by the Rule.

Multi-Year Worst Performing Circuits not on the 2022 WPC list

The MWPCs circuits not identified as WPCs in 2022 but which were WPCs in 2020 and 2021 are listed in Appendix C. Appendix D details the actions taken and/or planned to improve the performance of these circuits.

Conclusion

This report satisfies the reporting requirements of 20 CSR 4240-23.020 for the calendar year 2022. The reported reliability metrics demonstrate continued improvement in the reliability of Ameren Missouri's electric distribution system. With an adjusted SAIFI value of 0.72, Ameren Missouri's customers now experience, on average, less than one extended outage per year. The reported analyses and corrective actions for the Worst Performing Circuits also demonstrate Ameren Missouri's high level of focus on improving reliability and our full commitment to satisfying both the intent and the requirements of this rule.

APPENDIX A

Division	Operating Area	Circuit	Volt	Cust	CI	CMI	SAIDI	SAIFI	2020	2021	2022	Years WPC
ARCHVIEW	GERALDINE	294056	13.8KV	14	93	10381	741	6.64			WPC	1
GATEWAY	BERKELEY	201002	4KV	8	44	13835	1729	5.50			WPC	1
ARCHVIEW	MACKENZIE	124003	4KV	1	4	319	319	4.00			WPC	1
NORTHEAST MO	LOUISIANA	629052	12KV	63	248	29436	467	3.94			WPC	1
SEMO	DEXTER	628056	12KV	1024	3713	403146	394	3.63			WPC	1
GATEWAY	BERKELEY	259055	12KV	2168	7873	615268	284	3.63			WPC	1
ARCHVIEW	GERALDINE	128007	4KV	35	123	36217	1035	3.51	WPC		WPC	2
NORTHEAST MO	KIRKSVILLE	858051	12KV	559	1801	69586	124	3.22			WPC	1
MERAMEC VALLEY	JEFFERSON	545054	12KV	814	2546	346021	425	3.13			WPC	1
CENTRAL MO	ELDON	611052	12KV	835	2590	227757	273	3.10			WPC	1
ARCHVIEW	GERALDINE	294058	13.8KV	18	54	4399	244	3.00			WPC	1
ARCHVIEW	GERALDINE	238009	4KV	211	633	62118	294	3.00			WPC	1
NORTHEAST MO	KIRKSVILLE	858052	12KV	1	3	129	129	3.00	WPC	WPC	WPC	3
CENTRAL MO	JEFFERSON CITY	719052	12KV	419	1245	428821	1023	2.97			WPC	1
NORTHEAST MO	WENTZVILLE	389051	12KV	1365	3951	343372	252	2.90			WPC	1
ARCHVIEW	MACKENZIE	253057	12KV	1013	2907	657274	649	2.87			WPC	1
GATEWAY	DORSETT	209054	12KV	43	123	14022	326	2.86			WPC	1
MERAMEC VALLEY	ELLISVILLE	165051	12KV	324	912	165625	511	2.82			WPC	1
MERAMEC VALLEY	JEFFERSON	553055	12KV	787	2193	257910	328	2.79	WPC	WPC	WPC	3
NORTHEAST MO	LOUISIANA	731051	12KV	362	979	140359	388	2.70			WPC	1
NORTHEAST MO	WENTZVILLE	665055	12KV	365	952	87117	239	2.61			WPC	1
GATEWAY	BERKELEY	096002	4KV	743	1925	177146	238	2.59			WPC	1
ARCHVIEW	MACKENZIE	275004	4KV	469	1216	279520	596	2.59			WPC	1
MERAMEC VALLEY	JEFFERSON	168055	12KV	935	2307	288110	308	2.47	WPC		WPC	2
ARCHVIEW	GERALDINE	029014	4KV	777	1914	264059	340	2.46			WPC	1
CENTRAL MO	MOBERLY	999052	12KV	544	1333	128447	236	2.45			WPC	1
GATEWAY	DORSETT	288052	12KV	451	1085	114781	255	2.41			WPC	1
CENTRAL MO	MEXICO	962052	12KV	444	1060	99485	224	2.39	WPC		WPC	2
ARCHVIEW	GERALDINE	104002	4KV	387	923	239090	618	2.39			WPC	1
ARCHVIEW	MACKENZIE	034003	4KV	512	1203	201094	393	2.35			WPC	1
GATEWAY	DORSETT	123054	12KV	1172	2758	336848	287	2.35			WPC	1
ARCHVIEW	MACKENZIE	184055	12KV	482	1114	137546	285	2.31			WPC	1
GATEWAY	BERKELEY	156003	4KV	578	1334	66470	115	2.31			WPC	1
ARCHVIEW	GERALDINE	238008	4KV	656	1507	330924	504	2.30			WPC	1
GATEWAY	BERKELEY	141007	4KV	284	649	127045	447	2.29			WPC	1
SEMO	HAYTI	454055	12KV	1108	2525	359301	324	2.28			WPC	1
SEMO	DEXTER	622057	12KV	313	713	67796	217	2.28			WPC	1
NORTHEAST MO	LOUISIANA	672053	12KV	299	683	186010	622	2.28	WPC		WPC	2
ARCHVIEW	GERALDINE	029011	4KV	774	1762	211844	274	2.28			WPC	1

Division	Operating Area	Circuit	Volt	Cust	CI	CMI	SAIDI	SAIFI	2020	2021	2022	Years WPC
GATEWAY	BERKELEY	167054	12KV	1604	3633	470375	293	2.27		WPC	WPC	2
NORTHEAST MO	LOUISIANA	612055	12KV	921	2078	102653	111	2.26			WPC	1
SEMO	HAYTI	454051	12KV	115	260	28658	249	2.26			WPC	1
ARCHVIEW	MACKENZIE	146001	4KV	969	2180	335235	346	2.25			WPC	1
ARCHVIEW	GERALDINE	219008	4KV	693	1561	189260	273	2.25			WPC	1
ARCHVIEW	GERALDINE	238001	4KV	715	1604	120538	169	2.24	WPC		WPC	2
CENTRAL MO	EXCELSIOR SPRINGS	717053	12KV	1402	3140	529077	377	2.24			WPC	1
ARCHVIEW	MACKENZIE	150007	4KV	419	939	58643	140	2.24			WPC	1
ARCHVIEW	MACKENZIE	184052	12KV	482	1076	171130	355	2.23			WPC	1
ARCHVIEW	GERALDINE	017012	4KV	838	1871	531608	634	2.23			WPC	1
ARCHVIEW	MACKENZIE	253051	12KV	1623	3596	614191	378	2.22	WPC		WPC	2
CENTRAL MO	JEFFERSON CITY	854051	12KV	472	1041	137653	292	2.21			WPC	1
ARCHVIEW	MACKENZIE	124002	4KV	559	1226	85747	153	2.19			WPC	1
ARCHVIEW	GERALDINE	317005	4KV	677	1481	154282	228	2.19			WPC	1
GATEWAY	BERKELEY	134054	12KV	1864	4067	398076	214	2.18	WPC		WPC	2
MERAMEC VALLEY	ELLISVILLE	169055	12KV	756	1642	210735	279	2.17		WPC	WPC	2
ARCHVIEW	GERALDINE	321052	12KV	50	108	14071	281	2.16			WPC	1
SEMO	ST FRANCOIS	161051	12KV	1077	2327	325930	303	2.16			WPC	1
GATEWAY	DORSETT	117053	12KV	167	361	44639	267	2.16			WPC	1
GATEWAY	DORSETT	147052	12KV	605	1292	102134	169	2.14			WPC	1
ARCHVIEW	GERALDINE	148002	4KV	190	404	49379	260	2.13		WPC	WPC	2
ARCHVIEW	GERALDINE	029010	4KV	566	1206	230340	407	2.13			WPC	1
ARCHVIEW	MACKENZIE	116003	4KV	808	1715	385847	478	2.12			WPC	1
ARCHVIEW	MACKENZIE	280055	12KV	1316	2784	269045	204	2.12			WPC	1
MERAMEC VALLEY	JEFFERSON	572056	12KV	1409	2969	276287	196	2.11			WPC	1
GATEWAY	BERKELEY	269002	4KV	564	1190	112915	200	2.11			WPC	1
ARCHVIEW	GERALDINE	104005	4KV	593	1240	351281	592	2.09			WPC	1
ARCHVIEW	MACKENZIE	228053	12KV	164	342	88009	537	2.09			WPC	1
CENTRAL MO	BOONVILLE	949056	12KV	1297	2700	212843	164	2.08	WPC		WPC	2
MERAMEC VALLEY	FRANKLIN	127055	12KV	578	1199	19021	33	2.07			WPC	1
CENTRAL MO	EXCELSIOR SPRINGS	826052	13.8KV	329	679	96958	295	2.06			WPC	1
SEMO	CAPE GIRARDEAU	633057	12KV	2493	5141	466981	187	2.06			WPC	1
ARCHVIEW	GERALDINE	171001	4KV	431	888	30982	72	2.06			WPC	1
MERAMEC VALLEY	JEFFERSON	550054	12KV	573	1178	45732	80	2.06			WPC	1
ARCHVIEW	GERALDINE	120003	4KV	231	476	115540	500	2.06			WPC	1
GATEWAY	BERKELEY	260053	12KV	396	817	222556	562	2.06			WPC	1
GATEWAY	BERKELEY	119004	4KV	296	607	88108	298	2.05			WPC	1
MERAMEC VALLEY	ELLISVILLE	197051	12KV	1531	3122	242825	159	2.04			WPC	1
GATEWAY	BERKELEY	172009	4KV	720	1468	318742	443	2.04			WPC	1
ARCHVIEW	GERALDINE	104008	4KV	774	1574	279963	362	2.03		WPC	WPC	2

Division	Operating Area	Circuit	Volt	Cust	CI	CMI	SAIDI	SAIFI	2020	2021	2022	Years WPC
MERAMEC VALLEY	JEFFERSON	786051	12KV	1089	2213	88009	81	2.03			WPC	1
ARCHVIEW	GERALDINE	174012	4KV	468	943	111290	238	2.02			WPC	1
GATEWAY	BERKELEY	163005	4KV	682	1371	98263	144	2.01			WPC	1
ARCHVIEW	MACKENZIE	206005	4KV	502	1005	102539	204	2.00			WPC	1
GATEWAY	ST CHARLES	577057	12KV	1	2	705	705	2.00		WPC	WPC	2
ARCHVIEW	GERALDINE	293005	4KV	4	8	1461	365	2.00		WPC	WPC	2
ARCHVIEW	GERALDINE	017016	4KV	968	1926	796065	822	1.99			WPC	1
SEMO	POTOSI	451054	13.2KV	384	763	98275	256	1.99	WPC	WPC	WPC	3
ARCHVIEW	GERALDINE	293009	4KV	80	159	30979	387	1.99			WPC	1
GATEWAY	BERKELEY	214055	12KV	907	1795	179219	198	1.98			WPC	1
NORTHEAST MO	WENTZVILLE	655053	12KV	980	1944	166229	170	1.98			WPC	1
CENTRAL MO	JEFFERSON CITY	806052	12KV	117	232	37806	323	1.98			WPC	1
GATEWAY	DORSETT	318054	12KV	505	994	191424	379	1.97			WPC	1
SEMO	ST FRANCOIS	161055	12KV	590	1158	68469	116	1.96			WPC	1
ARCHVIEW	MACKENZIE	150002	4KV	1027	1999	388579	378	1.95			WPC	1
GATEWAY	DORSETT	209055	12KV	199	382	155971	784	1.92			WPC	1
MERAMEC VALLEY	ELLISVILLE	115052	12KV	1707	3263	302066	177	1.91			WPC	1
GATEWAY	BERKELEY	272053	12KV	423	809	108035	255	1.91			WPC	1
SEMO	CAPE GIRARDEAU	680053	12KV	364	687	36083	99	1.89			WPC	1
ARCHVIEW	GERALDINE	174017	4KV	54	102	22916	424	1.89			WPC	1
ARCHVIEW	GERALDINE	102008	4KV	44	83	14373	327	1.89			WPC	1
ARCHVIEW	GERALDINE	044007	4KV	266	487	102554	386	1.83			WPC	1
SEMO	CAPE GIRARDEAU	864005	4KV	349	636	46233	132	1.82			WPC	1
CENTRAL MO	JEFFERSON CITY	799053	12KV	1074	1959	198118	184	1.82			WPC	1
ARCHVIEW	MACKENZIE	135005	4KV	278	507	42543	153	1.82			WPC	1
GATEWAY	DORSETT	147051	12KV	396	707	46516	117	1.79			WPC	1
SEMO	POTOSI	475051	12KV	586	1050	80526	137	1.79			WPC	1
ARCHVIEW	MACKENZIE	271052	12KV	493	881	99640	202	1.79			WPC	1
SEMO	DEXTER	734053	12KV	51	91	16188	317	1.78			WPC	1
CENTRAL MO	LAKESIDE	570051	12KV	1377	2456	808278	587	1.78			WPC	1
ARCHVIEW	GERALDINE	255003	4KV	595	1051	290399	488	1.77			WPC	1
MERAMEC VALLEY	ELLISVILLE	218059	12KV	1377	2442	212083	154	1.77			WPC	1
GATEWAY	DORSETT	040005	4KV	606	1067	71341	118	1.76			WPC	1
NORTHEAST MO	WENTZVILLE	691051	12KV	1266	2228	250529	198	1.76	WPC	WPC	WPC	3
SEMO	DEXTER	817051	12KV	81	142	19364	239	1.75			WPC	1
CENTRAL MO	LAKESIDE	170051	12KV	888	1552	126249	142	1.75			WPC	1
SEMO	POTOSI	484056	12KV	1443	2514	262547	182	1.74			WPC	1

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 017012
Division: ARCHVIEW
ZIP Codes(s) Served: 63104
Customers Served: 838
Customer Interruptions (CI): 1,871
SAIFI Value: 2.23
SAIDI Value: 634

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	193	10.32%	16
EQUIPMENT/UG	1,618	86.48%	3
TREE	10	0.53%	1
EMPLOYEES	7	0.37%	1
OVERLOAD	32	1.71%	1
OTHER	1	0.05%	1
UNKNOWN	10	0.53%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Four incidents account for 90% of the customer interruptions in 2022. The first one caused 41% of the customer interruption. it was due to the fault on Dip-Compton-3 cable. This was repaired and placed back in the service on 8/5/2022. Second issue was due to burned underground primary and had 44% of customer interruptions. This was repaired on DOJM work request 21MT797487. Third incident was due to burned jumper and it was repaired on OAS work order 222530483. Another one was due to overload transformer. The transformer and secondary were replaced on DOJM work request #802952. Cycle trim was complete in 2021 and mid cycle patrol will be complete in 2023. The next cycle trim will be done in 2025. Overhead and underground visual inspections are scheduled in 2023. Any repair work identified as a result of the inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 017016
Division: ARCHVIEW
ZIP Codes(s) Served: 63104
Customers Served: 968
Customer Interruptions (CI): 1,926
SAIFI Value: 1.99
SAIDI Value: 822

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	1	0.05%	1
EQUIPMENT/UG	968	50.26%	2
TREE	1	0.05%	1
EMPLOYEES	1	0.05%	1
UNKNOWN	955	49.58%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Three incidents account for 99% of the customer interruptions in 2022. The first incident caused 46% of the customer interruptions. This was due to breaker problem at Hickory, and it was repaired. The second incident accounts for 49% of the customer interruptions. The circuit was inspected for issues and it was due to a failed underground primary. This will be repaired on DOJM work request 21MT790964. The other incident was due to the failed underground service. The fault was repaired on DOJM work request 21MT805701. There are no recurring problems identified on this circuit and no farther work is required at this time. A cycle trim was complete in 2021 and a mid-cycle patrol will be completed in 2023. The next cycle trim will be completed in 2025. Overhead and underground visual inspections are scheduled in 2023. Any repair work identified as a result of the inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 029010
Division: ARCHVIEW
ZIP Codes(s) Served: 63110
Customers Served: 566
Customer Interruptions (CI): 1,206
SAIFI Value: 2.13
SAIDI Value: 407

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	1,075	89.14%	6
TREE	127	10.53%	2
EMPLOYEES	1	0.08%	1
OTHER	3	0.25%	3

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Four incidents account for 95% of customer interruptions in 2022. The first incident occurring on July 28th accounts for 44% of the customer interruptions. This occurred when a crew replaced a cross arm. The second incident caused 10% of customer interruptions in 2022. This was due to a downed primary conductor. It was repaired on DOJM work request 21MT805032. The third incident was due to a broken tree on a primary conductor. The tree was removed and a switch was replaced with the proper size on OAS work order 221513748. The last incident was due to a blown fuse. The fuse was replaced with the proper size on OAS work order 221864184. There are no reoccurring problems identified on this circuit and no further work is required at this time. A cycle trim was complete in 2021 and a mid-cycle patrol will be completed in 2023. The next cycle trim will be done in 2025.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 029011
Division: ARCHVIEW
ZIP Codes(s) Served: 63110
Customers Served: 774
Customer Interruptions (CI): 1,762
SAIFI Value: 2.28
SAIDI Value: 274

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	255	14.47%	4
EQUIPMENT/UG	1,493	84.73%	2
OVERLOAD	1	0.06%	1
OTHER	12	0.68%	1
UNKNOWN	1	0.06%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Three incidents account for 97% of the customer interruptions in 2022. One incident was due to bad circuit cable and accounts for 42% of customer interruptions in 2022. This will be repaired on DOJM work request 21MTT800754. The second incident was due to down primary and was restored on OAS work order 220814079. Another incident was due to underground primary cable failure and accounts for 42% of customer interruptions. Switching was done on OAS work order 222733491 and the primary conductor will be replaced under DOJM work request 21MT802329. There are no recurring problems identified on this circuit and no further work is required at this time. Cycle trim was complete in 2021 and mid cycle patrol will be complete in 2023 and the next cycle trim will be done in 2025. Overhead and underground visual inspections are scheduled in 2023. Any repair work identified as a result of the inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 029014
Division: ARCHVIEW
ZIP Codes(s) Served: 63104, 63110
Customers Served: 777
Customer Interruptions (CI): 1,914
SAIFI Value: 2.46
SAIDI Value: 340

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	1,763	92.11%	8
TREE	1	0.05%	1
OVERLOAD	147	7.68%	5
OTHER	2	0.10%	2
UNKNOWN	1	0.05%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Two Incidents account for 80% of the customer interruptions in 2022. The first incident caused 40% of customer interruptions when the circuit locked out. It was patrolled with the circuit being split at D3223 and no problems were found. Therefore the circuit was restored. The second incident caused 40% of customer interruptions in 2022. This was due to loose fitting primary, and it will be fixed on DOJM work request 21MT796847. There are no recurring problems identified in this circuit and no further work is required. A cycle trim was complete in 2021 and a mid-cycle patrol will be completed in 2023. The next cycle trim will be completed in 2025. Overhead visual inspections are scheduled in 2023. Any repair work identified as a result of the inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 034003
Division: ARCHVIEW
ZIP Codes(s) Served: 63031, 63119
Customers Served: 512
Customer Interruptions (CI): 1,203
SAIFI Value: 2.35
SAIDI Value: 393

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
PUBLIC	1,186	98.59%	5
TREE	9	0.75%	2
EMPLOYEES	8	0.67%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Public damage to a pole on Gray Ave. between Papin Ave. and Jackson Rd. led to a circuit outage on 3/28/2022. Repairs were made on DOJM work request 21MT789634. This outage caused 43% of the circuit's customer interruptions (513 out of 1203). Public damage to a pole at 189 Baker Ave. led to a circuit outage on 11/18/2022. Repairs were made on DOJM work request 21MT805381. This outage caused 43% of the circuit's customer interruptions (513 out of 1203). Several other transformer outages caused the bulk of the remaining customer interruptions (14% of the circuit's total). There are no recurring problems identified on the circuit and no further work is required at this time. A full-cycle tree trim was completed in 2021 and a mid-cycle patrol is scheduled for 2023. A ground line inspection was completed in 2019 and an overhead visual inspection is planned for 2023. Any repair work identified as a result of these inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 040005
Division: GATEWAY
ZIP Codes(s) Served: 63114
Customers Served: 606
Customer Interruptions (CI): 1,067
SAIFI Value: 1.76
SAIDI Value: 118

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	33	3.09%	4
PUBLIC	4	0.37%	1
TREE	1,027	96.25%	7
EMPLOYEES	1	0.09%	1
ANIMAL	1	0.09%	1
OTHER	1	0.09%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Ninety percent of the customer interruptions in 2022 are the result of one incident caused by tree contact. The repairs were corrected at the time of the outage. There are the no recurring problems on this circuit and no other work is required at this time. A full-cycle trim was executed on 2022, and next trim is scheduled for 2025. An overhead visual inspection was completed in 2021. The underground visual inspection was completed in 2019 and a detailed inspection is scheduled for 2023. Any repair work identified as a result of the inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 044007
Division: ARCHVIEW
ZIP Codes(s) Served: 63005, 63105, 63130
Customers Served: 266
Customer Interruptions (CI): 487
SAIFI Value: 1.83
SAIDI Value: 386

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	487	100.00%	5

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Five incidents were downstream of D1699 in SWPD 23694. This tap is currently overloaded on C phase in the summer and will be corrected on Maximo work order KA23737. Additionally, this tap is radially fed, and it is recommended that it be reconducted with 1/0 AAAC to established a circuit tie to 044003 via Brentwood Blvd.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 096002
Division: GATEWAY
ZIP Codes(s) Served: 63112, 63130, 63134, 63139,
Customers Served: 743
Customer Interruptions (CI): 1,925
SAIFI Value: 2.59
SAIDI Value: 238

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	930	48.31%	13
PUBLIC	42	2.18%	2
TREE	930	48.31%	4
EMPLOYEES	2	0.10%	2
ANIMAL	21	1.09%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

One incident accounts for 45% of the customer interruptions in 2022. This incident occurred on 7/12/2022, which was caused by an individual tree issue. Forty eight percent of customer interruptions in 2022 are a result of overhead equipment malfunctions. A full-cycle tree trim is scheduled for 2023. A 2023/2024 project in which circuit 096002 is being rebuilt will address the issues of equipment malfunctions.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 102008
Division: ARCHVIEW
ZIP Codes(s) Served: 63105
Customers Served: 44
Customer Interruptions (CI): 83
SAIFI Value: 1.89
SAIDI Value: 327

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	40	48.19%	1
TREE	43	51.81%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Two incidents accounted for 100% of the customer interruptions in 2022. The first incident was due to a tree limb falling onto the primary conductor on 10/13/22 causing 52% of customer interruptions (43/83). This was repaired on OAS work order 222864043. There was an overhead malfunction also on 10/13/22 that caused the remaining 48% of the customer interruptions (40/83). There are no recurring problems identified on this circuit and no further work is required.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 104002
Division: ARCHVIEW
ZIP Codes(s) Served: 63121
Customers Served: 387
Customer Interruptions (CI): 923
SAIFI Value: 2.39
SAIDI Value: 618

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	429	46.48%	1
PUBLIC	374	40.52%	1
TREE	69	7.48%	3
OVERLOAD	51	5.53%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Two incidents caused 87% of customer interruptions (803/923). The first incident was caused by primary conductor coming down during a thunderstorm on 07/28/22, accounting for 47% of the customer interruptions (429/923). This was repaired on OAS work order 222092473. The second incident, accounting for 41% of the customer interruptions (374/923), was caused by a public vehicle on 05/02/22, which resulted in a double subtransmission lockout of the PAGE-79 and PAGE-PAS-T2 circuits. There are no recurring problems identified on this circuit and no further work is required.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 104005
Division: ARCHVIEW
ZIP Codes(s) Served: 63103, 63121
Customers Served: 593
Customer Interruptions (CI): 1,240
SAIFI Value: 2.09
SAIDI Value: 592

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	500	40.32%	4
PUBLIC	570	45.97%	1
TREE	169	13.63%	4
OTHER	1	0.08%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Three incidents caused 98% of the customer interruptions (1209/1240). The first incident, accounting for 46% of the customer interruptions (570/1240), was caused by a public vehicle on 05/02/22, which resulted in a double subtransmission lockout of the PAGE-79 and PAGE-PAS-T2 circuits. The second incident was a result of a switch malfunction during high winds. It is suspected that this was due to trees hitting the primary conductors, which caused 40% of the customer interruptions (491/1240). The third incident was caused by a tree falling during high winds on 11/05/22, causing about 13% of the customer interruptions. There are no recurring problems identified on this circuit and no further work is required.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 115052
Division: MERAMEC VALLEY
ZIP Codes(s) Served: 63011, 63017, 63021
Customers Served: 1,707
Customer Interruptions (CI): 3,263
SAIFI Value: 1.91
SAIDI Value: 177

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	22	0.67%	4
PUBLIC	16	0.49%	4
EQUIPMENT/UG	3,017	92.46%	8
TREE	49	1.50%	2
ANIMAL	156	4.78%	11
UNKNOWN	3	0.09%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

One incident accounts for 89% of customer interruptions in 2022. The incident was due to an underground equipment malfunction located near Baxter Rd and Holloway Rd. The remaining customer interruptions were due to device and transformer outages caused by equipment malfunctions, tree contacts, and animals. A 12kV intellirupter switch was installed in 2022 near Manchester Rd and Ballpark Dr under work request 21MT721254 to sectionalize the circuit. An overhead groundline inspection and an underground detail inspection were completed in 2022. Any repair work identified as a result of the circuit inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy. A mid-cycle patrol was completed in 2022 to identify and perform any necessary hot spot tree trimming. A full-cycle tree maintenance trimming is scheduled for 2024. There are no recurring problems identified on the circuit and no further work is required at this time.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 116003
Division: ARCHVIEW
ZIP Codes(s) Served: 63104, 63118
Customers Served: 808
Customer Interruptions (CI): 1,715
SAIFI Value: 2.12
SAIDI Value: 478

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	64	3.73%	7
TREE	1,596	93.06%	6
EMPLOYEES	2	0.12%	2
OTHER	22	1.28%	4
UNKNOWN	31	1.81%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Three incidents account for 93% of the customer interruptions in 2022. All three incidents occurred during a consecutive three day stretch of Spring thunderstorms. They were due to trees breaking at different locations. In the first incident, the primary conductor was broken. In the second incident, a tree got caught in the primary conductor. In the third incident, a tree broke a pole and took down the primary conductor. At the time of the three outages, there was abnormal switching that tied this circuit to a neighboring circuit. The outages that occurred were due to issues on the neighboring circuit, and not due to any issue on this circuit. A mid-cycle tree trim patrol was completed in 2022 and a full-cycle tree trim is scheduled for 2023. An underground visual inspection is scheduled for 2023. Any repair work identified as a result of these inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 117053
Division: GATEWAY
ZIP Codes(s) Served: 63043, 63146
Customers Served: 167
Customer Interruptions (CI): 361
SAIFI Value: 2.16
SAIDI Value: 267

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	304	84.21%	5
PUBLIC	1	0.28%	1
EQUIPMENT/UG	7	1.94%	1
OTHER	46	12.74%	1
UNKNOWN	3	0.83%	3

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Two incidents account for 72% of customer interruptions in 2022. The first incident was due to an unidentified overhead malfunction. The second incident was due to a hot line clamp failing, which was fixed on site once the crew arrived on 11/29/22. The circuit cycle trim is scheduled for 2023. An underground visual inspection was completed in 2021 and the groundline inspection was completed in 2021. There are the no recurring problems on this circuit and no other work is required at this time.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 119004
Division: GATEWAY
ZIP Codes(s) Served: 63114, 63132
Customers Served: 296
Customer Interruptions (CI): 607
SAIFI Value: 2.05
SAIDI Value: 298

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	23	3.79%	4
PUBLIC	298	49.09%	2
EQUIPMENT/UG	283	46.62%	2
TREE	1	0.16%	1
EMPLOYEES	1	0.16%	1
UNKNOWN	1	0.16%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Two incidents account for 95% of customer interruptions in 2022. The first incident was due to a car hitting a pole causing primary conductors to make contact. No damage was done to the pole. The second incident was due to an underground equipment malfunction. An underground detailed inspection was completed in 2022. Any repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 120003
Division: ARCHVIEW
ZIP Codes(s) Served: 63120, 63121
Customers Served: 231
Customer Interruptions (CI): 476
SAIFI Value: 2.06
SAIDI Value: 500

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	14	2.94%	3
EQUIPMENT/UG	220	46.22%	1
TREE	241	50.63%	3
OTHER	1	0.21%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Two incidents caused 92% of the customer interruptions (437/476), all of which occurred during inclement weather. The first incident happened during heavy rains. An entire tree fell on the backbone primary, causing 46% of the customer interruptions (217/476). The second incident was due to an underground malfunction in the circuit exit cable, which also happened during heavy rains. This caused 46% of the customer interruptions (220/476). There are no recurring problems identified on this circuit and no further work is required.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 123054
Division: GATEWAY
ZIP Codes(s) Served: 63088, 63104, 63114, 63122,
Customers Served: 1,172
Customer Interruptions (CI): 2,758
SAIFI Value: 2.35
SAIDI Value: 287

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	2,475	89.74%	19
PUBLIC	54	1.96%	6
EQUIPMENT/UG	1	0.04%	1
TREE	157	5.69%	8
ANIMAL	63	2.28%	9
OTHER	1	0.04%	1
UNKNOWN	7	0.25%	3

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Two incidents account for 84% of the customer interruptions in 2022. The first incident was due to an equipment failure on all three reclosers. The repairs were made under DOJM work request 21MT802989. The second incident was due to an overhead conductor problem and the wire was repaired under DOJM work request 21MT803274. There are no reoccurring issues that require repair. An overhead inspection is scheduled for 2023. Any repair work identified as a result of these inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy. Also, a full-cycle tree trim was completed in 2021 and a mid-cycle patrol is scheduled for 2023.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 124002
Division: ARCHVIEW
ZIP Codes(s) Served: 63104, 63118, 63147
Customers Served: 559
Customer Interruptions (CI): 1,226
SAIFI Value: 2.19
SAIDI Value: 153

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	1,192	97.23%	11
TREE	34	2.77%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

One incident accounts for 89% of the customer interruptions in 2022. This issue was due to a primary disconnect switch failing. It was repaired on OAS work order 22101363. A full-cycle tree trim is scheduled for 2023. There are no recurring problems identified on the circuit and no further work is required at this time.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 124003
Division: ARCHVIEW
ZIP Codes(s) Served: 63118
Customers Served: 1
Customer Interruptions (CI): 4
SAIFI Value: 4.00
SAIDI Value: 319

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	3	75.00%	3
UNKNOWN	1	25.00%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Four incidents are responsible for 100% of customer interruptions in 2022. There was abnormal switching that tied this circuit to a neighboring circuit during three of the outages. The outages that occurred were due to single customer outages on the neighboring circuit, and not due to any issue on this circuit. Because there is only one customer on circuit 124003, the single customer outages on the neighboring circuit made it appear that the one customer on 124003 was out on multiple occasions when they were not. There was only one outage on circuit 124003 due to a primary disconnect switch failing, which was repaired on OAS work order 222260292. With the other events excluded, this circuit would not be a worst performing circuit. A full cycle tree trim is scheduled for 2023. There are no recurring problems identified on the circuit and no further work is required at this time.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 127055
Division: MERAMEC VALLEY
ZIP Codes(s) Served: 63090
Customers Served: 578
Customer Interruptions (CI): 1,199
SAIFI Value: 2.07
SAIDI Value: 33

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	572	47.71%	1
EQUIPMENT/UG	1	0.08%	1
TREE	5	0.42%	1
ANIMAL	29	2.42%	3
OTHER	13	1.08%	9
UNKNOWN	579	48.29%	2

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Two incidents account for 96% of the customer interruptions in 2022. The first occurred on 3/7/2022 and the second incident occurred on 10/29/2022. No cause for either interruption was discovered. Customers were restored in less than 15 minutes for each incident. A single-phase fuse will be replaced with equivalent S&C TripSaver II on Maximo work order KA35115 to help maintain reliability. No other work is required at this time.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 135005
Division: ARCHVIEW
ZIP Codes(s) Served: 63109
Customers Served: 278
Customer Interruptions (CI): 507
SAIFI Value: 1.82
SAIDI Value: 153

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	7	1.38%	2
EQUIPMENT/UG	500	98.62%	2

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Two incidents account for 99% of the customer interruptions in 2022. The first incident was due to a section of circuit exit cable failing on 6/23/2022. The cable was repaired on DOJM work request 21MT795326. This outage caused 46% of the circuit's customer interruptions (232 out of 507). The second incident was due to a section of circuit exit cable failing on 7/28/2022. The cable was repaired on DOJM work request 21MT798162. This outage caused 53% of the circuit's customer interruptions (268 out of 507). Two other transformer outages caused the remaining customer interruptions (1% of the circuit's total). Because there have been recurring circuit exit cable failures on 135005 and the other Hampton (135) circuits, the Hampton Substation was recommended to be added to the Smart Energy Program that replaces old circuit exit cable. A mid-cycle patrol was completed in 2021 and a full-cycle tree trim is scheduled for 2023. An overhead visual inspection was completed in 2021 and an overhead visual inspection is planned for 2025. Any repair work identified as a result of these inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

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Single Year WPC Analysis and Remedial Action Report

Circuit Number: 141007
Division: GATEWAY
ZIP Codes(s) Served: 63132
Customers Served: 284
Customer Interruptions (CI): 649
SAIFI Value: 2.29
SAIDI Value: 447

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	556	85.67%	7
PUBLIC	13	2.00%	2
TREE	19	2.93%	3
OTHER	1	0.15%	1
UNKNOWN	60	9.24%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Two incidents account for 73% of customer interruptions in 2022. Both incidents were caused by a primary conductor coming in contact with a neutral which was fixed on DOJM work request 21MT806963. Approximately 3% of customer interruptions were caused by tree related issues. A full-cycle tree trim is scheduled for 2023. There are no additional recurring problems identified on the circuit and no further work is required at this time.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 146001
Division: ARCHVIEW
ZIP Codes(s) Served: 63118
Customers Served: 969
Customer Interruptions (CI): 2,180
SAIFI Value: 2.25
SAIDI Value: 346

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	1,765	80.96%	8
PUBLIC	1	0.05%	1
EQUIPMENT/UG	370	16.97%	3
TREE	1	0.05%	1
UNKNOWN	43	1.97%	2

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Three incidents account for 98% of the customer interruptions in 2022. The first incident was due to a primary disconnect switch failing, which was repaired on OAS work order 221900070. The second incident was an emergency outage taken to repair an issue at the terminal pole where the circuit exits the substation. The third incident occurred while this circuit was abnormally switched and tied to a neighboring circuit. The issue was due to an underground primary cable failing at a switchgear, which was on the neighboring circuit. There are no recurring problems identified on this circuit and no further work is required at this time. A mid-cycle tree trim patrol was completed in 2022 and a full-cycle tree trim is scheduled for 2023. There are no recurring problems identified on the circuit and no further work is required at this time.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 147051
Division: GATEWAY
ZIP Codes(s) Served: 63122, 63141
Customers Served: 396
Customer Interruptions (CI): 707
SAIFI Value: 1.79
SAIDI Value: 117

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	399	56.44%	4
EQUIPMENT/UG	9	1.27%	2
TREE	299	42.29%	3

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Two incidents account for 97% of customer interruptions in 2022. The first incident was due to a tree falling on the primary neutral on 5/21/2022. The incident was repaired under DOJM work request 21MT793268. The second incident was due to an unidentified overhead malfunction on 10/25/2022. The circuit trim cycle is scheduled for 2023. A detailed underground inspection was completed in 2021 and a groundline inspection was completed in 2021 as well. There are the no recurring problems on this circuit and no other work is required at this time.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 147052
Division: GATEWAY
ZIP Codes(s) Served: 63141, 63146
Customers Served: 605
Customer Interruptions (CI): 1,292
SAIFI Value: 2.14
SAIDI Value: 169

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	1,106	85.60%	16
PUBLIC	5	0.39%	1
EQUIPMENT/UG	18	1.39%	2
TREE	38	2.94%	4
ANIMAL	23	1.78%	3
UNKNOWN	102	7.89%	5

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

One incident accounts for 47% of the customer interruptions in 2022. The incident was due to a broken crossarm. The repairs were made at the time of the outage and no further work was needed. A detailed underground inspection was completed in 2021 and a groundline inspection was completed in 2021 as well. There are the no recurring problems on this circuit and no other work is required at this time.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 150002
Division: ARCHVIEW
ZIP Codes(s) Served: 63111, 63118
Customers Served: 1,027
Customer Interruptions (CI): 1,999
SAIFI Value: 1.95
SAIDI Value: 378

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	1,044	52.23%	5
EQUIPMENT/UG	952	47.62%	2
OTHER	2	0.10%	2
UNKNOWN	1	0.05%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Two incidents account for 98% of the customer interruptions in 2022. The first incident was due to an underground cable failure at a switchgear on 1/8/2022, which was repaired on OAS work order 220080111. This outage caused 48% of the circuit's customer interruptions. The second incident was due to a transformer on the backbone that caught fire on 6/22/2022. It was repaired on OAS work order 221734137. This outage caused 50% of the circuit's customer interruptions. There are no recurring problems identified on this circuit and no further work is required at this time. A mid-cycle tree trim patrol was completed in 2022 and a full cycle tree trim is scheduled for 2023.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 150007
Division: ARCHVIEW
ZIP Codes(s) Served: 63111, 63125, 63147
Customers Served: 419
Customer Interruptions (CI): 939
SAIFI Value: 2.24
SAIDI Value: 140

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	104	11.08%	8
PUBLIC	409	43.56%	2
EQUIPMENT/UG	407	43.34%	4
TREE	2	0.21%	2
EMPLOYEES	1	0.11%	1
UNKNOWN	16	1.70%	2

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Three incidents account for 92% of the customer interruptions in 2022. The first incident was due to a balloon getting entangled in the overhead primary. The second and third incidents occurred while this circuit was abnormally switched and tied to a neighboring circuit. One of these was due to an underground primary cable failing at a switchgear, which was on the neighboring circuit. The other due to a fused single-phase conductor breaking, which was also on a neighboring circuit. With the other events excluded, this circuit would not be a worst performing circuit. There are no recurring problems identified on this circuit and no further work is required at this time. A mid-cycle tree trim patrol was completed in 2022 and a full-cycle tree trim is scheduled for 2023.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 156003
Division: GATEWAY
ZIP Codes(s) Served: 63114, 63134
Customers Served: 578
Customer Interruptions (CI): 1,334
SAIFI Value: 2.31
SAIDI Value: 115

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	76	5.70%	5
PUBLIC	22	1.65%	4
EQUIPMENT/UG	577	43.25%	1
TREE	638	47.83%	6
OTHER	1	0.07%	1
UNKNOWN	20	1.50%	2

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Two incidents account for 86% of customer interruptions in 2022. The first incident was due to a device malfunction on switch D9435 and the switch was repaired. This incident occurred on 2/13/2022 and accounted for 43% of customer interruptions. The second incident was due to a tree on the primary at 9583 Madelaine. This incident occurred on 10/30/2022 and accounted for 43% of customer interruptions. A trimming cycle is due for this circuit this year. No additional corrective action is necessary.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 161051
Division: SEMO
ZIP Codes(s) Served: 63601, 63637, 63640, 63650
Customers Served: 1,077
Customer Interruptions (CI): 2,327
SAIFI Value: 2.16
SAIDI Value: 303

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	64	2.75%	15
LIGHTNING	60	2.58%	8
PUBLIC	984	42.29%	2
EQUIPMENT/UG	43	1.85%	2
TREE	1,039	44.65%	9
ANIMAL	110	4.73%	10
UNKNOWN	27	1.16%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Multiple tree related issues were responsible for 45% of customer interruptions in 2022. A full-cycle tree trimming is scheduled for 2023 and will address any problem areas. Thirty eight percent of customer interruptions were due to a public vehicle incident. There are four locations where new Intellirupters are scheduled to be installed in 2023. This will create an automated three phase tie with the Farmington 161054 circuit providing automated switching capabilities to the northern end of the Farmington 161051 circuit. There have also been multiple locations identified for installing TripSavers or Reclosers on single-phase taps along the circuit.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 161055
Division: SEMO
ZIP Codes(s) Served: 63640, 63651
Customers Served: 590
Customer Interruptions (CI): 1,158
SAIFI Value: 1.96
SAIDI Value: 116

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	585	50.52%	10
LIGHTNING	10	0.86%	5
PUBLIC	345	29.79%	5
EQUIPMENT/UG	2	0.17%	1
TREE	58	5.01%	5
ANIMAL	155	13.39%	8
OTHER	1	0.09%	1
UNKNOWN	2	0.17%	2

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

There is currently a Smart Energy Plan project under Financial Work Order J0P0X in the scoping and design phase that is to construct a new 3.7 mile three-phase circuit tie between Farmington 161055 and Knob Lick 571053 circuits. The project also includes the installation of three new Intellirupters to provide automated switching capabilities for the new tie. Multiple tree related incidents caused 5% of customer interruptions in 2022 and will be addressed with the full-cycle tree trimming that is scheduled for this circuit in 2023. There have also been multiple locations identified along the circuit for installing TripsSavers or Reclosers on single-phase taps.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 163005
Division: GATEWAY
ZIP Codes(s) Served: 63136
Customers Served: 682
Customer Interruptions (CI): 1,371
SAIFI Value: 2.01
SAIDI Value: 144

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	639	46.61%	10
PUBLIC	48	3.50%	3
EQUIPMENT/UG	670	48.87%	1
TREE	7	0.51%	4
ANIMAL	6	0.44%	1
OTHER	1	0.07%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Two incidents account for 93% of the customer interruptions in 2022. The first was due to an overhead malfunction on 10/25/2022. The second incident was a primary cable fault on 11/23/2022. In both instances the conductors and devices were repaired. A mid-cycle patrol is due for 2024 on this circuit. No additional corrective action is necessary.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 165051
Division: MERAMEC VALLEY
ZIP Codes(s) Served: 63025, 63038, 63069
Customers Served: 324
Customer Interruptions (CI): 912
SAIFI Value: 2.82
SAIDI Value: 511

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	156	17.11%	12
PUBLIC	322	35.31%	3
TREE	427	46.82%	17
ANIMAL	7	0.77%	5

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Two incidents account for 69% of customer interruptions in 2022. The first incident was due to a tree limb on the primary backbone. The second incident was due to a public vehicle hitting a pole. A full-cycle tree trim is planned for 2024. A new Intellirupter recloser will be installed on the circuit for automated restoration in 2023 on work request 21MT794544. A second Intellirupter recloser will replace an existing 280V4L recloser on Fox Creek Road in 2023.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 170051
Division: CENTRAL MO
ZIP Codes(s) Served: 65026, 65049, 65065, 65072,
Customers Served: 888
Customer Interruptions (CI): 1,552
SAIFI Value: 1.75
SAIDI Value: 142

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	272	17.53%	6
EQUIPMENT/UG	5	0.32%	2
TREE	1,056	68.04%	14
ANIMAL	15	0.97%	3
UNKNOWN	204	13.14%	2

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Major storms occurred in the Lake of the Ozarks area during April, May and August along with extreme cold temperatures in December. Sixty eight percent of the customer interruptions on this circuit were caused by tree issues. Cycle tree trimming was completed in December 2022, while the next cycle tree trim is planned for 2028 with a mid-cycle patrol planned for 2025. Eighteen percent of the customer interruptions were due to overhead malfunctions. The most recent overhead inspection was completed in 2018. An underground visual inspection was completed in 2022 with no issues were identified. The next overhead and underground inspections are planned for 2024 and 2026, respectively. Any repair work identified as a result of the inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy. Smart switches were added to the circuit in 2020 along with additional cutouts and animal guarding. Fusing and insulator replacements were also completed in 2020. No recurring problems, with the exception of those addressed by cycle tree trimming, were identified on the circuit as part of the review. Therefore, no further work is required at this time.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 171001
Division: ARCHVIEW
ZIP Codes(s) Served: 63144
Customers Served: 431
Customer Interruptions (CI): 888
SAIFI Value: 2.06
SAIDI Value: 72

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	457	51.46%	4
EQUIPMENT/UG	430	48.42%	1
EMPLOYEES	1	0.11%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Three incidents, accounting for 37% of customers interruptions in 2022, were due to an outage on circuit 139009 (OAS work orders 220542562, 220542749, and 220543005). Omitting the three orders would have resulted in a SAIFI of 1.3. Of the three remaining incidents on this circuit, two of them resulted in 99.8% of total customers impacted. One of these outages was a result of a sub transmission cable fault. Since the fault, one of the sub transmission circuits serving this substation was replaced with a new circuit. The remaining outage was a result of a broken cross arm, which was replaced. There are no further corrective actions recommended at this time.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 172009
Division: GATEWAY
ZIP Codes(s) Served: 63130
Customers Served: 720
Customer Interruptions (CI): 1,468
SAIFI Value: 2.04
SAIDI Value: 443

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	743	50.61%	9
PUBLIC	702	47.82%	1
TREE	12	0.82%	1
EMPLOYEES	10	0.68%	1
UNKNOWN	1	0.07%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Two incidents account for 96% of customer interruptions in 2022. The first incident was due to a single public incident in which a firework hit primary conductors on 7/5/2022. The second incident was due to a broken crossarm on 7/9/2022. A mid-cycle patrol is scheduled for 2023 which will evaluate trees and vegetation. Overhead visual and underground detailed inspections are scheduled in 2023. Any repair work identified as a result of these inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 174012
Division: ARCHVIEW
ZIP Codes(s) Served: 63105, 63124, 63130
Customers Served: 468
Customer Interruptions (CI): 943
SAIFI Value: 2.02
SAIDI Value: 238

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	10	1.06%	3
PUBLIC	468	49.63%	1
EQUIPMENT/UG	465	49.31%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Two incidents account for 99% of customer interruptions in 2022. The first incident was a result of a balloon contacting overhead primary and causing a fault at the circuit breaker in the substation. The second incident was caused by an underground cable fault that caused the circuit breaker at the substation to trip. It is recommended that switch D13116 be replaced with a 140T fuse in order to sectionalize future faults on this cable.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 174017
Division: ARCHVIEW
ZIP Codes(s) Served: 63105
Customers Served: 54
Customer Interruptions (CI): 102
SAIFI Value: 1.89
SAIDI Value: 424

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	51	50.00%	1
EQUIPMENT/UG	51	50.00%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Two incidents account for 100% the customer interruptions in 2022. The first incident was due to an unknown overhead malfunction. The second incident was caused by a failed switch on a capacitor bank. The switch was disconnected and the circuit was restored. This capacitor is no longer needed and will be removed on DOJM work request 21MT801141



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 184052
Division: ARCHVIEW
ZIP Codes(s) Served: 63127
Customers Served: 482
Customer Interruptions (CI): 1,076
SAIFI Value: 2.23
SAIDI Value: 355

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	700	65.06%	18
LIGHTNING	2	0.19%	2
PUBLIC	1	0.09%	1
TREE	340	31.60%	3
EMPLOYEES	1	0.09%	1
ANIMAL	8	0.74%	5
OTHER	1	0.09%	1
UNKNOWN	23	2.14%	2

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

A jumper failed at a 600A solid blade switch (D15377), which led to a circuit outage on 3/22/2022. Repairs were made on OAS work orders 220813302 and 220813357. This outage caused 50% of the circuit's customer interruptions (541 out of 1076). A tree broke multiple crossarms along Lynstone Pl, north of Watson Rd and took out the circuit on 8/25/2022. Repairs were made on DOJM work order 21MT799693. This caused 29% of the circuit's customer interruptions (315 out of 1076). Several other fused tap and transformer outages caused the bulk of the remaining customer interruptions. There are no recurring problems identified on the circuit and no further work is required at this time. A mid-cycle patrol was completed in 2022 and a full-cycle tree trim is scheduled for 2024. An overhead visual inspection was completed in 2019 and an overhead visual inspection is planned for 2023. Any repair work identified as a result of these inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 184055
Division: ARCHVIEW
ZIP Codes(s) Served: 63119, 63122, 63124, 63127
Customers Served: 482
Customer Interruptions (CI): 1,114
SAIFI Value: 2.31
SAIDI Value: 285

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	493	44.25%	5
LIGHTNING	73	6.55%	2
PUBLIC	7	0.63%	2
EQUIPMENT/UG	1	0.09%	1
TREE	505	45.33%	9
ANIMAL	22	1.97%	3
UNKNOWN	13	1.17%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

On a windy day, a broken V brace led to a circuit outage on 3/22/2022. Repairs were made on OAS work order 220811963. This outage caused 43% of the circuit's customer interruptions (475 out of 1114). A tree falling on a primary wire took out a recloser at 415 Wicksworth Ln on 5/19/2022. Repairs were made on OAS work order 221395192. This caused 36% of the circuit's customer interruptions (396 out of 1114). Several other fused tap and transformer outages caused the bulk of the remaining customer interruptions. There are no recurring problems identified on the circuit and no further work is required at this time. A full-cycle tree trim was completed in 2021 and a mid-cycle patrol is scheduled for 2023. An overhead visual inspection was completed in 2019 and an overhead visual inspection is planned for 2023. Any repair work identified as a result of these inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 197051
Division: MERAMEC VALLEY
ZIP Codes(s) Served: 63021
Customers Served: 1,531
Customer Interruptions (CI): 3,122
SAIFI Value: 2.04
SAIDI Value: 159

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	1	0.03%	1
EQUIPMENT/UG	3,026	96.93%	7
TREE	1	0.03%	1
EMPLOYEES	2	0.06%	2
ANIMAL	92	2.95%	3

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Multiple underground cable failures account for 97% of customer interruptions in 2022. Forty six percent of the underground issues were along New Ballwin Road. A planned Intellirupter recloser will isolate cable failures in that area. The recloser will be installed in 2023 on DOJM work request 21MT805672.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 201002
Division: GATEWAY
ZIP Codes(s) Served: 63121
Customers Served: 8
Customer Interruptions (CI): 44
SAIFI Value: 5.50
SAIDI Value: 1729

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	3	6.82%	2
TREE	40	90.91%	5
OTHER	1	2.27%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Approximately ninety percent of the customer interruptions in 2022 are the result of downed tree limbs on primary and neutral on four separate dates. The individual tree limb incidents were taken care of by vegetation management. A mid-cycle inspection of this line by vegetation management is scheduled in 2025. No further work is required at this time.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 206005
Division: ARCHVIEW
ZIP Codes(s) Served: 63109, 63119
Customers Served: 502
Customer Interruptions (CI): 1,005
SAIFI Value: 2.00
SAIDI Value: 204

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/UG	503	50.05%	1
UNKNOWN	502	49.95%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Two incidents account for 100% of the customer interruptions in 2022. The first incident was due to a section of DIP-28286 failing on 10/26/2022, taking out the circuit. The cable was isolated and repaired on DOJM work request 21MT803933. This outage caused 50% of the circuit's customer interruptions (503 out of 1005). The second incident was due to another circuit outage also occurring on 11/16/2022, but no information is indicated about the cause. This outage caused the other 50% of the circuit's customer interruptions (502 out of 1005). There are no recurring problems identified on the circuit and no further work is required at this time. A mid-cycle patrol was completed in 2022 and a full-cycle tree trim is scheduled for 2024. An overhead visual inspection was completed in 2022 and a ground line inspection is planned for 2026. Any repair work identified as a result of these inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 209054
Division: GATEWAY
ZIP Codes(s) Served: 63044
Customers Served: 43
Customer Interruptions (CI): 123
SAIFI Value: 2.86
SAIDI Value: 326

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	108	87.80%	3
ANIMAL	1	0.81%	1
UNKNOWN	14	11.38%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

An overhead malfunction occurred which resulted in a circuit outage. The circuit was patrolled and no issues were reported. Repairs were made at the time of the outage and no further work was needed. The circuit mid-cycle trim is scheduled for 2024. An overhead inspection was performed in 2022 and a detailed underground inspection is scheduled for 2023. There are no recurring problems on this circuit and no other work required at this time.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 209055
Division: GATEWAY
ZIP Codes(s) Served: 63044, 63045
Customers Served: 199
Customer Interruptions (CI): 382
SAIFI Value: 1.92
SAIDI Value: 784

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	52	13.61%	9
LIGHTNING	169	44.24%	1
PUBLIC	147	38.48%	1
ANIMAL	11	2.88%	4
UNKNOWN	3	0.79%	2

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

One incident accounts for 44% of customer interruptions in 2022. The incident was due to a suspected lighting strike, which resulted in a downed primary conductor and repairs were made. The circuit mid-cycle trim is scheduled for 2024. An overhead inspection was performed in 2022 and a detailed underground inspection is scheduled for 2023. There are no recurring problems on this circuit and no other work required at this time.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 214055
Division: GATEWAY
ZIP Codes(s) Served: 63031, 63033, 63136, 63138
Customers Served: 907
Customer Interruptions (CI): 1,795
SAIFI Value: 1.98
SAIDI Value: 198

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	1,528	85.13%	11
LIGHTNING	3	0.17%	3
EQUIPMENT/UG	1	0.06%	1
TREE	5	0.28%	5
ANIMAL	218	12.14%	12
OTHER	1	0.06%	1
UNKNOWN	39	2.17%	3

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Two incidents account for 75% of the customer interruptions in 2022. The first incident was due to a transformer that failed. The second incident was due to a jumper that failed. Both incidents were repaired appropriately. An overhead inspection of this circuit is due in 2023. No additional actions are required.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 218059
Division: MERAMEC VALLEY
ZIP Codes(s) Served: 63011, 63021
Customers Served: 1,377
Customer Interruptions (CI): 2,442
SAIFI Value: 1.77
SAIDI Value: 154

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	84	3.44%	7
PUBLIC	1,362	55.77%	2
EQUIPMENT/UG	15	0.61%	2
TREE	966	39.56%	8
ANIMAL	15	0.61%	2

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Four Intellirupters are planned for installation on the circuit in 2023. Installation will be completed on DOJM work requests 21MT800006, 800128, 800129, and 800168. A full-cycle tree trim is planned for 2023.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 219008
Division: ARCHVIEW
ZIP Codes(s) Served: 63108, 63110, 63112, 63113
Customers Served: 693
Customer Interruptions (CI): 1,561
SAIFI Value: 2.25
SAIDI Value: 273

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	679	43.50%	6
EQUIPMENT/UG	628	40.23%	1
TREE	222	14.22%	5
EMPLOYEES	30	1.92%	1
OTHER	2	0.13%	2

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Four incidents account for 89% of the customer interruptions in 2022. A vehicle accident from a hit pole caused the downed primary and secondary with work being completed on DOJM work request 21MT789742. This incident accounted for 40% of the customer interruptions. No additional work was required. Faulted underground primary cable resulted in 40% of the customer interruptions with repairs being completed on DOJM work request 21MT790522. No additional work was required. A broken tree fell on the line causing a broken insulator and a split crossarm with work being completed on DOJM work request 21MT795605. This incident resulted in 4% of the customer interruptions. No additional work was required. A broken tree caused fuse U24312 to blow and resulted in the 5% of the customer interruptions. The fused cutout was replaced on DOJM work request 21MT801976. No additional work required. An overhead visual inspection was completed in 2022. An underground visual inspection was completed in 2019 and an underground detailed inspection is scheduled for 2023. Any repair work identified as a result of that inspection will be completed in accordance with the Ameren Missouri's infrastructure inspection policy. A full trim cycle was completed in 2021 and there is a mid-cycle patrol planned for 2023.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 228053
Division: ARCHVIEW
ZIP Codes(s) Served: 63126
Customers Served: 164
Customer Interruptions (CI): 342
SAIFI Value: 2.09
SAIDI Value: 537

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	10	2.92%	2
PUBLIC	140	40.94%	1
TREE	189	55.26%	3
ANIMAL	2	0.58%	1
OTHER	1	0.29%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Two incidents account for 84% of the customer interruptions in 2022. The first incident was due to a tree falling on all three phases of primary wire at the rear of 9608 Greenview Dr on a windy day on 5/8/2022 blowing fuse U22133. Repairs were made on OAS work order 221280135. This outage caused 43% of the circuit's customer interruptions (147 out of 342). The second incident was due to public damage to a pole behind Crestwood Plaza, which blew fuse U22133 on 10/5/2022. Repairs were made on work request 21MT802564. This outage caused 41% of the circuit's customer interruptions (141 out of 342). A few other fused tap and transformer outages caused the bulk of the remaining customer interruptions. There are no recurring problems identified on the circuit and no further work is required at this time. A full-cycle tree trim was completed in 2021 and a mid-cycle patrol is scheduled for 2023. An overhead visual inspection was completed in 2020 and an overhead visual inspection is planned for 2024. Any repair work identified as a result of these inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 238008
Division: ARCHVIEW
ZIP Codes(s) Served: 63130, 63133
Customers Served: 656
Customer Interruptions (CI): 1,507
SAIFI Value: 2.30
SAIDI Value: 504

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	668	44.33%	10
PUBLIC	769	51.03%	6
TREE	49	3.25%	9
OTHER	20	1.33%	5
UNKNOWN	1	0.07%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Three incidents caused 89% of the customer interruptions (1338/1507). The first incident was caused by two poles and three spans of primary conductor failing. The cause is listed as an overhead malfunction. This caused 41% of the customer interruptions (624/1507). The second incident, accounting for 42% of the customer interruptions (631/1507), was caused by a public vehicle on 04/26/22. The third incident was also caused by a public vehicle resulting in 6% of customer interruptions (83/1507). There are no recurring problems identified on this circuit and no further work is required.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 238009
Division: ARCHVIEW
ZIP Codes(s) Served: 63106, 63133
Customers Served: 211
Customer Interruptions (CI): 633
SAIFI Value: 3.00
SAIDI Value: 294

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	18	2.84%	4
PUBLIC	59	9.32%	4
EQUIPMENT/UG	371	58.61%	2
EMPLOYEES	185	29.23%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Three incidents caused 89% of customer interruptions (556/633). The first incident was caused by an operating error and lasted less than 10 minutes. This caused 29% of the customer interruptions (185/633). The second incident, accounting for 29% of the customer interruptions (184/633), was caused by an underground malfunction. The third outage, accounting for 30% of the customer interruptions (187/633), was caused by another underground malfunction. There are no recurring problems identified on this circuit and no further work is required.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 253057
Division: ARCHVIEW
ZIP Codes(s) Served: 63129
Customers Served: 1,013
Customer Interruptions (CI): 2,907
SAIFI Value: 2.87
SAIDI Value: 649

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	773	26.59%	5
PUBLIC	265	9.12%	3
EQUIPMENT/UG	63	2.17%	5
TREE	1,715	59.00%	3
OVERLOAD	10	0.34%	1
OTHER	10	0.34%	1
UNKNOWN	71	2.44%	2

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Four incidents account for 85% of the customer interruptions in 2022. Two incidents were due to a dead tree falling on the primary conductor during a thunder storm. The third incident was due to a tree breaking and damaging the primary conductor. The fourth incident was due to one span of 3 phase primary falling down. There are no recurring problems identified on this circuit and no further work is required at this time.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 255003
Division: ARCHVIEW
ZIP Codes(s) Served: 63105, 63106, 63115
Customers Served: 595
Customer Interruptions (CI): 1,051
SAIFI Value: 1.77
SAIDI Value: 488

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	999	95.05%	9
LIGHTNING	1	0.10%	1
PUBLIC	1	0.10%	1
TREE	47	4.47%	6
OTHER	1	0.10%	1
UNKNOWN	2	0.19%	2

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

One incident caused 78% of the customer interruptions on this circuit in 2023. An overhead jumper failed (C phase) causing an outage to seven downstream transformers. The jumper was replaced and the circuit was restored. A project to rebuild the circuit to current construction standards will be submitted.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 259055
Division: GATEWAY
ZIP Codes(s) Served: 63031, 63033, 63106
Customers Served: 2,168
Customer Interruptions (CI): 7,873
SAIFI Value: 3.63
SAIDI Value: 284

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	3,320	42.17%	33
LIGHTNING	8	0.10%	2
PUBLIC	11	0.14%	1
EQUIPMENT/UG	33	0.42%	1
TREE	2,292	29.11%	19
EMPLOYEES	2	0.03%	2
ANIMAL	28	0.36%	5
OTHER	1	0.01%	1
UNKNOWN	2,178	27.66%	4

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Three incidents account for 82% of the customer interruptions in 2022. The first incident was due to a faulted solid blade switch, which was replaced. The second and third incidents were due to tree limbs on the line. In the third instance, a tree took down two spans and the neutral but was coded as unknown within the outage management system. A trimming cycle is due for this circuit in 2023. No other corrective action is needed.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 260053
Division: GATEWAY
ZIP Codes(s) Served: 63034
Customers Served: 396
Customer Interruptions (CI): 817
SAIFI Value: 2.06
SAIDI Value: 562

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	75	9.18%	6
PUBLIC	323	39.53%	1
TREE	409	50.06%	7
EMPLOYEES	1	0.12%	1
ANIMAL	4	0.49%	4
UNKNOWN	5	0.61%	3

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Two incidents account for 88% of customer interruptions in 2022. The first incident was due to a vehicle hitting a pole. The pole and device were repaired. After review of the pole location, there was no evidence that this is a bad location and this was an isolated incident. The second incident was due to a tree falling on primary conductor. The tree was removed and a trimming cycle is scheduled in 2023 for this circuit. No additional corrective action is necessary.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 269002
Division: GATEWAY
ZIP Codes(s) Served: 63042, 63134, 63135
Customers Served: 564
Customer Interruptions (CI): 1,190
SAIFI Value: 2.11
SAIDI Value: 200

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	1,134	95.29%	7
TREE	53	4.45%	6
EMPLOYEES	1	0.08%	1
OTHER	1	0.08%	1
UNKNOWN	1	0.08%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Ninety two percent of the customer interruptions in 2022 are the result of broken crossarm and secondary conductor occurring on one incident, 3/9/2022. Both the crossarm and secondary conductor were replaced on DOJM work request 21MT788479. An overhead visual inspection is scheduled for 2023. Any repair work identified as a result of these inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy. A full-cycle tree trim is scheduled for 2023.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 271052
Division: ARCHVIEW
ZIP Codes(s) Served: 63026
Customers Served: 493
Customer Interruptions (CI): 881
SAIFI Value: 1.79
SAIDI Value: 202

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	785	89.10%	9
EQUIPMENT/UG	42	4.77%	1
ANIMAL	53	6.02%	2
UNKNOWN	1	0.11%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

One incident accounts for 55% of the circuit's customer interruptions (488 out of 881). This incident was due to a disconnect switch failing, which led to a circuit outage on 9/28/2022. Repairs were made on OAS work order 222712254. Several other fused tap and transformer outages caused the bulk of the remaining customer interruptions. There are no recurring problems identified on the circuit and no further work is required at this time. A full-cycle tree trim was completed in 2022 and a mid-cycle patrol is scheduled for 2024. An overhead visual inspection was completed in 2019 and an overhead visual inspection is planned for 2023. Any repair work identified as a result of these inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 272053
Division: GATEWAY
ZIP Codes(s) Served: 63138
Customers Served: 423
Customer Interruptions (CI): 809
SAIFI Value: 1.91
SAIDI Value: 255

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	557	68.85%	8
PUBLIC	1	0.12%	1
TREE	138	17.06%	11
ANIMAL	75	9.27%	4
UNKNOWN	38	4.70%	2

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Three incidents account for 63% of the customer interruptions in 2022. The first incident occurred on 5/2/2022 and was due to a squirrel on a distribution transformer, which caused a malfunction accounting for 6% of the customer interruptions. The second incident occurred on 5/26/2022 and was due to a limb on the primary conductor accounting for 7% of the customer interruptions. The third incident occurred on 12/8/2022 and was due to a crossarm split on a pole, which affected a solid blade switch. This incident accounted for 50% of the customer interruptions. The crossarm and switch were repaired and the fuse was replaced from the squirrel incident. A mid-cycle vegetation inspection is scheduled in 2024 for this circuit. No other corrective action is necessary.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 275004
Division: ARCHVIEW
ZIP Codes(s) Served: 63123
Customers Served: 469
Customer Interruptions (CI): 1,216
SAIFI Value: 2.59
SAIDI Value: 596

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	183	15.05%	6
EQUIPMENT/UG	60	4.93%	3
TREE	498	40.95%	5
UNKNOWN	475	39.06%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

A broken crossarm and down primary wire caused a circuit outage on 5/5/2022. Repairs were made on DOJM work request 21MT792180. This outage caused 39% of the circuit's customer interruptions (475 out of 1216). A tree caused a circuit outage on 8/1/2022. Repairs were made on DOJM work request 21MT797807. This outage caused 39% of the circuit's customer interruptions (477 out of 1216). Several other fused tap and transformer outages caused the bulk of the remaining customer interruptions. There are no recurring problems identified on the circuit and no further work is required at this time. A full-cycle tree trim was completed in 2021 and a mid-cycle patrol is scheduled for 2023. An overhead visual inspection was completed in 2021 and a ground line inspection is planned for 2025. Any repair work identified as a result of these inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 280055
Division: ARCHVIEW
ZIP Codes(s) Served: 63010, 63129
Customers Served: 1,316
Customer Interruptions (CI): 2,784
SAIFI Value: 2.12
SAIDI Value: 204

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	12	0.43%	2
EQUIPMENT/UG	53	1.90%	11
TREE	2,651	95.22%	4
ANIMAL	58	2.08%	1
UNKNOWN	10	0.36%	2

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Two incidents account for 95% of the customer interruptions in 2022. The first incident was due to a tree falling onto the primary conductor. The second incident was due a tree breaking and damaging the primary conductor at a separate location during a rainstorm. A mid-cycle tree trim patrol was completed in 2022. An underground detailed inspection and overhead visual inspection were completed in 2022. Any repair work identified as a result of these inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 288052
Division: GATEWAY
ZIP Codes(s) Served: 63043, 63044
Customers Served: 451
Customer Interruptions (CI): 1,085
SAIFI Value: 2.41
SAIDI Value: 255

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	299	27.56%	13
ANIMAL	30	2.76%	8
OTHER	4	0.37%	1
UNKNOWN	752	69.31%	4

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

One incident accounted for 46% of the customer interruptions in 2022. On 8/5/2022, an overhead switch malfunctioned causing the outage. The circuit was patrolled, and no issues were reported. There are no recurring problems on this circuit and no other work required at this time. The circuit cycle trim is scheduled for 2024. An overhead inspection is scheduled for 2023 and a detailed underground inspection was performed in 2021. Any repair work identified as a result of these inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 293009
Division: ARCHVIEW
ZIP Codes(s) Served: 63143
Customers Served: 80
Customer Interruptions (CI): 159
SAIFI Value: 1.99
SAIDI Value: 387

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	158	99.37%	2
OTHER	1	0.63%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

One incident occurring on 8/15/2022 accounts for all but 2 of the customer interruptions in 2022. This incident was a result of a wire breaking a splice point. The cause of the broken line is unknown. The affected section of line was replaced and there is no further corrective action recommended at this time.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 294056
Division: ARCHVIEW
ZIP Codes(s) Served: 63101, 63102
Customers Served: 14
Customer Interruptions (CI): 93
SAIFI Value: 6.64
SAIDI Value: 741

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
PUBLIC	9	9.68%	1
EQUIPMENT/UG	65	69.89%	5
UNKNOWN	19	20.43%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

The corrective action planned is to remove all PILC cable, add route diversity, and automated sectionalizing via DOJM work request 790263. The plan to rebuild Circuit 294056 is a subset of a plan to rebuild all circuits from Gratiot substation per the Underground Rebuild Master Plan.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 294058
Division: ARCHVIEW
ZIP Codes(s) Served: 63101, 63102
Customers Served: 18
Customer Interruptions (CI): 54
SAIFI Value: 3.00
SAIDI Value: 244

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
PUBLIC	47	87.04%	3
EQUIPMENT/UG	7	12.96%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

A plan is in motion to replace the entire 294058 circuit which includes removal of all PILC cable, adding route diversity and automated sectionalizing. The engineering design is estimated to be completed by June 2023 with construction to be completed by November 2023.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 317005
Division: ARCHVIEW
ZIP Codes(s) Served: 63136, 63147
Customers Served: 677
Customer Interruptions (CI): 1,481
SAIFI Value: 2.19
SAIDI Value: 228

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	713	48.14%	10
PUBLIC	738	49.83%	4
TREE	29	1.96%	7
OTHER	1	0.07%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Three incidents caused 88% of customer interruptions on this circuit in 2022. The first instance resulted from a public vehicle accident (653/1481). The second and third instances related to an overhead jumper failure due to a frayed wire catching fire (651/1481). The jumper and frayed wire were replaced and circuit was restored. A project to build circuit to current construction standards will be submitted.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 318054
Division: GATEWAY
ZIP Codes(s) Served: 63021, 63131
Customers Served: 505
Customer Interruptions (CI): 994
SAIFI Value: 1.97
SAIDI Value: 379

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	1	0.10%	1
LIGHTNING	20	2.01%	1
PUBLIC	23	2.31%	3
EQUIPMENT/UG	6	0.60%	4
TREE	922	92.76%	5
EMPLOYEES	1	0.10%	1
ANIMAL	4	0.40%	2
UNKNOWN	17	1.71%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Two incidents account for 86% of the customer interruptions in 2022. The first incident occurred on 7/9/2022 and was due to tree contact on B and C phase. Repairs and restoration were completed under OAS work order 221900474. The second incident occurred on 7/18/2022 and was due to tree contact on the overhead line. Repairs and restoration were completed under OAS work order 221991336. There are no reoccurring issues that require repair. A mid-cycle patrol was completed in 2020, and a full-cycle tree trim is scheduled for 2024.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 321052
Division: ARCHVIEW
ZIP Codes(s) Served: 63117, 63144
Customers Served: 50
Customer Interruptions (CI): 108
SAIFI Value: 2.16
SAIDI Value: 281

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/UG	108	100.00%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

There was only one circuit outage during 2022 resulting in all 50 customers being affected. The outage was a result of a cable fault and repairs were made to restore the circuit on OAS work order 222020449. Restorations steps within the outage management system double counted the outage impact. Excluding this issue would result in this circuit not making the worst performing circuit list. No corrective action is recommended at this time.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 389051
Division: NORTHEAST MO
ZIP Codes(s) Served: 63346, 63348, 63362, 63385
Customers Served: 1,365
Customer Interruptions (CI): 3,951
SAIFI Value: 2.90
SAIDI Value: 252

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	1,343	33.99%	5
PUBLIC	3	0.08%	3
EQUIPMENT/UG	4	0.10%	1
TREE	2,557	64.72%	4
ANIMAL	44	1.11%	3

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Overhead malfunctions and tree issues accounted for 99% interruptions in 2022. Two new Intellirupters have been added to the list of distribution automation devices to be completed in 2023. One will be located along Peine Rd east of Spring Mill Dr and the second will be along Hwy 61 north of Hwy W.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 454051
Division: SEMO
ZIP Codes(s) Served: 63830, 63851
Customers Served: 115
Customer Interruptions (CI): 260
SAIFI Value: 2.26
SAIDI Value: 249

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	221	85.00%	12
EMPLOYEES	8	3.08%	1
OTHER	31	11.92%	4

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Ninety seven percent of the Caruthersville Switch circuit 454051 customer interruptions in 2022 were due to overhead primary failures. Currently, we are replacing both Caruthersville Switch & Caruthersville Plant with the new Juliet substation in Caruthersville. Overhead circuit rebuild on these circuits was completed on DOJM work request numbers 2TSE131399 & 131400 in 2023.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 454055
Division: SEMO
ZIP Codes(s) Served: 63830
Customers Served: 1,108
Customer Interruptions (CI): 2,525
SAIFI Value: 2.28
SAIDI Value: 324

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	2,424	96.00%	13
LIGHTNING	37	1.47%	1
TREE	50	1.98%	3
ANIMAL	14	0.55%	5

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Ninety six percent of the Caruthersville Switch circuit 454055 customer interruptions in 2022 were due to overhead primary failures. Currently, we are replacing both Caruthersville Switch & Caruthersville Plant with the new Juliet substation in Caruthersville. Overhead circuit rebuild on these circuits was completed on DOJM work request numbers 2TSE131399 & 131400 in 2023.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 475051
Division: SEMO
ZIP Codes(s) Served: 63622, 63623, 63625, 63630,,
Customers Served: 586
Customer Interruptions (CI): 1,050
SAIFI Value: 1.79
SAIDI Value: 137

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	741	70.57%	24
LIGHTNING	1	0.10%	1
PUBLIC	21	2.00%	1
TREE	234	22.29%	4
ANIMAL	8	0.76%	6
OTHER	41	3.90%	7
UNKNOWN	4	0.38%	4

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Tree related issues primarily early in the year were responsible for 22.3% of the customer interruptions in 2022 and have been addressed as a full cycle tree trimming was completed in 2022 in the later part of the year. A groundline inspection was completed on the circuit in late 2021 and the repairs identified in that inspection were completed in the second half of 2022 to address those issues. There have also been multiple three phase and single phase locations identified along the circuit where we will be installing Trip Savers or Reclosers in 2023.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 484056
Division: SEMO
ZIP Codes(s) Served: 63628, 63630, 63648, 63660,
Customers Served: 1,443
Customer Interruptions (CI): 2,514
SAIFI Value: 1.74
SAIDI Value: 182

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	376	14.96%	28
LIGHTNING	51	2.03%	4
PUBLIC	1,394	55.45%	7
EQUIPMENT/UG	2	0.08%	2
TREE	565	22.47%	10
ANIMAL	71	2.82%	24
OTHER	1	0.04%	1
UNKNOWN	54	2.15%	9

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

There is currently a Smart Energy Plan project under Financial Work Order J01LZ in the scoping and design phase to construct a new 4.7 mile three phase circuit tie between the Potosi 484056 and Terre Du Lac 561053 circuits, which includes the installation of 4 new Intellirupters to provide automated switching capabilities for the new tie. Public vehicle incidents were responsible for 55.4% of the outages in 2022, all of which were addressed at the time of the occurrence with any improvement adjustments possible made at the time to avoid repeat incidents in the same locations. Tree related issues were responsible for 22.5% of the outages in 2022 and will be addressed further as there is a full cycle tree trimming scheduled for the Potosi 484056 circuit in 2023 which will address any additional problem areas. There has also been multiple locations identified along the circuit where we will be installing Trip Savers or Reclosers on single phase taps in 2023.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 545054
Division: MERAMEC VALLEY
ZIP Codes(s) Served: 63010, 63026
Customers Served: 814
Customer Interruptions (CI): 2,546
SAIFI Value: 3.13
SAIDI Value: 425

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	1,069	41.99%	5
PUBLIC	663	26.04%	2
TREE	798	31.34%	1
EMPLOYEES	9	0.35%	2
ANIMAL	7	0.27%	2

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

There are plans to install an intellirupter near switch J6452. This circuit had a mid-cycle tree patrol in 2022 and is planned for a cycle trim in 2024. This circuit had an overhead visual inspection completed in 2022. A drone inspection of the entire circuit was performed in 2022. Any repair work identified as a result of the inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 550054
Division: MERAMEC VALLEY
ZIP Codes(s) Served: 63019, 63028
Customers Served: 573
Customer Interruptions (CI): 1,178
SAIFI Value: 2.06
SAIDI Value: 80

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	1,161	98.56%	5
ANIMAL	17	1.44%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Ninety six percent of customer interruptions were due to overhead equipment malfunctions. The equipment was repaired on DOJM work orders 26JF163647 and 26JF162507. The last visual inspection was performed in 2019, with one being scheduled in 2023. Any issues found, as a result of the 2023 inspection, will be repaired in accordance with Ameren Missouri's infrastructure inspection policy. There are no reoccurring problems identified on this circuit and no further work required at this time.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 570051
Division: CENTRAL MO
ZIP Codes(s) Served: 65026, 65049, 65065, 65072
Customers Served: 1,377
Customer Interruptions (CI): 2,456
SAIFI Value: 1.78
SAIDI Value: 587

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	2,065	84.08%	11
PUBLIC	85	3.46%	2
EQUIPMENT/UG	1	0.04%	1
TREE	181	7.37%	6
ANIMAL	89	3.62%	4
OTHER	3	0.12%	2
UNKNOWN	32	1.30%	4

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Six incidents (2 overall events) account for 84% of the customer interruptions in 2022. The first event involved a faulted voltage regulator. The second event occurred during extreme cold temperatures in December when the restoration of broken primary and jumper was delayed due to cold load pickup. A groundline inspection was completed in 2022, which identified a number of poles, risers, grounds, and guys needing replacement along with other miscellaneous equipment. An underground detailed inspection was last completed in 2020. The next underground and overhead inspections are planned for 2024 and 2028, respectively. Any repair work identified as a result of the inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy. Supplemental fault current indicators were added to the circuit in 2021 while smart switching is planned for 2023. The most recent cycle tree trim was completed in 2019 while a mid-cycle vegetation patrol was completed in 2022. The next cycle tree trim is planned for 2025. No recurring problems beyond those identified by the groundline inspection were identified on the circuit as part of the review. Therefore, no further work is required at this time.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 572056
Division: MERAMEC VALLEY
ZIP Codes(s) Served: 63012, 63052
Customers Served: 1,409
Customer Interruptions (CI): 2,969
SAIFI Value: 2.11
SAIDI Value: 196

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	1,447	48.74%	6
EQUIPMENT/UG	8	0.27%	1
TREE	130	4.38%	3
ANIMAL	2	0.07%	2
UNKNOWN	1,382	46.55%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Ninety six percent of customer interruptions were due to overhead equipment malfunctions and unknown issues. The overhead equipment was replaced on work orders 26JF161648, 26JF156055, and 26JF161840 along with the troubleman replacing broken fuses. The last overhead visual inspection was performed in 2019. No additional work is planned in 2023.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 611052
Division: CENTRAL MO
ZIP Codes(s) Served: 65078, 65084
Customers Served: 835
Customer Interruptions (CI): 2,590
SAIFI Value: 3.10
SAIDI Value: 273

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	2,528	97.61%	22
LIGHTNING	4	0.15%	1
ANIMAL	52	2.01%	12
OTHER	6	0.23%	4

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

The event that contributed the most to customer interruptions in 2022 resulted from a broken primary during rainy conditions and loads that could not be transferred remotely due to communication problems with substation switching equipment. Smart switches were installed at the Versailles Substation in late 2021, and communication issues with the switches were resolved later in 2022. Another significant event involved a solid blade switch failure. A groundline inspection is scheduled in 2023. An underground visual inspection was completed in 2021 while the next underground inspection is planned for 2025. Any repair work identified as a result of the inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy. A phase balancing study and overhead visual inspection were completed as part of the worst performing circuit review. This review identified some phase imbalance and a need for additional animal guarding, lightning arrester caps, and transformer fusing that will be addressed under Maximo work order KA35201 along with replacement of porcelain cutouts. A cycle trim and mid-cycle patrol were completed in 2019 and 2022, respectively. The next cycle trim is planned for 2025.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 612055
Division: NORTHEAST MO
ZIP Codes(s) Served: 63334
Customers Served: 921
Customer Interruptions (CI): 2,078
SAIFI Value: 2.26
SAIDI Value: 111

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	980	47.16%	8
LIGHTNING	1	0.05%	1
ANIMAL	1,057	50.87%	14
OTHER	3	0.14%	1
UNKNOWN	37	1.78%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Overhead malfunctions and animal issues account for 98% of customer interruptions in 2022. Maximo work order KA33741 was created to add fuse switches to single-phase transformers connected directly to the backbone of the circuit. In addition, five locations have been identified to add a TripSaver switch and work requests will be created for construction crews to complete the additions. Cycle tree trimming is planned for 2023.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 622057
Division: SEMO
ZIP Codes(s) Served: 63823, 63834
Customers Served: 313
Customer Interruptions (CI): 713
SAIFI Value: 2.28
SAIDI Value: 217

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	575	80.65%	7
EQUIPMENT/UG	16	2.24%	1
TREE	1	0.14%	1
ANIMAL	117	16.41%	4
OTHER	4	0.56%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Four incidents account for 96% of the customer interruptions in 2022. Two incidents on 8/4/2022 and 11/5/2022 are due to storm damage. One incident on 2/17/2022 was due to an underground primary failure. The fourth incident was due to animal damage. The section of underground cable was repaired on DOJM work request 2TSE134077 in 2022. No other work is planned for 2023.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 628056
Division: SEMO
ZIP Codes(s) Served: 63841
Customers Served: 1,024
Customer Interruptions (CI): 3,713
SAIFI Value: 3.63
SAIDI Value: 394

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	1,766	47.56%	11
LIGHTNING	1	0.03%	1
TREE	1,914	51.55%	3
ANIMAL	31	0.83%	4
OTHER	1	0.03%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Three incidents account for 78% of customer interruptions in 2022. The first incident occurred on 4/11/2022 during a thunderstorm accounting for 26% of the customer interruptions and was due to a substation relay issue that was corrected. The second incident occurred on 6/1/2022 when a tree fell into the primary during a thunderstorm which accounted for 26% of the customer interruptions. The third incident occurred on 9/17/2022 accounting for 26% of the customer interruptions when a tree fell into the primary. The Walnut circuit 628056 project replaced over 8,000' of direct buried underground cable on DOJM work request 2TSE129320 in late 2021 with mapping updated in 2022. The Distribution Automation group also has four smart switch installation projects that are currently being designed to isolate future outages.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 629052
Division: NORTHEAST MO
ZIP Codes(s) Served: 63330, 63336, 63343
Customers Served: 63
Customer Interruptions (CI): 248
SAIFI Value: 3.94
SAIDI Value: 467

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	159	64.11%	9
LIGHTNING	1	0.40%	1
PUBLIC	63	25.40%	2
TREE	14	5.65%	1
ANIMAL	7	2.82%	4
OTHER	3	1.21%	1
UNKNOWN	1	0.40%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Overhead malfunctions accounted for 64% of the customer interruptions in 2022. A single public vehicle event on 8/31/2022 accounted for 25% of the customer interruptions in 2022. A new work request will be created to add a new recloser on a section of cross-country overhead circuit off of Pike Co Rs 211. A mid-cycle vegetation trim was completed in 2022.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 633057
Division: SEMO
ZIP Codes(s) Served: 63701, 63703, 63755
Customers Served: 2,493
Customer Interruptions (CI): 5,141
SAIFI Value: 2.06
SAIDI Value: 187

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	3,720	72.36%	25
PUBLIC	113	2.20%	6
EQUIPMENT/UG	70	1.36%	4
TREE	212	4.12%	17
ANIMAL	38	0.74%	5
OTHER	15	0.29%	5
UNKNOWN	973	18.93%	3

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

One incident accounts for 48% of the customer interruptions in 2022. This incident occurred on 11/29/2022 when a fused cutout failed, taking out the entire circuit. The cutout and fuse were replaced. In addition, on 12/23/22, SEMO Division experienced extreme cold temperatures. This caused a failure of a substation breaker at the Mt. Auburn substation. Part of the load from Mt. Auburn substation was transferred to Glenwood substation causing overloads and subsequent cold load pickup issues. The Glenwood circuit load was then transferred to Cape Rock substation temporarily. There is currently a project to rebuild this section of Cape Rock circuit to create capacity to handle this additional load on the Glenwood circuit. This work will be completed on DOJM work request 2TSE136545 in 2023. SEMO Division is also replacing over 20,000' of direct buried underground primary and 6,600' of underground secondary on this circuit. This work will be done on DOJM work request 2TSE134828 in 2023.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 655053
Division: NORTHEAST MO
ZIP Codes(s) Served: 63376
Customers Served: 980
Customer Interruptions (CI): 1,944
SAIFI Value: 1.98
SAIDI Value: 170

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	1,920	98.77%	8
EQUIPMENT/UG	24	1.23%	4

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Overhead malfunctions account for 99% of customer interruptions in 2022. A distribution automation project will be added to this circuit in 2023 to improve reliability. Maintenance tree trim cycle was completed in 2020.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 665055
Division: NORTHEAST MO
ZIP Codes(s) Served: 63379
Customers Served: 365
Customer Interruptions (CI): 952
SAIFI Value: 2.61
SAIDI Value: 239

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	784	82.35%	17
LIGHTNING	1	0.11%	1
PUBLIC	46	4.83%	3
EQUIPMENT/UG	1	0.11%	1
TREE	97	10.19%	4
ANIMAL	1	0.11%	1
UNKNOWN	22	2.31%	5

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Overhead malfunctions and tree incidents account for 93% of the customer interruptions in 2022. Cycle tree trim is planned for 2024. Groundline circuit inspection is planned for 2023. Any repair work identified as a result of the inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy. In addition, there is a plan to replace eight spans of 3-phase 12.5kV backbone circuit #4ACSR conductor with 556AA along Frenchmans Bluff Rd off of Lincoln Dr in Troy, MO under DOJM work request 2WWZ212788. Design and construction is planned to be completed in 2023.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 680053
Division: SEMO
ZIP Codes(s) Served: 63701, 63703
Customers Served: 364
Customer Interruptions (CI): 687
SAIFI Value: 1.89
SAIDI Value: 99

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	331	48.18%	4
PUBLIC	353	51.38%	2
TREE	1	0.15%	1
OTHER	2	0.29%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

A public vehicle incident on 7/18/2022 accounts for 51% of the customer interruptions in 2022. SEMO division is in the process of rebuilding the 680051 and 680053 circuit exits at Lefarth substation. Currently the circuit exit conductors run together on the same pole line with bundled Hendrix cable. Upon inspection, this cable was found to be in poor condition. A project to replace both of these circuit exits on different pole lines will be done in 2023 on DOJM work request numbers 2TSE135682 & 135683. This work will eliminate flash overs, overloading, and provide better switching capabilities between the two circuits.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 717053
Division: CENTRAL MO
ZIP Codes(s) Served: 64024, 64062
Customers Served: 1,402
Customer Interruptions (CI): 3,140
SAIFI Value: 2.24
SAIDI Value: 377

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	1,547	49.27%	21
PUBLIC	1	0.03%	1
EQUIPMENT/UG	8	0.25%	2
TREE	1,499	47.74%	9
EMPLOYEES	68	2.17%	1
ANIMAL	14	0.45%	6
OTHER	3	0.10%	3

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Forty-nine percent of the customer interruptions on this circuit were caused by overhead malfunctions. The most recent Circuit Device Inspection was completed in 2021 with the next inspection to take place in 2025. Seven Circuit Device Inspection projects are identified to be completed in 2023. Any repair work identified as a result of future inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy. The most recent tree trimming was completed in 2019, while next cycle tree trim is planned for 2024. Six new Intellirupter reclosers will be installed on the circuit this year. No additional work is planned in 2023.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 719052
Division: CENTRAL MO
ZIP Codes(s) Served: 65041, 65069
Customers Served: 419
Customer Interruptions (CI): 1,245
SAIFI Value: 2.97
SAIDI Value: 1023

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	583	46.83%	13
EQUIPMENT/UG	3	0.24%	2
TREE	633	50.84%	5
ANIMAL	13	1.04%	3
OTHER	12	0.96%	9
UNKNOWN	1	0.08%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Approximately 51% of the customer interruptions are attributed to trees. Incident investigations following the April and May storms identified uprooted trees outside of Ameren easements. A cycle trim was completed in 2020. The next mid-cycle patrol and cycle trim are scheduled for 2023 and 2026, respectively. Over 46% of the customer interruptions on this circuit were due to overhead malfunctions. Overhead visual and underground detailed inspections were completed in 2019. An underground visual inspection is scheduled in 2023 while the next overhead inspection is planned for 2025. Any repair work identified as a result of the inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy. The reconductoring of brittle wire on the circuit was completed in 2021 and 2022. Supplemental fault current indicators (FCI's) were added to the circuit in 2021, and additional fault current indicators are planned for 2023. A coordination study and overhead visual inspection were completed as part of the worst performing circuit review. The review identified a need for various crossarm, insulator, and transformer bushing replacements as well as fused switch and recloser upgrades, additional animal guarding and spot tree trimming that will be addressed under Maximo work order KA33699.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 731051
Division: NORTHEAST MO
ZIP Codes(s) Served: 63353, 63433, 63441, 63459
Customers Served: 362
Customer Interruptions (CI): 979
SAIFI Value: 2.70
SAIDI Value: 388

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	359	36.67%	4
LIGHTNING	65	6.64%	4
TREE	22	2.25%	3
ANIMAL	193	19.71%	3
OTHER	1	0.10%	1
UNKNOWN	339	34.63%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Overhead malfunctions, animal, and tree incidents account for 59% of the customer interruptions in 2022. Thirty five percent of customer interruptions were due to a single event on 9/4/2022 with an unknown cause. A tree trim cycle was completed in 2022. Maximo work order KA36232 was created to add a 40T TripSaver and remove fuse switch 13767 in Frankford, MO. This work is planned to be completed in 2023.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 734053
Division: SEMO
ZIP Codes(s) Served: 63833, 63862
Customers Served: 51
Customer Interruptions (CI): 91
SAIFI Value: 1.78
SAIDI Value: 317

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	85	93.41%	8
LIGHTNING	5	5.49%	1
ANIMAL	1	1.10%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Ninety three percent of customer interruptions in 2022 were due to overhead malfunctions. SEMO Division has an approved SEP project (CHAR 72 UPGR) in OPPM to install an OPGW static from Charleston to Anniston to East Prairie to provide lightning protection and to also reconductor the 12kV underbuild from Charleston to Anniston. This project is currently slated for 2025 completion. However, due to the recent primary conductor failure, our Distribution Technical Advisor group is trying to get this project moved for a 2024 completion.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 786051
Division: MERAMEC VALLEY
ZIP Codes(s) Served: 63012, 63050, 63070
Customers Served: 1,089
Customer Interruptions (CI): 2,213
SAIFI Value: 2.03
SAIDI Value: 81

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	1,089	49.21%	4
LIGHTNING	1,061	47.94%	4
TREE	8	0.36%	5
ANIMAL	18	0.81%	1
OVERLOAD	8	0.36%	1
UNKNOWN	29	1.31%	5

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Ninety six percent of customer interruptions were due to substation outages from weather related incidents and resulting overhead malfunctions. The equipment was repaired on OAS work order 223563973 and restored on OAS work order 221381652. The last visual inspection was performed in 2019 and will be inspected again in 2025. Tree trimming will be performed and completed in 2023. There are no reoccurring problems identified on this circuit and no further work required at this time.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 799053
Division: CENTRAL MO
ZIP Codes(s) Served: 65101, 65109
Customers Served: 1,074
Customer Interruptions (CI): 1,959
SAIFI Value: 1.82
SAIDI Value: 184

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	3	0.15%	3
PUBLIC	12	0.61%	2
EQUIPMENT/UG	183	9.34%	23
TREE	1,741	88.87%	2
ANIMAL	16	0.82%	3
OTHER	4	0.20%	4

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Two incidents account for 89% of the customer interruptions in 2022. The first incident was due to tree contact on 07/27/22 that accounts for 44% of customer interruptions. The second incident was due to a broken tree on 12/16/22 that accounts for 45% of customer interruptions. Approximately 9% of customer interruptions on this circuit are due to underground malfunctions. Both underground and overhead visual inspections are scheduled in 2023. Groundline and underground detailed inspections were completed in 2019. Any repair work identified as a result of the inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy. A cycle tree trim is scheduled in 2023 and was last completed in 2019 with a mid-cycle patrol in 2021. Supplemental fault current indicators (FCI's) were added to the circuit in 2021. Additional FCI's and smart switches are planned for 2023. A phase balancing study and overhead visual inspection were completed as part of the worst performing circuit review. This review identified some phase imbalance and a need for various crossarm, insulator, lightning arrestor and porcelain cutout replacements as well as additional animal guarding and transformer fusing that will all be addressed under Maximo work order KA38044.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 806052
Division: CENTRAL MO
ZIP Codes(s) Served: 65053
Customers Served: 117
Customer Interruptions (CI): 232
SAIFI Value: 1.98
SAIDI Value: 323

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	14	6.03%	3
PUBLIC	102	43.97%	2
EQUIPMENT/UG	115	49.57%	1
OTHER	1	0.43%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

The majority of customer interruptions in 2022 are attributed to a public vehicle incident, a substation circuit exit cable fault, and a customer transformer failure. All circuit exit cables and associated terminal poles have been replaced within the last five years. Smart switches and fault current indicators (FCI's) were added to the circuit in 2021, and supplemental FCI's are planned for 2023. The most recent groundline inspection of this circuit occurred in 2019 while an underground detailed inspection was completed in 2021. The next underground and overhead inspections are both planned for 2025. Any repair work identified as a result of the inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy. A cycle tree trim is scheduled in 2023 and a mid-cycle patrol was completed in 2020. No recurring problems were identified on the circuit as part of the review; therefore, no further work is required at this time.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 817051
Division: SEMO
ZIP Codes(s) Served: 63820, 63834, 63845
Customers Served: 81
Customer Interruptions (CI): 142
SAIFI Value: 1.75
SAIDI Value: 239

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	140	98.59%	4
LIGHTNING	1	0.70%	1
ANIMAL	1	0.70%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

One incident accounts for 96% of the customer interruptions in 2022. The West Catron substation experienced a lightning strike on 8/30/2022 causing an overhead substation failure. SEMO Division has created a Smart Energy Plan project (Berntie 71 34kV rebuild), which will rebuild the 34kV line with 336ACSR T2 wire and OPGW static from Lilboun to Catron to Parm to Townley in 2025. This project will also add lightning protection should prevent lightning strikes from causing outages along the length of this line and protect the overhead substation at Catron.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 826052
Division: CENTRAL MO
ZIP Codes(s) Served: 64620, 64649, 64689
Customers Served: 329
Customer Interruptions (CI): 679
SAIFI Value: 2.06
SAIDI Value: 295

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	677	99.71%	6
ANIMAL	2	0.29%	2

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Ninety-nine percent of customer interruptions in 2022 were caused by overhead equipment malfunctions. Repairs were complete during the outage restorations. The most recent Circuit Device Inspection was completed in 2018 with the next inspection to take place in 2024. Any repair work identified as a result of the inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy. Cycle tree trimming was completed in 2020, while the next cycle tree trim is planned for 2026. Two incidents resulting in customer interruptions on this circuit were caused by animal related incidents within the substation. Substation Maintenance is planning to install an animal mitigation system in the substation in 2023. No additional overhead line work is planned in 2023.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 854051
Division: CENTRAL MO
ZIP Codes(s) Served: 63037, 63056, 63068
Customers Served: 472
Customer Interruptions (CI): 1,041
SAIFI Value: 2.21
SAIDI Value: 292

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	519	49.86%	22
LIGHTNING	450	43.23%	1
PUBLIC	1	0.10%	1
TREE	1	0.10%	1
ANIMAL	15	1.44%	3
OTHER	4	0.38%	4
UNKNOWN	51	4.90%	4

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Almost 50% of the customer interruptions on this circuit were due to overhead malfunctions. A major, multi-phased reconductor project, in progress since early 2022, has replaced a large portion of the circuit backbone and will continue into 2023. The most recent overhead inspection was completed in 2018, and an underground detailed inspection was completed in 2022 with minimal issues identified. The next overhead and underground inspections are planned for 2024 and 2026, respectively. Any repair work identified as a result of the inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy. A cycle tree trim is planned for 2026. A mid-cycle patrol is scheduled in 2023. Smart switching was added to the circuit in 2022 with more planned for 2023. A coordination/phase balancing study and overhead visual inspection were completed as part of the worst performing circuit review. The review identified some phase imbalance as well as a need for additional fusing and animal guarding that will be addressed under Maximo work order KA37417.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 858051
Division: NORTHEAST MO
ZIP Codes(s) Served: 63435
Customers Served: 559
Customer Interruptions (CI): 1,801
SAIFI Value: 3.22
SAIDI Value: 124

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	1,588	88.17%	9
EQUIPMENT/UG	152	8.44%	1
TREE	8	0.44%	2
ANIMAL	48	2.67%	12
UNKNOWN	5	0.28%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Overhead malfunctions and trees caused 88% of customer interruptions in 2022. A new work request will be created to convert from overhead to underground, a section of the circuit that presently runs through private property. A tree trim cycle was completed in 2022.



APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 864005
Division: SEMO
ZIP Codes(s) Served: 63701
Customers Served: 349
Customer Interruptions (CI): 636
SAIFI Value: 1.82
SAIDI Value: 132

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	581	91.35%	6
TREE	55	8.65%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Three related incidents account for 91% of the customer interruptions in 2022. This incident occurred on 7/18/2022 when a tree came down on the 4kV circuit during a thunderstorm. There is no other work planned for 2023.

APPENDIX B

Single Year WPC Analysis and Remedial Action Report

Circuit Number: 999052
Division: CENTRAL MO
ZIP Codes(s) Served: 65258, 65259, 65263
Customers Served: 544
Customer Interruptions (CI): 1,333
SAIFI Value: 2.45
SAIDI Value: 236

Outage Analysis

Causes	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	738	55.36%	13
LIGHTNING	1	0.08%	1
TREE	7	0.53%	2
ANIMAL	545	40.89%	12
OTHER	1	0.08%	1
UNKNOWN	41	3.08%	3

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

Fifty-five percent of the customer interruptions in 2022 were caused by overhead equipment malfunctions. Forty-one percent of the customer interruptions in 2022 were caused by animal contact. Resulting work found during the worst performing circuit field review will be performed on Maximo work order KA38242, which includes installing animal guards and replacing old porcelain arrestors and cutouts. The most recent Circuit Device Inspection was completed in 2018 with the next inspection to take place in 2024. Any repair work identified as a result of the inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy. The most recent tree trimming was completed in 2019, while the next cycle tree trim is planned for 2025.

APPENDIX B

Multi Year WPC Analysis and Remedial Action Report

Circuit Number: 104008
Division: ARCHVIEW
ZIP Codes(s) Served: 63121, 63136
Customers Served: 774
Customer Interruptions (CI): 1,574
SAIFI Value: Y2020 - 0.31; Y2021 - 2.08; Y2022 - 2.03
SAIDI Value: 362

Outage Analysis

Causes	2020 Total CI	2021 Total CI	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	73	729	776	49.30%	6
PUBLIC	0	753	751	47.71%	2
TREE	97	123	38	2.41%	8
EMPLOYEES	0	0	1	0.06%	1
OVERLOAD	43	0	0	0.00%	0
OTHER	1	1	8	0.51%	2
UNKNOWN	16	1	0	0.00%	0

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

(2019) Three incidents caused 96% of the customer interruptions in 2019. The first two incidents were due to overhead malfunctions. The third was a public vehicle hitting a pole and breaking the primary conductor. The circuit was inspected and no other problems were found. (2021) Two incidents account for the majority of the customer interruptions in 2021. The first issue was due to a public vehicle. The second Issue was due to a broken branch on the power line located in an alley.

Corrective Actions Planned

Two incidents caused 96% of the customer interruptions (1502/1574). The first incident, accounting for 48% of customer interruptions (750/1574), was caused by a public vehicle on 05/02/22, which resulted in a double subtransmission lockout of PAGE-79 & PAGE-PAS-T2. The second incident caused 48% of customer interruptions (752/1574) and was a result of



primary falling during heavy rains. For this year and the previous years, the main cause of outages on this circuit is attributed to public vehicles. The vehicles are not damaging facilities in the same location and this circuit not does have a unique construction compared to others. A full cycle tree trim was complete in 2022. A mid-cycle patrol is scheduled for 2024. An underground detail inspection was complete in 2021. Any repair work identified as a result of these inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

Multi Year WPC Analysis and Remedial Action Report

Circuit Number: 128007
Division: ARCHVIEW
ZIP Codes(s) Served: 63115, 63120
Customers Served: 35
Customer Interruptions (CI): 123
SAIFI Value: Y2020 - 2.03; Y2021 - 0.26; Y2022 - 3.51
SAIDI Value: 1035

Outage Analysis

Causes	2020 Total CI	2021 Total CI	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	72	10	48	39.02%	7
TREE	1	0	0	0.00%	0
OTHER	0	0	3	2.44%	1
UNKNOWN	0	0	72	58.54%	2

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

(2020) One incident caused nearly 100% of the customer interruptions on this circuit in 2020. A circuit outage occurred during windy conditions and was quickly restored, but a second outage occurred a short time later. A circuit patrol was unable to identify a cause and the power was restored without further incident on OAS work order 1880685. The circuit was inspected no further action is needed.

Corrective Actions Planned

Three incidents caused 86% of the customer interruptions (106/123). The first outage had an unknown cause and accounts for 29% of the customer interruptions (36/123). The second outage was caused by a jumper burning during a thunderstorm. This incident accounts for 28% of the customer interruptions (34/123). Finally, the last outage was due to an unknown cause. This outage accounts for 29% of the customer interruptions (36/123). A full cycle tree trim is scheduled for 2023. An underground detail inspection was complete in 2021. An overhead visual inspection is scheduled for 2023. Any repair work identified as a result of these inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

Multi Year WPC Analysis and Remedial Action Report

Circuit Number: 134054
Division: GATEWAY
ZIP Codes(s) Served: 63031, 63042
Customers Served: 1,864
Customer Interruptions (CI): 4,067
SAIFI Value: Y2020 - 18.38; Y2021 - 0.27; Y2022 - 2.18
SAIDI Value: 214

Outage Analysis

Causes	2020 Total CI	2021 Total CI	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	0	57	135	3.32%	5
PUBLIC	77	16	3,715	91.34%	3
EQUIPMENT/UG	135	190	216	5.31%	4
TREE	26	208	0	0.00%	0
EMPLOYEES	16	1	0	0.00%	0
CUSTOMER	16	0	0	0.00%	0
ANIMAL	0	25	0	0.00%	0
OTHER	1	1	1	0.02%	1
UNKNOWN	23	0	0	0.00%	0

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

(2020) An incident on 4/19/2020 caused 31% of the 2020 customer interruptions (91 customers) when an underground transformer and primary failed/faulted. Repairs were made on Work Request 21MT742361. Another incident on 9/9/2020 accounted for 17% of customer interruptions (51 customers). This incident was due to a failed/faulted underground transformer which was repaired under OAS 202532516. Another incident on 4/5/2020 accounted for 24% of customer interruptions (72 customers). This outage was caused by public excavation which hit our underground service. Repairs were made on Work Request 21MT741395. There are no recurring problems on the circuit and no other work is required at this time.

Corrective Actions Planned



Two vehicle incidents were responsible for 91% of the customer interruptions on this circuit in 2022; one in January and one in June. They were in separate locations and not related to each other. Repairs were made accordingly. Without these two incidents, this circuit would not be on the worst performing circuit list. A full-cycle tree trim is planned for 2023. No additional corrective action is necessary.

APPENDIX B

Multi Year WPC Analysis and Remedial Action Report

Circuit Number: 148002
Division: ARCHVIEW
ZIP Codes(s) Served: 63102, 63103, 63104
Customers Served: 190
Customer Interruptions (CI): 404
SAIFI Value: Y2020 - 0.06; Y2021 - 1.93; Y2022 - 2.13
SAIDI Value: 260

Outage Analysis

Causes	2020 Total CI	2021 Total CI	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	6	6	217	53.71%	7
PUBLIC	1	0	0	0.00%	0
EQUIPMENT/UG	0	366	1	0.25%	1
ANIMAL	1	0	0	0.00%	0
OTHER	2	1	1	0.25%	1
UNKNOWN	1	1	185	45.79%	2

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

(2021) Two incidents account for the 99% of the customer interruptions in 2021. The first issue was due to the faulted section of a cable (designated dip 6819) on 148002 and this was repaired under Work Request number 765909. The second issue was due to a failed underground primary circuit cable. This was repaired under Work Request number 767313.

Corrective Actions Planned

Two incidents account for 92% of the customer interruptions in 2022. One incident that contributes to 45% of customer interruptions was caused by a broken switch on a stormy day. The switch was reset under OAS work order 221893481. The second one was due to a broken switch, and it was patrolled and restored on OAS work order 220252192. The last cycle trim was complete in 2021 and the next cycle trim is planned for 2023. Overhead visual was complete in 2022. Underground visual inspection is scheduled in 2023. Any repair work identified as a



result of these inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

Multi Year WPC Analysis and Remedial Action Report

Circuit Number: 167054
Division: GATEWAY
ZIP Codes(s) Served: 63031, 63137, 63138
Customers Served: 1,604
Customer Interruptions (CI): 3,633
SAIFI Value: Y2020 - 0.73; Y2021 - 3.29; Y2022 - 2.27
SAIDI Value: 293

Outage Analysis

Causes	2020 Total CI	2021 Total CI	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	617	2,255	272	7.49%	16
LIGHTNING	22	1	10	0.28%	1
PUBLIC	23	0	0	0.00%	0
EQUIPMENT/UG	124	54	32	0.88%	5
TREE	47	2,852	3,095	85.19%	19
EMPLOYEES	0	0	5	0.14%	5
ANIMAL	192	94	98	2.70%	11
OTHER	3	0	1	0.03%	1
UNKNOWN	81	0	120	3.30%	5

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

(2021) A full cycle tree trim was complete in 2021. Underground and overhead visual inspections were complete in 2019. Any repair work identified as a result of the inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

Corrective Actions Planned

Eighty-five percent of the customer interruptions are due to tree related device outages. A midcycle forestry patrol of this circuit is due in 2023. Forestry has been contacted to see if additional trimming on this circuit can be complete. In addition, multiple fuses have been identified for possible TripSavers locations which should improve reliability on this circuit.

APPENDIX B

Multi Year WPC Analysis and Remedial Action Report

Circuit Number: 168055
Division: MERAMEC VALLEY
ZIP Codes(s) Served: 63028, 63050, 63070
Customers Served: 935
Customer Interruptions (CI): 2,307
SAIFI Value: Y2020 - 5.25; Y2021 - 0.21; Y2022 - 2.47
SAIDI Value: 308

Outage Analysis

Causes	2020 Total CI	2021 Total CI	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	2,267	64	1,267	54.92%	17
LIGHTNING	0	46	1	0.04%	1
PUBLIC	0	0	1	0.04%	1
TREE	683	13	658	28.52%	12
CUSTOMER	6	0	0	0.00%	0
ANIMAL	31	31	59	2.56%	9
UNKNOWN	147	42	321	13.91%	7

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

(2020) Several events attributed to outages on this circuit in 2020. One event caused 35% of customer interruptions - a transformer on the backbone failed and caused a circuit outage. Repairs were made on OAS 202360020 replacing the transformer with the new "JA" style that has external fusing to help prevent this type of failure. Another event caused 20% of the customer interruptions when a broken cross arm during rainy conditions caused recloser (4382) to trip open. Repairs were made on OAS 201380329. Broken limbs/tree contact account for 38% of customer interruptions. A full cycle tree trim is under way and is expected to be completed by June 2021. There are multiple projects currently being submitted for further improvements to improve reliability on this circuit. Phase-cuts will be completed at several locations to redistribute and balance overall loading on the circuit, allowing our system protection group to install new relays on all circuits, mains, and transformers with updated settings in place of the existing electromechanical relays. (2019) In 2019, two incidents accounted for 74% of the customer interruptions on this circuit. One was due to a lightning



strike and subsequent capacitor damage causing the unit to malfunction. The equipment was replaced on Work Request 26JF147157. The other was during rainy conditions and attributed to a tree contacting two phases and tripping the circuit breaker. Tree contact on a transformer caused another 6% of the customer interruptions causing a recloser (#2098) lock out during rainy conditions. A mid-cycle tree trim was performed in 2019. An engineering inspection is planned for 2020 to ensure no further action is required.

Corrective Actions Planned

Corrective actions include: addressing the poles and issues identified as part of the CDIS program, replacing intellirupter J24427 on DOJM work request 26JF164089, identify new locations to implement trip savers and other automation equipment, have vegetation patrol trouble areas ahead of their 2024 mid cycle patrol schedule and address any issues found.

APPENDIX B

Multi Year WPC Analysis and Remedial Action Report

Circuit Number: 169055
Division: MERAMEC VALLEY
ZIP Codes(s) Served: 63017, 63038, 63040, 63069
Customers Served: 756
Customer Interruptions (CI): 1,642
SAIFI Value: Y2020 - 0.59; Y2021 - 2.05; Y2022 - 2.17
SAIDI Value: 279

Outage Analysis

Causes	2020 Total CI	2021 Total CI	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	85	1,231	987	60.11%	17
LIGHTNING	0	6	2	0.12%	1
PUBLIC	0	106	0	0.00%	0
EQUIPMENT/UG	11	2	129	7.86%	3
TREE	298	115	469	28.56%	18
ANIMAL	33	30	54	3.29%	13
OVERLOAD	0	0	1	0.06%	1
OTHER	2	31	0	0.00%	0
UNKNOWN	8	4	0	0.00%	0

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

(2021) Five automated circuit reclosers were installed on the circuit in late 2021 to develop an automatic restoration scheme between Pond 169055 and adjacent Pond 169053 and Pacific 556053 circuits. Work was completed on Work Request number 21MT721256. One automated circuit recloser was installed on the circuit in late 2021 to develop an automatic restoration scheme between Pond 169055 and adjacent Olive 217051 and Eatherton 295051 circuits. Work was completed on Work Request number 21MT777854.

Corrective Actions Planned

Additional trip saver reclosers will be installed with DOJM work requests 21MT785734, 785735, and 785737. A trip saver that failed with winter loading and will be upgraded on



Maximo work order KA18524. An additional sectionalizing switch will be added on Maximo work order KA26756 near Highway 100 and Hencken Road to aid in outage restoration. A full-cycle tree trim was complete in 2022. An underground visual inspection is planned for 2023. Any repair work identified as a result of the inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

Multi Year WPC Analysis and Remedial Action Report

Circuit Number: 238001
Division: ARCHVIEW
ZIP Codes(s) Served: 63133
Customers Served: 715
Customer Interruptions (CI): 1,604
SAIFI Value: Y2020 - 2.19; Y2021 - 0.42; Y2022 - 2.24
SAIDI Value: 169

Outage Analysis

Causes	2020 Total CI	2021 Total CI	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	749	86	921	57.42%	6
PUBLIC	618	1	670	41.77%	2
EQUIPMENT/UG	0	12	2	0.12%	1
TREE	114	157	10	0.62%	1
EMPLOYEES	11	0	1	0.06%	1
OTHER	1	42	0	0.00%	0

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

(2020) Two incidents accounted for 88% of the 2020 customer interruptions. The first was an overhead malfunction where primary conductor burned through causing 645 customer interruptions. The second was a public vehicle accident that broke a pole and took down 2 spans of primary causing 618 customer interruptions. Repairs were completed on Work Request 21MT755842. No recurring problems were found and no further action needed.

Corrective Actions Planned

Three incidents caused 94% of customer interruptions (1501/1604). The first was caused by a public vehicle which accounts for 42% of the customer interruptions (669/1604). The second was caused by a faulted cable, causing 38% of customer interruptions (606/1604). The last outage was a result of a malfunctioning lightning arrestor, which resulted in any fuses replaced burning up. This caused 14% of customer interruptions (226/1604). There are no recurring problems identified on this circuit and no further work is required. A full cycle tree trim is scheduled for



2024. A groundline inspection was complete in 2022. Any repair work identified as a result of these inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

Multi Year WPC Analysis and Remedial Action Report

Circuit Number: 253051
Division: ARCHVIEW
ZIP Codes(s) Served: 63128, 63129
Customers Served: 1,623
Customer Interruptions (CI): 3,596
SAIFI Value: Y2020 - 2.12; Y2021 - 1.17; Y2022 - 2.22
SAIDI Value: 378

Outage Analysis

Causes	2020 Total CI	2021 Total CI	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	56	607	1,704	47.39%	5
LIGHTNING	1,581	0	0	0.00%	0
PUBLIC	27	20	1	0.03%	1
EQUIPMENT/UG	122	203	152	4.23%	15
TREE	1,611	21	1,645	45.75%	2
EMPLOYEES	0	0	2	0.06%	2
ANIMAL	18	1,035	82	2.28%	2
OTHER	0	1	10	0.28%	2
UNKNOWN	0	14	0	0.00%	0

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

(2020) Two incidents account for 93% of the customer interruptions in 2020. The first was due to a tree that fell on the primary. The tree was removed on OAS work order 200175346. The second issue was due to lightning. A mid-cycle tree trim was completed in 2020. An underground visual and overhead visual inspection were performed in 2020. Any repair work identified as a result of these inspections was completed in accordance with Ameren Missouri's infrastructure inspection policy. (2021) In 2021 this circuit no longer appeared as a worst performing circuit.

Corrective Actions Planned



Two incidents account for 91% of the customer interruptions in 2022. The first incident was due to a tree breaking with one span of primary conductor coming down. This was repaired on OAS work order 222401359. The second issue, coded as overhead malfunction within the outage management system, was due to a tree breaking and damaging a fused section of primary conductor at a separate location which was repaired on DOJM work request 21MT798705. A full cycle tree trim was completed in 2022. There are no recurring problems identified on the circuit and no further work is required at this time.

APPENDIX B

Multi Year WPC Analysis and Remedial Action Report

Circuit Number: 293005
Division: ARCHVIEW
ZIP Codes(s) Served: 63119, 63143, 63144
Customers Served: 4
Customer Interruptions (CI): 8
SAIFI Value: Y2020 - 0.16; Y2021 - 1.75; Y2022 - 2.00
SAIDI Value: 365

Outage Analysis

Causes	2020 Total CI	2021 Total CI	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	1	6	8	100.00%	2
LIGHTNING	15	0	0	0.00%	0
EQUIPMENT/UG	1	0	0	0.00%	0
TREE	8	0	0	0.00%	0
EMPLOYEES	8	0	0	0.00%	0
ANIMAL	0	1	0	0.00%	0
OVERLOAD	1	0	0	0.00%	0

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

(2021) All four outages on this circuit were on the same transformer. One of the outages were a result of animals, one was a lightning, and two outages were unknown. Animal guards will be installed on the transformer to curtail future animal related outages.

Corrective Actions Planned

There were two incidents in 2022. One of the incidents was caused by a limb falling on the primary and blowing a fuse. The second incident was unknown and resulted in a blown fuse. The section of line downstream of fuse U11324 will be patrolled to identify potential hazards. A mid-cycle forestry patrol is scheduled for 2024. An overhead and underground visual inspection is scheduled for 2023. Any repair work identified as a result of these inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

Multi Year WPC Analysis and Remedial Action Report

Circuit Number: 451054
Division: SEMO
ZIP Codes(s) Served: 63622, 63623, 63625, 63650,,
Customers Served: 384
Customer Interruptions (CI): 763
SAIFI Value: Y2020 - 5.04; Y2021 - 3.66; Y2022 - 1.99
SAIDI Value: 256

Outage Analysis

Causes	2020 Total CI	2021 Total CI	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	1,184	556	475	62.25%	23
LIGHTNING	85	8	25	3.28%	4
PUBLIC	11	0	5	0.66%	1
TREE	489	741	145	19.00%	9
ANIMAL	11	4	0	0.00%	0
OTHER	0	0	85	11.14%	3
UNKNOWN	76	75	28	3.67%	7

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

In 2022 there were ten locations identified along the circuit where three phase and single phase Trip Savers and Reclosers could benefit the circuit. At five locations Trips Savers were installed, at the other five locations Reclosers were installed, and construction was completed at all locations in the second half of 2022. In 2022 an Underground Visual inspection was also completed to identify any issues which will be addressed in the first half of 2023.

Corrective Actions Planned

A mid cycle tree patrol is scheduled for 2023 which will help address the tree related outages which were responsible for 19% of customer interruptions in 2022. There are also four additional locations where we will be installing Trip Savers in 2023 along the circuit under DOJM work request numbers 28IR-047464, 047465, 047468 and 047469. A full groundline inspection is



scheduled for this circuit in 2023. Any repair work identified as a result of the inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

Multi Year WPC Analysis and Remedial Action Report

Circuit Number: 553055
Division: MERAMEC VALLEY
ZIP Codes(s) Served: 63016, 63023, 63028, 63050,
Customers Served: 787
Customer Interruptions (CI): 2,193
SAIFI Value: Y2020 - 1.74; Y2021 - 1.75; Y2022 - 2.79
SAIDI Value: 328

Outage Analysis

Causes	2020 Total CI	2021 Total CI	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	64	872	955	43.55%	10
LIGHTNING	0	13	0	0.00%	0
PUBLIC	249	166	770	35.11%	2
EQUIPMENT/UG	763	1	2	0.09%	2
TREE	123	248	394	17.97%	9
ANIMAL	22	0	58	2.64%	4
OTHER	57	55	0	0.00%	0
UNKNOWN	50	16	14	0.64%	2

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

(2020) Three main outage types (equipment, trees and public vehicles) accounted for more than 80% of the 2020 circuits interruptions. The equipment malfunctions were repaired under Work Request 21MT749646. Several incidents resulted from trees outside the Right Of Way and were repaired/restored on Work Requests 26JF154379, 26JF154906, and 26JF153130. Finally, public vehicle accidents caused outages and were repaired by Work Request 26JF152174 and OAS 1863091 and 1870189. (2021) Approximately 80% of the customer interruptions were due to storms. Additionally, failed equipment, which accounted for nearly 11% of the customer interruptions, were repaired/replaced on Work Request numbers 26JF157708, 26JF158176, 26JF158181, 26JF159178, 26JF159449, 26JF160151, and 26JF160256. There are no additional reoccurring problems identified on this circuit and no further work required at this time. Currently, there is a project planned to install an Intellirupter on this circuit.



Corrective Actions Planned

This circuit was patrolled by a drone in 2023 to help identify any potential issues on the circuit. The last overhead inspection was in 2019 and tree trimming is planned for early 2024. Any repair work identified as a result of the inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy. A project is currently being developed to create a tie to an adjacent circuit to aid in outage restoration efforts.

APPENDIX B

Multi Year WPC Analysis and Remedial Action Report

Circuit Number: 577057
Division: GATEWAY
ZIP Codes(s) Served: 63301, 63376
Customers Served: 1
Customer Interruptions (CI): 2
SAIFI Value: Y2020 - 0.00; Y2021 - 2.00; Y2022 - 2.00
SAIDI Value: 705

Outage Analysis

Causes	2020 Total CI	2021 Total CI	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	0	2	1	50.00%	1
UNKNOWN	0	0	1	50.00%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

(2021) Two outages caused 100% of the interruptions on this circuit. The first outage was due to the circuit tripping during windy conditions. This was repaired on OAS# 212980744. The second outage was due to switching at the substation. This was completed on OAS# 213450226.

Corrective Actions Planned

This circuit has one customer that experienced two interruptions in 2022. The first occurred on 01/05/2022 and was due to a failed splice. Repairs were made under OAS number 220053791. The second occurred on 12/23/2022 due to an unknown cause. The customer's service was restored under OAS number 223570530. A mid-cycle tree patrol is planned in 2024. There are no recurring problems identified on the circuit and no further work is required at this time.



APPENDIX B

Multi Year WPC Analysis and Remedial Action Report

Circuit Number: 672053
Division: NORTHEAST MO
ZIP Codes(s) Served: 63334, 63353
Customers Served: 299
Customer Interruptions (CI): 683
SAIFI Value: Y2020 - 2.70; Y2021 - 0.40; Y2022 - 2.28
SAIDI Value: 622

Outage Analysis

Causes	2020 Total CI	2021 Total CI	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	604	31	417	61.05%	12
LIGHTNING	2	22	8	1.17%	4
PUBLIC	0	0	210	30.75%	2
EQUIPMENT/UG	0	0	1	0.15%	1
TREE	163	60	27	3.95%	3
ANIMAL	1	2	1	0.15%	1
OTHER	1	1	0	0.00%	0
UNKNOWN	13	3	19	2.78%	5

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

(2020) Two 12.5kV Intellirupter DA switches to facilitate supplying affected customers from a different substation during certain contingencies was completed under DOJM work request 2WWZ186938. (2021) Overhead visual and underground visual inspections were completed 2021 and repair work identified as a result of the inspections was completed in accordance with Ameren Missouri's infrastructure inspection policy. A full cycle tree trim was completed in 2022.

Corrective Actions Planned

Overhead malfunctions along with incidences involving the public contributed to the majority of the customer interruptions in 2022. While no actions are planned for next year we are in the



process of analyzing projects in the next four to five years to upgrade Buffalo substation and rebuild a portion of this circuit along Hwy 54.

APPENDIX B

Multi Year WPC Analysis and Remedial Action Report

Circuit Number: 691051
Division: NORTHEAST MO
ZIP Codes(s) Served: 63334, 63343, 63344, 63359,,
Customers Served: 1,266
Customer Interruptions (CI): 2,228
SAIFI Value: Y2020 - 1.77; Y2021 - 3.36; Y2022 - 1.76
SAIDI Value: 198

Outage Analysis

Causes	2020 Total CI	2021 Total CI	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	289	1,750	647	29.04%	22
LIGHTNING	61	20	18	0.81%	8
PUBLIC	1,621	809	0	0.00%	0
EQUIPMENT/UG	2	0	1	0.04%	1
TREE	40	1,478	1,450	65.08%	12
ANIMAL	42	10	4	0.18%	4
OVERLOAD	26	0	0	0.00%	0
OTHER	3	4	84	3.77%	4
UNKNOWN	16	4	24	1.08%	11

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

(2022) A 15kV Intellirupter protection device was added along Hwy 61 in 2022 to limit the number of customers interrupted if a fault occurs on that section of the circuit under Work Request number 2WWZ209002. (2021) Part two was completed in 2021 for the tie capability and to provide a second supply to Auburn (691) Substation under Work Order numbers J0SR0 and J0Q9W. The rebuild and relocation of the LINC-74 34.5kV circuit (supply to Auburn Substation - 691) at the Cuivre River Hwy 61 bridge to composite poles was completed in the first quarter of 2022 under Work Order number J0LHK. (2020) Part one of a multi-year project was completed in 2020 to extend the Elsberry 630-53 12.5kV circuit along Hwy B to provide tie capability to this circuit under work order J0FFS. Part two is scheduled to be completed in 2021 and includes Work Requests 2WWZ191150, 2WWZ191546, and 2WWZ191545.



Corrective Actions Planned

Part three of the multi-year project is to complete the 12.5kV tie circuit along Hwy B between Elsberry and Auburn Substations under work order J0VJR. Part four will extend the 34.5kV circuit to Elsberry and reconductor the 12.5kV circuit along Hwy B between Elsberry substation and Hwy W, which is scheduled to be worked in 2024 under DOJM work request number 2WWZ196759. A new project is planned for 2024/25 to replace the existing 15kV switchgear at Auburn 34.5-12.5kV Substation to provide breaker positions for a third & fourth 12.5kV circuit. In addition, a third 12.5kV circuit is planned to extended from Auburn Substation along Hwy 61 to Hwy E which will split the 691051 circuit into two separate circuits. A full-cycle tree trim is planned for 2024.

APPENDIX B

Multi Year WPC Analysis and Remedial Action Report

Circuit Number: 858052
Division: NORTHEAST MO
ZIP Codes(s) Served: 63435
Customers Served: 1
Customer Interruptions (CI): 3
SAIFI Value: Y2020 - 2.00; Y2021 - 3.00; Y2022 - 3.00
SAIDI Value: 129

Outage Analysis

Causes	2020 Total CI	2021 Total CI	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	2	0	2	66.67%	2
LIGHTNING	0	1	0	0.00%	0
ANIMAL	0	2	1	33.33%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

The 2020 and 2021 outages were due to issues on the Culver Stockton College primary meter and the college's system past their primary meter. The customer's fuses on their primary meter pole are labeled K2516 on Ameren mapping for communication purposes. Outages to these fuses are due to customer issues. This circuit is only 300 feet in total length. There is no reliability work needed on this Ameren circuit. In 2021, a 10-year Smart Energy Plan project to harden the 69 KV Carbide-91 sub-transmission supplying the Canton-12 substation was started. This Carbide91 hardening project will improve reliability to all customers on the Canton-12 Substation, including circuit 858052. A maintenance tree trim cycle was completed in 2022.

Corrective Actions Planned

This circuit supplies one customer. One of the three customer interruptions was due to issues on the Culver Stockton College primary meter and the college's customer owned primary system downstream of their primary meter. The other customer interruptions were due to an animal and an overhead equipment malfunction. In 2021, a 10-year Smart Energy Plan project to harden the 69 KV Carbide-91 sub-transmission supplying the Canton-12 Substation was started. This



Carbide-91 hardening project will improve reliability to all customers on the Canton-12 Substation, including circuit 858052.

APPENDIX B

Multi Year WPC Analysis and Remedial Action Report

Circuit Number: 949056
Division: CENTRAL MO
ZIP Codes(s) Served: 65046, 65068, 65233, 65279
Customers Served: 1,297
Customer Interruptions (CI): 2,700
SAIFI Value: Y2020 - 1.73; Y2021 - 0.34; Y2022 - 2.08
SAIDI Value: 164

Outage Analysis

Causes	2020 Total CI	2021 Total CI	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	1,307	195	1,349	49.96%	15
LIGHTNING	68	1	3	0.11%	3
PUBLIC	6	0	276	10.22%	2
TREE	685	112	969	35.89%	4
CUSTOMER	0	7	0	0.00%	0
ANIMAL	112	51	91	3.37%	12
OTHER	1	4	12	0.44%	1
UNKNOWN	0	61	0	0.00%	0

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

(2020) The majority of 2020 customer interruptions on this circuit were caused by overhead equipment malfunctions. No recurring problems were found.

Corrective Actions Planned

The majority of customer interruptions on this circuit were caused by overhead equipment malfunctions, which totaled 50% of all customer interruptions on this circuit. The most recent Circuit Device Inspection was completed in 2022 with the next inspection scheduled in 2028. Seventy Circuit Device Inspection projects are identified to be completed in 2023 as a result of the 2022 inspection. The most recent tree trimming was completed in 2019, while the next cycle tree trim is planned for 2025. Any repair work identified as a result of the inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy. No additional



work is planned in 2023 due to the large scope of work as a result of the Circuit Device Inspection in 2022.

APPENDIX B

Multi Year WPC Analysis and Remedial Action Report

Circuit Number: 962052
Division: CENTRAL MO
ZIP Codes(s) Served: 63361, 65262
Customers Served: 444
Customer Interruptions (CI): 1,060
SAIFI Value: Y2020 - 1.59; Y2021 - 0.12; Y2022 - 2.39
SAIDI Value: 224

Outage Analysis

Causes	2020 Total CI	2021 Total CI	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	597	18	118	11.13%	4
LIGHTNING	6	0	0	0.00%	0
PUBLIC	0	0	5	0.47%	1
EQUIPMENT/UG	0	1	3	0.28%	1
TREE	1	1	914	86.23%	2
ANIMAL	76	32	20	1.89%	4
OTHER	2	0	0	0.00%	0

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

(2020) The majority of customer interruptions on this circuit were caused by the overhead equipment malfunctions, which totaled eighty-seven (87) percent of all customer interruptions on this circuit. No recurring problems were found and no additional work is planned in 2021.

Corrective Actions Planned

One incident accounts for 86% of the customer interruptions in 2022. This incident occurred on 10/25/22 and was a result of tree contact. Cycle tree trimming was completed in 2018, while next cycle tree trim is planned for 2024. The most recent Circuit Device Inspection was completed in 2022 with the next inspection scheduled in 2028. Any repair work identified as a result of the inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy. Six Circuit Device Inspection projects are identified to be completed in 2023. No



additional work is planned in 2023 as this circuit has a large construction project to install a new Intellirupter recloser tie in addition to installing new conductor for future load.

APPENDIX C

Division	Operating Area	Circuit	Volt	Cust	CI	CMI	SAIDI	SAIFI	2020	2021	2022	Years WPC
MERAMEC VALLEY	JEFFERSON	545051	12KV	740	1125	51466	70	1.52	WPC	WPC		2
MERAMEC VALLEY	ELLISVILLE	217051	12KV	320	457	119198	372	1.43	WPC	WPC		2
GATEWAY	ST CHARLES	565054	12KV	993	1055	63053	63	1.06	WPC	WPC		2
NORTHEAST MO	WENTZVILLE	647052	12KV	354	223	24687	70	0.63	WPC	WPC		2
GATEWAY	DORSETT	264056	12KV	1738	1045	263895	152	0.60	WPC	WPC		2
GATEWAY	BERKELEY	162054	12KV	985	329	66092	67	0.33	WPC	WPC		2
GATEWAY	BERKELEY	265051	12KV	334	109	17193	51	0.33	WPC	WPC		2
GATEWAY	BERKELEY	167056	12KV	739	97	20497	28	0.13	WPC	WPC		2
MERAMEC VALLEY	FRANKLIN	127054	12KV	521	55	1541	3	0.11	WPC	WPC		2
ARCHVIEW	MACKENZIE	135004	4KV	895	23	3474	4	0.03	WPC	WPC		2

APPENDIX D

Multi Year WPC Analysis and Remedial Action Report

Circuit Number: 127054
Division: MERAMEC VALLEY
ZIP Codes(s) Served: 63090
Customers Served: 521
Customer Interruptions (CI): 55
SAIFI Value: Y2020 - 2.17; Y2021 - 2.05; Y2022 - 0.11
SAIDI Value: 3

Outage Analysis

Causes	2020 Total CI	2021 Total CI	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	558	5	2	3.64%	2
LIGHTNING	25	0	0	0.00%	0
PUBLIC	511	1	1	1.82%	1
EQUIPMENT/UG	0	1	0	0.00%	0
TREE	0	910	0	0.00%	0
ANIMAL	15	141	48	87.27%	1
OTHER	0	0	4	7.27%	4

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

(2020) An overhead malfunction caused over 50% of the 2020 customer interruptions for this circuit during an incident occurring on 01/18/2020. Another 46% of the customer interruptions were attributed to a public vehicle incident occurring on 04/01/20. At this time no improvement actions are planned. (2021) On 04/07/2021, a tree fell and broke a pole causing a circuit-wide outage. There are other various instances in 2020 of suspected conductor galloping and/or wildlife interference with this circuit. Corrective actions include 3 separate Intellirupter devices to be installed on this circuit at various locations in order to provide a scheme and teaming ability to switch and reduce customer outages that can arise to due vegetation, wildlife, and various other unknown outage causes. The DOJM work request numbers for these three Intellirupters are 23FR069895, 23FR069896, and 23FR069877.

Corrective Actions Planned



There are no recurring problems identified on the circuit and no further work is required at this time.

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Multi Year WPC Analysis and Remedial Action Report

Circuit Number: 135004
Division: ARCHVIEW
ZIP Codes(s) Served: 63109, 63139
Customers Served: 895
Customer Interruptions (CI): 23
SAIFI Value: Y2020 - 2.15; Y2021 - 3.10; Y2022 - 0.03
SAIDI Value: 4

Outage Analysis

Causes	2020 Total CI	2021 Total CI	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	1	110	11	47.83%	3
PUBLIC	36	0	0	0.00%	0
EQUIPMENT/UG	1,817	2,658	0	0.00%	0
TREE	0	0	10	43.48%	2
EMPLOYEES	0	0	1	4.35%	1
OTHER	32	0	0	0.00%	0
UNKNOWN	0	0	1	4.35%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

(2021) A section of circuit exit cable failed in the manhole at Chippewa and Tamm on 2/28/2021. The cable was isolated and repaired OAS# work order 210590622. Two other circuit outages were also listed on this date and were related to the circuit exit cable failure. These three outages were the same incident and caused 96% of the circuit's circuit interruptions in 2021 (2658 out of 2768). One other fused tap and several transformer outages caused the remaining circuit interruptions in 2021's (4% of the circuit's total). (2020) A section of circuit exit cable failed between manhole 7 and the terminal pole on 12/25/2020. The cable was isolated and replaced on work request 21MT759972. This outage caused 47% of the circuit's customer interruptions in 2020 (879 out of 1886). A section of Dip-Scanlan-1 failed on 3/3/2020. The cable was isolated and replaced on work request 21MT739355. This outage caused 44% of the circuit's circuit interruptions in 2020 (834 out of 1886). Several other fused tap and transformer outages caused the bulk of the remaining customer interruptions in 2020 (9% of the circuit's total).

Corrective Actions Planned

Because there have been recurring circuit exit cable failures on 135004 and the other Hampton (135) circuits, the Hampton Substation was recommended to be added to the Smart Energy Program that replaces old circuit exit cable. A mid-cycle patrol was completed in 2021 and a full-cycle tree trim is scheduled for 2023. An overhead visual inspection was completed in 2021 and an overhead visual inspection is planned for 2025. Any repair work identified as a result of these inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

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Multi Year WPC Analysis and Remedial Action Report

Circuit Number: 162054
Division: GATEWAY
ZIP Codes(s) Served: 63033, 63139
Customers Served: 985
Customer Interruptions (CI): 329
SAIFI Value: Y2020 - 2.91; Y2021 - 2.19; Y2022 - 0.33
SAIDI Value: 67

Outage Analysis

Causes	2020 Total CI	2021 Total CI	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	1,092	50	202	61.40%	15
LIGHTNING	15	16	28	8.51%	1
PUBLIC	0	0	9	2.74%	1
EQUIPMENT/UG	1	29	0	0.00%	0
TREE	1,392	1,003	26	7.90%	3
EMPLOYEES	0	982	0	0.00%	0
ANIMAL	306	45	53	16.11%	4
UNKNOWN	39	17	11	3.34%	3

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

(2020) One incident on 7/7/2020 accounted for 47% of the 2020 customer interruptions (1324 customers). During this incident a tree fell onto our primary lines which tripped a switch and breaker. The tree was removed and repairs made on OAS 201890127. A second incident on 6/14/2020 accounted for 32% of customer interruptions (911 customers) when three 600 amp switches burned open and were replaced under OAS 201660481. Another 10% of customer interruptions on this circuit were due to squirrels, animal guards were added (OAS 201590096). There were no recurring problems on the circuit and no other work is required at that time.

(2021) Ninety two percent of the customer interruptions were due to two incidents. For the first incident, switch D9633 was opened by mistake during a switching operation. This was addressed under OAS# 213272057. The second incident was caused by tree contact. This was addressed under OAS# 211163336 on April 26th, 2021. This area was trimmed by the vegetation department. No additional corrective action was needed.



Corrective Actions Planned

A full-cycle tree trim is planned for 2024. There are no recurring problems identified on the circuit and no further work is required at this time.

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Multi Year WPC Analysis and Remedial Action Report

Circuit Number: 167056
Division: GATEWAY
ZIP Codes(s) Served: 63136, 63137, 63138
Customers Served: 739
Customer Interruptions (CI): 97
SAIFI Value: Y2020 - 2.08; Y2021 - 1.83; Y2022 - 0.13
SAIDI Value: 28

Outage Analysis

Causes	2020 Total CI	2021 Total CI	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	14	18	10	10.31%	6
PUBLIC	0	0	31	31.96%	5
EQUIPMENT/UG	0	4	0	0.00%	0
TREE	1,456	1,304	42	43.30%	9
EMPLOYEES	0	1	0	0.00%	0
ANIMAL	43	13	7	7.22%	1
UNKNOWN	4	14	7	7.22%	3

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

(2020) One incident accounted for 96% of customer interruptions in 2020. This incident occurred on 6/30/2020 and was due to a tree falling onto our lines during a rainstorm. Forestry trimmed the tree and repairs were made on OAS 201821846. There are no recurring problems on the circuit and no other work is required at this time. A full cycle tree trim is scheduled in 2021.

(2019) Broken tree limbs and lightning caused 96% of the customer interruptions on this circuit in 2019. A field review identified two additional isolation points where distribution automation switches will be installed on this circuit in 2020.

(2021) Ninety six percent of customer interruptions were due to tree contact on the circuit which included one major storm. These issues were addressed on OAS# work order 211770635 and OAS# work order 211931718. A full-cycle tree trim was completed in 2021.

Corrective Actions Planned



Forty three percent of customer interruptions in 2022 were caused by tree related issues. A mid-cycle patrol is scheduled for 2023 which will evaluate trees and vegetation. Overhead visual and underground detailed inspections are scheduled in 2023. Any repair work identified as a result of these inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

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Multi Year WPC Analysis and Remedial Action Report

Circuit Number: 217051
Division: MERAMEC VALLEY
ZIP Codes(s) Served: 63005, 63017, 63038
Customers Served: 320
Customer Interruptions (CI): 457
SAIFI Value: Y2020 - 2.22; Y2021 - 1.72; Y2022 - 1.43
SAIDI Value: 372

Outage Analysis

Causes	2020 Total CI	2021 Total CI	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	176	77	49	10.72%	4
PUBLIC	0	266	176	38.51%	4
EQUIPMENT/UG	1	0	13	2.84%	2
TREE	519	200	196	42.89%	3
ANIMAL	0	5	0	0.00%	0
OTHER	0	0	23	5.03%	2
UNKNOWN	0	1	0	0.00%	0

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

(2020) Trees caused 75% of the customer interruptions in 2020. Overhead equipment issues caused 25% of the customer interruptions, predominantly when an overhead "loopover" burned open. Permanent repairs were made on OAS order 201361607. No additional work was planned.

(2019) Three incidents with trees caused approximately 57% of the customer interruptions in 2019. One public vehicle hitting a pole caused 39% of the customer interruptions for the year. Engineering reviewed the pole locations hit and found no improvement opportunities. Several transformers that are directly tapped to the primary will be fused on work request 21MT740027.

(2021) 36% of customer interruptions in 2021 were tree related. 48% of customer interruptions were public vehicle related. Work Request number 21MT761896 is planned to relocate a pole that has been previously hit by public vehicles. Four automated circuit reclosers were installed on the circuit, in 2021, to develop an automatic restoration scheme between Olive 217051 and adjacent Eatherton 295051, Olive 217053, and Pond 169055 circuits. Work was completed on Work Request numbers 21MT766134, 21MT766137, and 21MT777854. An overhead visual



inspection was completed in 2021. Any repair work identified as a result of these inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy. A mid-cycle tree trim was completed in 2021. A full cycle tree trim was completed in 2022.

Corrective Actions Planned

Forty-three percent of interruptions were caused by trees and thirty-nine percent were caused by public vehicles. Additional automated Intellirupter reclosers are planned for 2023 on DOJM work requests 21MT795277 and 21MT795276. Pole relocation for pole hit by vehicles will be worked on DOJM work request 21MT761896.

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Multi Year WPC Analysis and Remedial Action Report

Circuit Number: 264056
Division: GATEWAY
ZIP Codes(s) Served: 63141, 63146
Customers Served: 1,738
Customer Interruptions (CI): 1,045
SAIFI Value: Y2020 - 2.31; Y2021 - 2.84; Y2022 - 0.60
SAIDI Value: 152

Outage Analysis

Causes	2020 Total CI	2021 Total CI	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	2,931	2,391	258	24.69%	12
LIGHTNING	18	8	58	5.55%	1
PUBLIC	0	9	190	18.18%	3
EQUIPMENT/UG	39	2	86	8.23%	4
TREE	231	1,039	379	36.27%	12
EMPLOYEES	1	0	0	0.00%	0
ANIMAL	59	6	40	3.83%	4
OVERLOAD	0	1,425	0	0.00%	0
OTHER	1	0	1	0.10%	1
UNKNOWN	657	87	33	3.16%	3

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

(2020) The majority of customer interruptions (74%) were due to overhead equipment malfunctions in 2020. An overhead visual inspection was completed in 2020. A full cycle tree trim was performed in 2021. Division Engineering conducted a circuit patrol in 2021 and reviewed the device and transformer outages on this circuit. (2021) There were three circuit outages that accounted for 88% of the customer interruptions in 2021. The first outage, on August 11, 2021, was due to an equipment overload and accounted for 30% of the customer interruptions in 2021. The outage was documented in OAS# work order 212234180. The second outage, on August 31, 2021, was due to an overhead equipment failure and accounted for 38% of the customer interruptions in 2021. The outage was caused when the A-phase of the primary burned through at an existing splice. Repairs were made on OAS# work order



212434986. The third outage, on December 30, 2021, was due to tree damage and accounted for 19% of the customer interruptions in 2021. The outage was caused when the primary taken down by a tree. Repairs were made on OAS# work order 213642876. There were no recurring problems on the circuit and no other work was required at this time.

Corrective Actions Planned

Fifty-four percent of the outages were due to three outages on 5/12/22, 6/13/22, and 8/25/22. OAS # work order 222373292 was caused by a vehicle accident into the pole and repairs were made DOJM # work request 21MT799691. OAS # work order 221644034 was caused by broken wire and one span of primary was done. Repairs were made on DOJM # work request 21MT794645 with no reoccurring issues. OAS # work order 221323735 was caused by tree damage and power was restored. There are no reoccurring issues that require repair. A full-cycle tree trim was completed in 2021 and a mid-cycle patrol is scheduled for 2023. Also, an underground detailed inspections is scheduled for 2023. Any repair work identified as a result of these inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

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Multi Year WPC Analysis and Remedial Action Report

Circuit Number: 265051
Division: GATEWAY
ZIP Codes(s) Served: 63033
Customers Served: 334
Customer Interruptions (CI): 109
SAIFI Value: Y2020 - 1.76; Y2021 - 2.98; Y2022 - 0.33
SAIDI Value: 51

Outage Analysis

Causes	2020 Total CI	2021 Total CI	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	368	675	18	16.51%	2
LIGHTNING	0	13	0	0.00%	0
PUBLIC	0	29	0	0.00%	0
EQUIPMENT/UG	1	0	0	0.00%	0
TREE	125	57	2	1.83%	2
EMPLOYEES	0	1	1	0.92%	1
ANIMAL	9	83	88	80.73%	4
OTHER	0	36	0	0.00%	0
UNKNOWN	80	95	0	0.00%	0

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

(2020) One outage accounted for 32% of customer interruptions and occurred on 4/15/2020 when a B phase jumper burned open. Two outages in January accounted for 23% of customer interruptions. The first occurred on 1/17/2020 due to trees making contact with lines during an ice event (10% of customer interruptions). The other occurred on 1/31/2020 due to a squirrel which caused a fuse to blow. Repairs were made on OAS 200312744. Several smaller isolated incidents account for the remaining 44% of customer interruptions. (2021) 90% of customer interruptions were caused from tree contact or the relocation of transformers from overhead to underground. A mid-cycle tree patrol was performed in 2022. The vegetation management department was contacted for an additional look prior to the mid cycle patrol. Several fuse locations were evaluated to be replaced with TripSavers.



Corrective Actions Planned

A full-cycle tree trim is planned for 2024. There are no recurring problems identified on the circuit and no further work is required at this time.

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Multi Year WPC Analysis and Remedial Action Report

Circuit Number: 545051
Division: MERAMEC VALLEY
ZIP Codes(s) Served: 63010, 63026, 63128
Customers Served: 740
Customer Interruptions (CI): 1,125
SAIFI Value: Y2020 - 2.38; Y2021 - 2.48; Y2022 - 1.52
SAIDI Value: 70

Outage Analysis

Causes	2020 Total CI	2021 Total CI	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	926	343	14	1.24%	8
PUBLIC	0	0	285	25.33%	2
EQUIPMENT/UG	1	0	1	0.09%	1
TREE	456	1,339	89	7.91%	7
EMPLOYEES	282	47	0	0.00%	0
ANIMAL	39	50	17	1.51%	5
OTHER	0	1	714	63.47%	2
UNKNOWN	48	51	5	0.44%	1

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

(2020) Most of the 2020 incidents on this circuit resulted from tree contacts. DOJM work request 26JF156656 has been submitted to reconductor sections of this circuit to provide for alternative substation/circuit ties. Another project currently being developed will implement several automated reclosers on the circuit. (2021) DOJM work request numbers 26JF161139 and 26JF161140 were created to install animal guards on various transformers and fuses. There is a planned/approved project to upgrade line conductor and create a tie to an adjacent substation/circuit. This work is currently being performed on DOJM work request number 26JF156656. The tree trimming cycle was completed in 2022. There are several intellirupters planned / installed on this circuit in 2021/2022 under Work Request numbers 26JF158055, 158108, 158110, and 158184.



Corrective Actions Planned

An additional tripsaver is planned on this circuit as part of DOJM work order 26JF16131. An overhead visual inspection is planned for this year as well (2023). Any repair work identified as a result of these inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

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Multi Year WPC Analysis and Remedial Action Report

Circuit Number: 565054
Division: GATEWAY
ZIP Codes(s) Served: 63301, 63304, 63373
Customers Served: 993
Customer Interruptions (CI): 1,055
SAIFI Value: Y2020 - 2.67; Y2021 - 1.87; Y2022 - 1.06
SAIDI Value: 63

Outage Analysis

Causes	2020 Total CI	2021 Total CI	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	116	527	431	40.85%	14
LIGHTNING	5	9	8	0.76%	5
PUBLIC	644	137	0	0.00%	0
EQUIPMENT/UG	1,074	1	3	0.28%	3
TREE	9	20	2	0.19%	2
EMPLOYEES	0	682	0	0.00%	0
CUSTOMER	0	2	0	0.00%	0
ANIMAL	21	6	6	0.57%	5
OTHER	1	29	0	0.00%	0
UNKNOWN	3	5	605	57.35%	4

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

(2020) There were two circuit outages that caused the majority of the customer interruptions on this circuit in 2020. A vehicle accident leading to loss of supply caused 34% of the interruptions. Repairs were completed on Work Request 25SC069208. An underground failure caused 57% of the interruptions. During an operation in the field a switch tripped in a switch pad resulting in an outage. (2021) Three outages caused 95% of the customer interruptions on this circuit. The first outage caused 35% of the customer interruptions on this circuit. This was due to a primary line becoming disconnected during severe winds. Repairs were made under OAS# 212620378. The second outage caused 50% of the customer interruptions. This was due to switching at the substation. Restoration was completed under SAWS number 23567. The third outage caused



10% of the customer interruptions. This was due to a vehicle incident. A car hit a pole causing a primary line to hang low, needing replacement.

Corrective Actions Planned

This circuit had over 30 incidents in 2022. On 02/02/2022, an incident (OAS Order 220332642) coded as an overhead malfunction occurred. This event contributes to 23% of customer interruptions in 2022 (247/1055) and no issues were found upon review. On 10/21/2022, there was a downed primary line on OAS Order 222942620 which accounts for 15% (159/1055) of the customer interruptions and no issues were found. On 07/27/2022, there was a bad recloser which was replaced and accounts for 13% of customer interruptions (132/1055).

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Multi Year WPC Analysis and Remedial Action Report

Circuit Number: 647052
Division: NORTHEAST MO
ZIP Codes(s) Served: 63304, 63332, 63341
Customers Served: 354
Customer Interruptions (CI): 223
SAIFI Value: Y2020 - 2.61; Y2021 - 2.95; Y2022 - 0.63
SAIDI Value: 70

Outage Analysis

Causes	2020 Total CI	2021 Total CI	2022 Total CI	2022 % of Total CI	2022 # Incidents
EQUIPMENT/OH	458	48	187	83.86%	12
LIGHTNING	3	0	2	0.90%	2
PUBLIC	392	3	2	0.90%	1
EQUIPMENT/UG	1	4	2	0.90%	1
TREE	4	911	14	6.28%	4
EMPLOYEES	0	0	2	0.90%	1
ANIMAL	0	7	14	6.28%	5
UNKNOWN	36	43	0	0.00%	0

Corrective actions taken or planned are noted below. These actions were developed through any combination of engineering reviews, circuit patrols, circuit inspections, and trimming. Circuit inspections and trimming are conducted on an appropriate cycle per rules 20 CSR 4240-23.020 and 20 CSR 4240.23-030 respectively.

Corrective Actions

(2020) Nine separate overhead equipment incidents caused 51% of the customer interruptions on this circuit in 2020. Two separate public vehicle caused incidents caused 44% of the customer interruptions on this circuit in 2020. A mid-cycle tree trim was completed in 2020. Work request 2WWZ197645 added fault current indicators to all the WWKS circuits on this substation to improve restoration times. (2021) 89.7% of the 2021 outages were tree caused. The regular maintenance cycle tree trimming is scheduled for 2022. This tree trimming will directly address the 2021 outages and improve customer reliability. (2022) This was not a worst performing circuit in 2022. Maintenance tree trim cycle was completed in in 2022.

Corrective Actions Planned



There are no recurring problems identified on the circuit and no further work is required at this time.