Ameren Missouri 4 CSR 240-23.010 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 2011 as required by Missouri Public Service Commission Rule 4 CSR 240-23.010, 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).

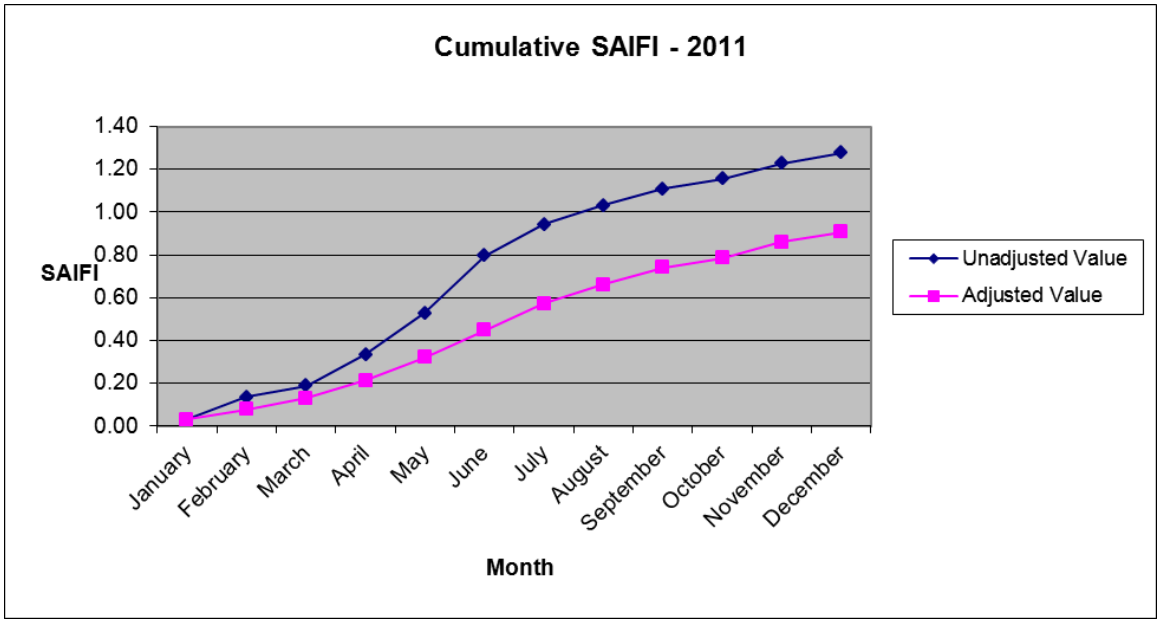
5. Worst Performing Circuit (WPC) – A distribution circuit whose SAIFI value, adjusted to exclude major storm events per IEEE Standard 1366-2003, when compared to the SAIFI values for the other circuits in the Ameren Missouri system places it among the 5% of circuits with the highest SAIFI values in 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

4 CSR 240-23.010, section 3 states "The information required by section (1) shall be filed both unadjusted and adjusted to exclude major storm events per IEEE Standard 1366-2003, Guide for Electric Power Distribution Reliability Indices." The following tables and graphs show Ameren Missouri's unadjusted and adjusted reliability metrics for calendar year 2011:

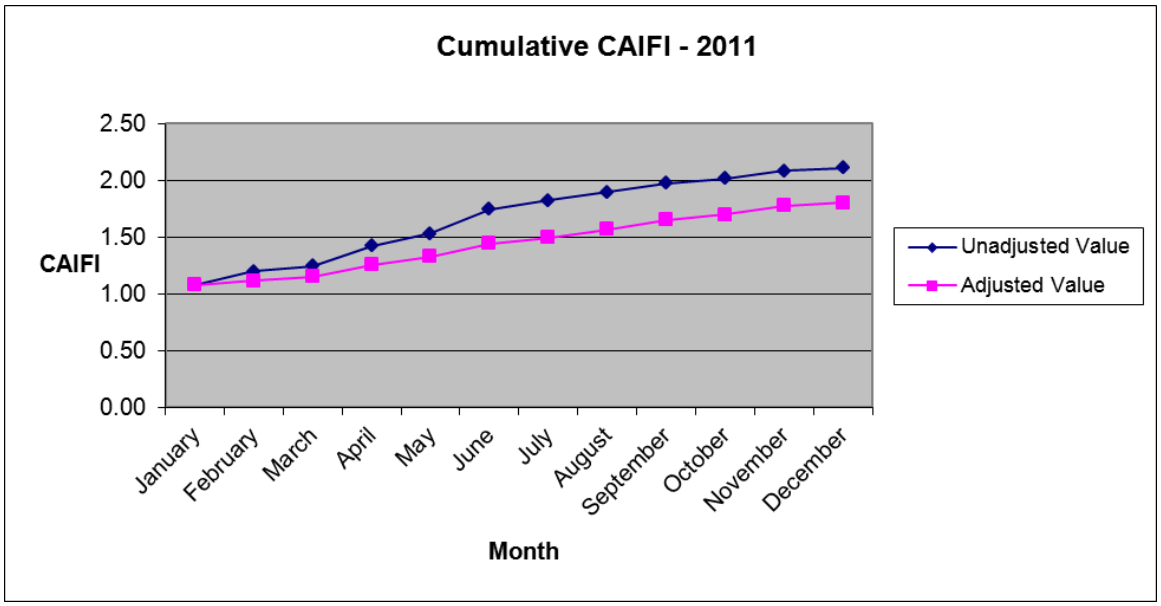
SAIFI:

Month	Unadjusted Value	Adjusted Value
January	0.03	0.03
February	0.14	0.08
March	0.19	0.13
April	0.34	0.21
May	0.53	0.32
June	0.80	0.45
July	0.94	0.57
August	1.03	0.66
September	1.11	0.74
October	1.16	0.79
November	1.23	0.86
December	1.28	0.91



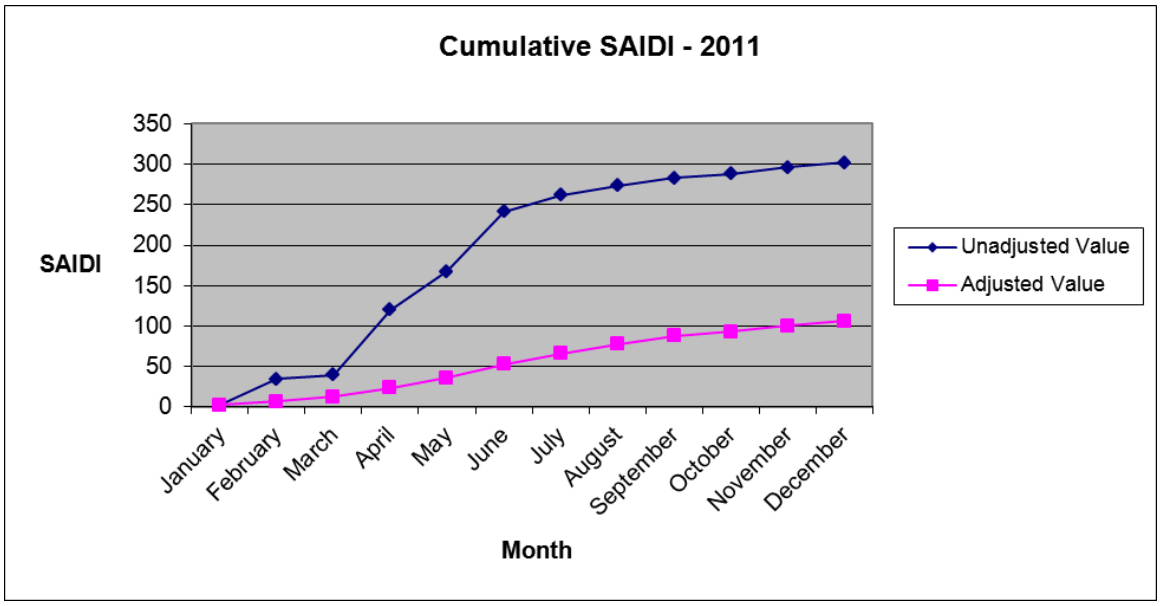
CAIFI:

Month	Unadjusted Value	Adjusted Value
January	1.08	1.08
February	1.20	1.11
March	1.25	1.15
April	1.43	1.26
May	1.53	1.33
June	1.75	1.44
July	1.83	1.50
August	1.90	1.57
September	1.98	1.65
October	2.02	1.70
November	2.09	1.78
December	2.11	1.80



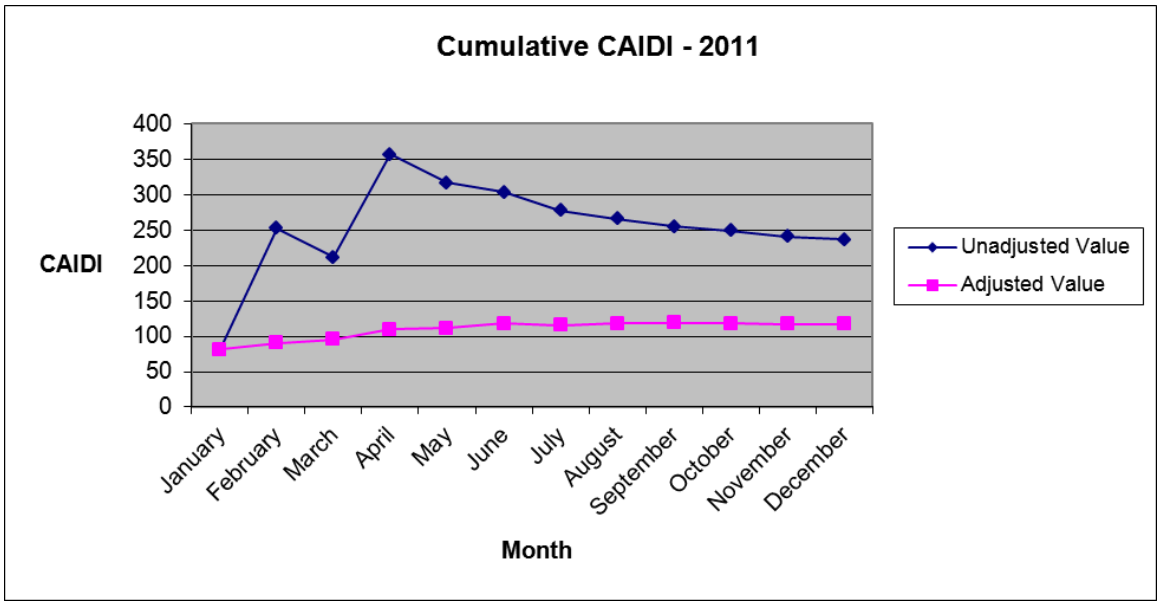
SAIDI:

Month	Unadjusted Value	Adjusted Value
January	3	3
February	35	7
March	40	12
April	120	24
May	168	36
June	242	53
July	262	66
August	273	78
September	283	88
October	288	93
November	296	101
December	302	106



CAIDI:

Month	Unadjusted Value	Adjusted Value
January	81	81
February	252	90
March	212	96
April	357	110
May	317	111
June	304	118
July	278	116
August	265	118
September	255	119
October	249	118
November	241	117
December	236	117



Ameren Missouri 2011 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 2011 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 2011 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 "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 2011 WPC list

The MWPCs circuits not identified as WPCs in 2011 but which were WPCs in 2009 and 2010 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 4 CSR 240-23.010 for the calendar year 2011. The reported reliability metrics demonstrate continued improvement in the reliability of Ameren Missouri's electric distribution system. With an adjusted SAIFI value of .91, 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
Ameren Missouri 2011 Worst Performing Circuits

DIVISION	OPERATING AREA	CIRCUIT	VOLT	CUSTOMERS	CI	CMI	SAIDI	SAIFI	2009	2010	2011	Years WPC
SEMO	CAPE GIRARDEAU	635007	4	49	1,616	149,533	3052	32.98			WPC	1
GATEWAY	ST CHARLES	564051	12	250	4,692	173,038	692	18.77			WPC	1
SEMO	DEXTER	879006	4	344	2,859	387,268	1126	8.31		WPC	WPC	2
BOONE TRAILS	WENTZVILLE	659051	12	295	1,978	152,130	516	6.71			WPC	1
SEMO	ST FRANCOIS	161054	12	407	2,460	329,892	811	6.04			WPC	1
BOONE TRAILS	MOBERLY	797008	4	14	72	4,186	299	5.14			WPC	1
BOONE TRAILS	BOONEVILLE	708004	4	1	5	336	336	5.00			WPC	1
SEMO	CAPE GIRARDEAU	835002	4	138	659	117,475	851	4.78		WPC	WPC	2
BOONE TRAILS	WENTZVILLE	655058	12	1064	4,563	308,033	290	4.29			WPC	1
ARCHVIEW	GERALDINE	188008	4	176	714	171,099	972	4.06			WPC	1
ARCHVIEW	GERALDINE	083002	4	31	124	35,425	1143	4.00			WPC	1
SEMO	POTOSI	483052	12	874	3,461	306,765	351	3.96	WPC		WPC	2
SEMO	DEXTER	620055	12	219	849	86,943	397	3.88			WPC	1
SEMO	CAPE GIRARDEAU	828056	12	328	1,271	129,955	396	3.88			WPC	1
SEMO	DEXTER	690057	12	619	2,350	346,776	560	3.80	WPC	WPC	WPC	3
SEMO	HAYTI	456057	12	134	507	82,624	617	3.78	WPC	WPC	WPC	3
GATEWAY	BERKELEY	281054	12	1302	4,777	316,383	243	3.67			WPC	1
SEMO	HAYTI	456055	12	97	353	83,512	861	3.64			WPC	1
SEMO	HAYTI	466055	12	151	543	55,214	366	3.60		WPC	WPC	2
CENTRAL OZARKS	CAPITAL	836051	12	295	1,013	133,241	452	3.43			WPC	1
GATEWAY	BERKELEY	215053	12	1337	4,587	1,017,294	761	3.43		WPC	WPC	2
SEMO	HAYTI	455053	12	817	2,747	242,629	297	3.36	WPC	WPC	WPC	3
SEMO	HAYTI	454055	12	1103	3,664	379,062	344	3.32	WPC	WPC	WPC	3
SEMO	POTOSI	451054	12	403	1,332	350,589	870	3.31			WPC	1
MERAMEC VALLEY	JEFFERSON	546054	12	155	491	51,068	329	3.17		WPC	WPC	2
GATEWAY	BERKELEY	134051	12	1374	4,308	296,403	216	3.14			WPC	1
SEMO	HAYTI	452053	12	288	895	213,061	740	3.11	WPC	WPC	WPC	3
GATEWAY	DORSETT	203058	12	811	2,472	425,846	525	3.05			WPC	1
SEMO	DEXTER	824003	4	421	1,251	92,116	219	2.97			WPC	1
ARCHVIEW	GERALDINE	120003	4	202	575	398,116	1971	2.85			WPC	1
GATEWAY	BERKELEY	134054	12	1858	5,284	989,496	533	2.84			WPC	1
UNDERGROUND	UNDERGROUND	082051	12	366	1,036	285,059	779	2.83		WPC	WPC	2
MERAMEC VALLEY	FRANKLIN	585052	12	280	790	191,888	685	2.82			WPC	1
SEMO	ST FRANCOIS	561053	12	765	2,155	355,812	465	2.82			WPC	1
BOONE TRAILS	MEXICO	800001	4	90	241	28,914	321	2.68			WPC	1
BOONE TRAILS	WENTZVILLE	672053	12	287	760	94,205	328	2.65	WPC		WPC	2
GATEWAY	DORSETT	209055	12	245	642	42,151	172	2.62			WPC	1
GATEWAY	BERKELEY	131005	4	577	1,479	916,223	1588	2.56			WPC	1
GATEWAY	BERKELEY	167054	12	1598	4,090	705,641	442	2.56	WPC		WPC	2
SEMO	HAYTI	465055	12	989	2,492	257,101	260	2.52	WPC		WPC	2
GATEWAY	DORSETT	256054	12	1637	4,103	334,091	204	2.51			WPC	1
GATEWAY	BERKELEY	272053	12	405	998	118,137	292	2.46			WPC	1
SEMO	CAPE GIRARDEAU	871057	12	268	654	108,607	405	2.44			WPC	1
MERAMEC VALLEY	FRANKLIN	503052	12	403	981	66,771	166	2.43			WPC	1
BOONE TRAILS	WENTZVILLE	674052	12	424	1,031	123,615	292	2.43		WPC	WPC	2
SEMO	DEXTER	688007	4	228	546	116,924	513	2.39			WPC	1
CENTRAL OZARKS	CAPITAL	854051	12	452	1,079	287,977	637	2.39			WPC	1
ARCHVIEW	GERALDINE	128004	4	89	210	18,158	204	2.36			WPC	1
MERAMEC VALLEY	FRANKLIN	506051	12	716	1,687	168,082	235	2.36			WPC	1
SEMO	DEXTER	628053	12	601	1,412	145,268	242	2.35			WPC	1
BOONE TRAILS	WENTZVILLE	645052	12	59	138	13,729	233	2.34			WPC	1
MERAMEC VALLEY	ELLISVILLE	169053	12	184	423	105,188	572	2.30			WPC	1
GATEWAY	BERKELEY	269004	4	819	1,879	106,539	130	2.29			WPC	1
GATEWAY	BERKELEY	265052	12	803	1,832	169,496	211	2.28			WPC	1
GATEWAY	BERKELEY	167056	12	722	1,640	654,479	906	2.27			WPC	1
BOONE TRAILS	MOBERLY	939053	12	572	1,299	69,111	121	2.27			WPC	1
GATEWAY	BERKELEY	153006	4	736	1,669	109,782	149	2.27			WPC	1
SEMO	CAPE GIRARDEAU	607054	12	271	613	86,263	318	2.26	WPC		WPC	2
GATEWAY	DORSETT	203051	12	1426	3,221	641,569	450	2.26			WPC	1
MERAMEC VALLEY	JEFFERSON	560053	12	1469	3,309	540,329	368	2.25			WPC	1
SEMO	CAPE GIRARDEAU	607055	12	272	612	111,306	409	2.25			WPC	1
CENTRAL OZARKS	EXCELSIOR SPRINGS	917051	12	575	1,265	58,714	102	2.20			WPC	1
BOONE TRAILS	WENTZVILLE	629051	12	484	1,058	155,184	321	2.19		WPC	WPC	2
BOONE TRAILS	KIRKSVILLE	703001	4	588	1,278	90,411	154	2.17			WPC	1
ARCHVIEW	GERALDINE	160001	4	470	1,021	106,888	227	2.17			WPC	1
CENTRAL OZARKS	CAPITAL	847001	4	112	243	45,361	405	2.17			WPC	1
BOONE TRAILS	MOBERLY	745053	12	226	490	44,431	197	2.17			WPC	1
GATEWAY	ST CHARLES	577051	12	1098	2,380	204,757	186	2.17			WPC	1
ARCHVIEW	MACKENZIE	271055	12	1687	3,646	355,530	211	2.16			WPC	1
GATEWAY	DORSETT	256059	12	1063	2,290	334,462	315	2.15	WPC		WPC	2
SEMO	DEXTER	622054	12	389	837	78,434	202	2.15	WPC		WPC	2
SEMO	CAPE GIRARDEAU	646052	12	949	2,038	483,236	509	2.15	WPC		WPC	2
GATEWAY	BERKELEY	096003	4	666	1,424	60,932	91	2.14			WPC	1
ARCHVIEW	GERALDINE	083006	4	71	151	10,482	148	2.13			WPC	1
ARCHVIEW	MACKENZIE	015011	4	357	759	61,554	172	2.13			WPC	1
ARCHVIEW	GERALDINE	255001	4	730	1,549	246,726	338	2.12			WPC	1
SEMO	POTOSI	487051	12	58	123	7,213	124	2.12			WPC	1
ARCHVIEW	MACKENZIE	020003	4	61	129	11,301	185	2.11			WPC	1

Appendix A
Ameren Missouri 2011 Worst Performing Circuits

DIVISION	OPERATING AREA	CIRCUIT	VOLT	CUSTOMERS	CI	CMI	SAIDI	SAIFI	2009	2010	2011	Years WPC
GATEWAY	BERKELEY	181003	4	693	1,457	702,091	1013	2.10			WPC	1
MERAMEC VALLEY	ELLISVILLE	295052	12	854	1,794	270,368	317	2.10			WPC	1
MERAMEC VALLEY	JEFFERSON	185053	12	644	1,350	262,948	408	2.10			WPC	1
ARCHVIEW	MACKENZIE	245051	12	1318	2,752	174,086	132	2.09			WPC	1
GATEWAY	BERKELEY	260053	12	407	845	93,989	231	2.08			WPC	1
ARCHVIEW	GERALDINE	044006	4	165	342	40,548	246	2.07			WPC	1
ARCHVIEW	MACKENZIE	105005	4	674	1,397	225,715	335	2.07			WPC	1
UNDERGROUND	UNDERGROUND	285054	12	318	658	200,609	631	2.07			WPC	1
GATEWAY	ST CHARLES	583051	12	992	2,049	60,529	61	2.07			WPC	1
GATEWAY	BERKELEY	210051	12	1289	2,647	193,468	150	2.05			WPC	1
SEMO	CAPE GIRARDEAU	803053	12	58	118	21,027	363	2.03			WPC	1
SEMO	DEXTER	623003	4	284	577	82,445	290	2.03			WPC	1
CENTRAL OZARKS	EXCELSIOR SPRINGS	717051	12	1116	2,267	179,775	161	2.03			WPC	1
ARCHVIEW	MACKENZIE	194052	12	1199	2,433	405,902	339	2.03			WPC	1
BOONE TRAILS	KIRKSVILLE	705001	4	330	664	34,728	105	2.01			WPC	1
GATEWAY	DORSETT	266052	12	92	185	40,512	440	2.01			WPC	1
BOONE TRAILS	KIRKSVILLE	858052	12	1	2	99	99	2.00			WPC	1
UNDERGROUND	UNDERGROUND	082052	12	172	343	91,415	531	1.99	WPC		WPC	2
BOONE TRAILS	WENTZVILLE	647052	12	308	613	118,770	386	1.99			WPC	1
GATEWAY	ST CHARLES	544055	12	868	1,720	229,612	265	1.98	WPC		WPC	2
GATEWAY	BERKELEY	163003	4	507	1,003	74,166	146	1.98			WPC	1
GATEWAY	BERKELEY	039004	4	386	757	88,401	229	1.96			WPC	1
ARCHVIEW	GERALDINE	083008	4	41	80	2,280	56	1.95			WPC	1
GATEWAY	BERKELEY	259054	12	2031	3,920	276,332	136	1.93			WPC	1
GATEWAY	DORSETT	264060	12	854	1,618	133,538	156	1.89			WPC	1
ARCHVIEW	MACKENZIE	253052	12	1563	2,955	245,717	157	1.89			WPC	1
SEMO	POTOSI	473053	12	625	1,175	408,646	654	1.88			WPC	1
BOONE TRAILS	WENTZVILLE	627051	12	589	1,100	59,066	100	1.87	WPC		WPC	2
MERAMEC VALLEY	ELLISVILLE	279054	12	1123	2,096	162,798	145	1.87			WPC	1
SEMO	ST FRANCOIS	161051	12	997	1,839	244,259	245	1.84			WPC	1
ARCHVIEW	GERALDINE	104008	4	748	1,374	506,530	677	1.84			WPC	1

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 635007
Division – SEMO
Area Served – Cape Girardeau, MO
SAIFI Value – 32.98

Analysis Results:

The high SAIFI value for this circuit is misleading due to a change in customer count from 800 to 49 at the end of the year, and also due to two large outages that were incorrectly recorded in 2011. In reviewing the first outage it was discovered that a reporting error improperly attributed this event as an outage when the customers were actually in service. In reviewing the second outage it was discovered that customers had been transferred to the Midtown 621003 circuit and no actual customer interruptions had occurred. When the CI associated with these reported outages are removed, the overall SAIFI calculation for this circuit would have been 0.88. Therefore, no corrective actions are necessary for this circuit.

Corrective Actions:

No work is planned on this circuit in 2012.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 564051
Division – Gateway
Area Served – St. Charles, MO
SAIFI Value – 18.77

Analysis Results:

This circuit serves 250 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by underground cable faults and a tree failure resulting in 4,639 of the total 4,692 CI. Circuit 564051 experienced three significant outages in 2011 which resulted in 99% of the CI experienced on this circuit. Two of the outages occurred when the direct buried primary cable on the circuit backbone failed. The other outage occurred when a tree branch broke and contacted the overhead lines.

Corrective Actions:

Tree trimming was performed on this circuit in 2011.

Both primary cable failures were repaired. The existing sections of direct buried primary cable were replaced with new primary cable installed in conduit under DOJM Work Request number 25SC051861. This work was completed in March 2012.

The circuit will be patrolled in 2012 to determine if any additional spot tree trimming is required.

An overhead visual inspection will be performed on this circuit in 2012. The repair work identified as a result of this inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 879006
Division – SEMO
Area Served – Lilbourn, MO
SAIFI Value – 8.31

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit (MWPC) based on its performance in 2010 and 2011. The SAIFI values for this circuit in the last two years were: 3.18 in 2010 and 8.31 in 2011. This circuit serves 344 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather, heat loading, overloads, and overhead equipment failures. Circuit 879006 experienced ten significant outages in 2011. Two outages occurred when the substation breaker tripped due to lightning. Two outages occurred when reclosers tripped due to excessive heat loading on the circuit. Three outages occurred as a result of the primary phases contacting each other during heavy wind. Two outages occurred as a result of the substation breaker tripping due to an overload from the new Pioneer Plant. Lastly, one outage occurred as a result of a lightning arrester failure.

Corrective Actions:

Previous reliability work performed on this circuit:

The Vegetation Management Department performed mid-cycle maintenance tree trimming in 2010.

A project to re-conductor and add lightning arrestors to a portion of the circuit running towards Ristine was performed under DOJM Work Request numbers 2TSE095450 and 2TSE095451. This work was completed in August 2011 and November 2011 respectively.

An overhead visual inspection was performed on this circuit in 2011. The repair work identified as a result of this inspection was performed under DOJM Work Request numbers 2TSE097308, 2TSE097708, and 2TSE098621 which were completed in July 2011, October 2011, and November 2011 respectively.

Wire spacers were added to the circuit near the substation to prevent the primary phases from contacting each other. In addition, the substation breaker was upgraded to eliminate overload conditions. This work was performed in 2011.

Planned MWPC reliability improvement work:

A new substation is being built with a capacity of 7MVA, SCADA switchgear, and a third circuit which will serve the new Pioneer Plant load. The feeder exits will be undergrounded which will eliminate the primary phase contact problem. This project is expected to be completed in June 2012.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 659051
Division – Boone Trails
Area Served – Wentzville, MO
SAIFI Value – 6.71

Analysis Results:

This circuit serves 295 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather and overhead equipment failures. Circuit 659051 experienced three significant outages in 2011. The first outage occurred when an insulator failed. The second outage occurred when a cross arm twisted in the wind. The third outage occurred when an insulator failed and caused the primary to fall.

Corrective Actions:

Both insulators and the cross arm were replaced.

Several transformers on the circuit backbone and several taps were fused in 2011.

Several old insulators on the circuit backbone were replaced in 2011.

Division engineering personnel will review the circuit in 2012 to determine where lightning arrestors should be installed to limit outages caused by lightning strikes.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 161054
Division – SEMO
Area Served – Farmington, MO
SAIFI Value – 6.04

Analysis Results:

This circuit originally served 1,073 customers. However, in November of 2011 666 of these customers were transferred to new circuit 161056, reducing the customer count on circuit 161054 to 407. This reduced number of customers was used to calculate the SAIFI value which placed this circuit on the WPC list. If the original customer count were included, the overall SAIFI calculation for this circuit would have been 2.29.

The customer interruptions (CI) experienced on this circuit in 2011 were caused by storms and equipment failures. Circuit 161054 experienced four circuit outages in 2011. Two outages were caused by storms, which caused wire failures and tree damage. A third outage was caused by faulty insulators on the circuit backbone. The fourth outage was caused by a capacitor bank failure.

Corrective Actions:

Circuit 161054 was modified in 2011. A new feeder exit project, the Farmington 161056 circuit, moved nine miles of circuit 161054 to new circuit 161056. This reduced the three phase exposure on circuit 161054 to five miles, which will greatly improve its reliability. This project was performed under DOJM Work Request numbers 28SF034583 and 28SF034295, which were completed in November 2011 and January 2012 respectively.

Tree trimming will be performed on this circuit in 2012.

Circuit protection projects, including additional fuses and insulators, will be performed under DOJM Work Request numbers 28SF035489 and 28SF035919 in 2012.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 797008
Division – Boone Trails
Area Served – Moberly, MO
SAIFI Value – 5.14

Analysis Results:

This circuit serves 14 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by overhead equipment malfunctions and weather. Circuit 797008 experienced several significant outages in 2011. The outages occurred when fuses blew during adverse weather conditions. This circuit is being reconfigured to 12kV.

Corrective Actions:

This circuit's load was transferred to circuit 914055 in 2011. Circuit 797008 will be removed and the substation retired.

No work is planned on this circuit in 2012.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 708004
Division – Boone Trails
Area Served – Boonville, MO
SAIFI Value – 5.00

Analysis Results:

This circuit serves 1 customer. The customer interruptions (CI) experienced on this circuit in 2011 were caused by hardware failures. Circuit 708004 experienced five significant outages in 2011. These five outages occurred due to hardware failures on the circuit. This circuit is being reconfigured to 12kV.

Corrective Actions:

This circuit will be retired this year and the load will be transferred to an adjacent 12kV circuit with greater capacity.

No work is planned on this circuit in 2012.

APPENDIX B

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 835002
Division – SEMO
Area Served – Chaffee, MO
SAIFI Value – 4.78

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit (MWPC) based on its performance in 2010 and 2011. The SAIFI values for this circuit in the last two years were: 2.58 in 2010 and 4.78 in 2011. This circuit serves 138 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by public vehicle accidents and a primary wire failure. Circuit 835002 experienced three significant outages in 2011. Two of these outages were caused by public vehicle accidents. The other outage occurred when a primary wire failed due to excessive heat loading and caused the substation breaker to trip.

Corrective Actions:

Previous reliability work performed on this circuit:

The Vegetation Management Department performed a mid-cycle patrol of this circuit in 2011.

A major substation project to replace the existing substation and switchgear was completed in 2011.

New 34kV and 3-4160V feeder exits were installed on this circuit along with regaining the third feeder position lost in 2007 when the existing switchgear failed. This work was performed under DOJM Work Request numbers 2TSE095580, 2TSE095461, 2TSE095460, and 2TSE095456, which were completed in September and October 2011.

A special visual inspection was performed on this circuit in 2011 which inspected for animal guarding, tap fusing, and maintenance issues. Repairs were performed under DOJM Work Request number 2TSE097993 which was completed in September 2011.

Planned MWPC reliability improvement work:

Normally scheduled tree trimming will be performed on this circuit in 2012. No further reliability work is needed.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 655058
Division – Boone Trails
Area Served – Saint Peters, MO
SAIFI Value – 4.29

Analysis Results:

This circuit serves 1,064 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather and cable failures. Circuit 655058 experienced four significant outages in 2011. The first outage occurred when a tree broke and fell onto the primary during a thunderstorm. The second outage occurred when a tree limb fell onto the primary during a thunderstorm. The last two outages occurred when the direct buried feeder exit cable failed.

Corrective Actions:

Tree trimming will be performed on this circuit in 2012.

The direct buried feeder exit cable that failed is being replaced with cable in conduit. This work will be performed in 2012 under DOJM Work Request number 2WWZ146467.

Division engineering personnel will patrol the circuit in 2012 to verify that all backbone transformers are fused and to determine if any additional opportunities for circuit sectionalizing exist.

Division engineering personnel will perform an Infrared (IR) inspection of the circuit. Repair work identified as a result of this inspection will be completed in 2012.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 188008
Division – Archview
Area Served – University City, MO
SAIFI Value – 4.06

Analysis Results:

This circuit originally served 516 customers. However, in 2011 this circuit was reconfigured to eliminate overload concerns, which reduced the customer count to 176. This reduced number of customers was used to calculate the SAIFI value which placed this circuit on the WPC list. If the original customer count were to be included, the overall SAIFI calculation for this circuit would have been 1.38.

The customer interruptions (CI) experienced on this circuit in 2011 were caused by an underground cable failure and a wire fault. Circuit 188008 experienced two significant outages in 2011. The first outage occurred due to an underground cable fault. The second outage occurred when a 34kV circuit sagged into circuit 188008 and caused it to trip.

Corrective Actions:

The underground cable that failed was replaced in 2011.

Circuit 188008 was lowered to prevent future clearance problems with the 34kV circuit. This work was performed in 2011.

An overhead visual and ground line inspection will be performed on this circuit in 2012. The repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 083002
Division – Archview
Area Served – North City of St. Louis, MO
SAIFI Value – 4.00

Analysis Results:

This circuit serves approximately 31 primarily commercial/industrial customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by a public vehicle accident and overhead equipment failures resulting in 124 CI. Circuit 083002 experienced two significant outages in 2011 which resulted in 99% of the CI experienced on this circuit. The first outage occurred when a vehicle hit a pole on private property, which resulted in a circuit outage to make repairs. The second outage occurred when the jumpers on a tie switch failed during abnormal switching.

Corrective Actions:

Tree trimming was last performed on this circuit in 2009.

A portion of the circuit was rebuilt in 2011 to accommodate the facility expansion at ADM Company. This work also improved and re-configured the secondary portion of the circuit where the wires were shorting together.

No further work is planned on this circuit in 2012.

APPENDIX B

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 483052
Division – SEMO
Area Served – Ironton, MO
SAIFI Value – 3.96

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit (MWPC) based on its performance in 2009 and 2011. The SAIFI values for this circuit in the last three years were: 2.27 in 2009, 0.18 in 2010, and 3.96 in 2011. This circuit serves 874 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by tree contacts, switching errors, faulty overhead equipment, weather, and animal intrusions. Circuit 483052 experienced multiple outages in 2011. Outages were caused by a tree contact on a three phase circuit, a switching error inside a substation, and a faulty lightning arrester on the circuit backbone. Device level outages were also caused by wire failures during thunderstorms and animal intrusions in equipment.

Corrective Actions:

Previous reliability work performed on this circuit:

Seven miles of this circuit were rebuilt and re-conductored which eliminated most aging hardware and voltage problem concerns. This work was performed under DOJM Work Request numbers 28IR031993, 28IR031994, and 28IR031995, completed in September and December of 2009, and February of 2010.

Line reclosers and fuses were installed on the radial section of this circuit. This work was performed under DOJM Work Request numbers 28IR030744 and 28IR033264, completed in June and April of 2010

Animal guards and line spinners were installed on substation line components to reduce future substation outages caused by animal intrusions under DOJM Work Request number 28IR034555 which was completed in December 2010.

In 2011, the 6 year cycle tree trimming was completed for this circuit. This action should reduce the amount of tree caused outages in 2012.

Planned MWPC reliability improvement work:

Additional protection was installed on unprotected backbone devices under DOJM Work Request number 28IR036154, which was completed in February 2012.

Additional switch labels were installed at the Pilot Knob substation to ensure correct switch identification, thereby eliminating future switching errors. This work was performed under OAS Order Number 120243636 in January 2012.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 620055
Division – SEMO
Area Served – Parma, MO
SAIFI Value – 3.88

Analysis Results:

This circuit serves 219 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather. Circuit 620055 experienced four significant outages in 2011. Two outages occurred when the substation breaker tripped as a result of high winds and snow. Two other outages occurred when the substation breaker tripped following primary conductor failures during storms

Corrective Actions:

A visual inspection of this circuit will be performed by division personnel in 2012. This inspection will identify needed animal guarding, tap fusing, and other maintenance items. Repairs will be performed under DOJM Work Request number 2TSE099725.

An overhead visual and ground line inspection will be performed on this circuit in 2012. The repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 828056
Division – SEMO
Area Served – Blodgett, MO
SAIFI Value – 3.88

Analysis Results:

This circuit serves 328 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by overhead equipment failures and weather. Circuit 828056 experienced seven significant outages in 2011. Two outages occurred when the primary failed during a thunderstorm. Two outages occurred when lightning arresters failed. Lastly, three outages occurred when the primary conductor failed due to load which caused the reclosers to trip.

Corrective Actions:

An overhead visual and ground line inspection will be performed on this circuit in 2012. The repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 690057
Division – SEMO
Area Served – Richland, MO
SAIFI Value – 3.80

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit (MWPC) based on its performance in 2009, 2010, and 2011. The SAIFI values for this circuit in the last three years were: 3.92 in 2009, 5.11 in 2010, and 3.80 in 2011. This circuit serves 619 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather and underground cable failures. Circuit 690057 experienced seven significant outages in 2011. Two outages occurred when the 34kV subtransmission primary failed during storms. Another outage occurred when the substation high side fuses blew during a thunderstorm. Two more outages occurred when the primary failed during storms. Lastly, two outages occurred when the substation feeder exit cable failed.

Corrective Actions:

Previous reliability work performed on this circuit:

The Vegetation Management Department performed mid-cycle maintenance tree trimming in 2008.

A special overhead visual inspection was performed on this circuit in 2010. The inspection identified needed animal guarding, tap-fusing, and other maintenance items. Tap fusing was performed under DOJM Work Request number 2TSE092583 which was completed in December 2010. The remaining circuit inspection work was performed under DOJM Work Request number 2TSE093548 which was completed in November 2010.

Three sets of reclosers were installed to sectionalize the circuit. This work was performed under DOJM Work Request number 2TSE092584 and was completed in December 2010.

The substation underground feeder exit cable was replaced under DOJM Work Request number 2TSE097309 in August 2011.

An overhead visual inspection was performed on this circuit in 2011. The repair work identified as a result of this inspection was completed in accordance with Ameren Missouri's infrastructure inspection policy. This work was performed under DOJM Work Request numbers 2TSE097992 and 2TSE097095 which were completed in October 2011 and December 2011 respectively.

Planned MWPC reliability improvement work:

A normally scheduled underground detailed inspection will be performed on this circuit in 2012. The repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 456057
Division – SEMO
Area Served – Deering, MO
SAIFI Value – 3.78

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit (MWPC) based on its performance in 2009, 2010, and 2011. The SAIFI values for this circuit in the last three years were: 2.37 in 2009, 3.17 in 2010, and 3.78 in 2011. This circuit serves 134 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather and overhead equipment failures. Circuit 456057 experienced six significant outages in 2011. One outage occurred when the 34kV subtransmission primary failed during a storm. A second outage occurred when a recloser tripped during a thunderstorm. A third outage occurred when a transformer failed which resulted in a fused switch failure. The remaining three outages occurred when the primary on this circuit failed during inclement weather.

Corrective Actions:

Previous reliability work performed on this circuit:

The Vegetation Management Department performed mid-cycle maintenance tree trimming in 2010.

An overhead visual inspection was done on this circuit in 2010. The repair work identified as a result of this inspection was completed in accordance with Ameren Missouri's infrastructure inspection policy. This work was performed under DOJM Work Request number 2TSE093555 which was completed in October 2010.

A special overhead visual inspection was performed on this circuit in 2011 which inspected for animal guarding, tap fusing, maintenance issues, and performed an infrared scan of the circuit. Repairs were performed under DOJM Work Request numbers 2TSE097298, 2TSE097705, and 2TSE097099 which were completed in July 2011, August 2011, and September 2011 respectively.

A 34kV Viper recloser was installed at the Hayti West substation to replace the old OCB. This 34kV substation serves the 12kV Deering substation. This work was performed under DOJM Work Request number 2TSE093963 which was completed in October 2011.

Planned MWPC reliability improvement work:

The previously completed reliability work is expected to improve the performance of this circuit to an acceptable level. No work is planned on this circuit in 2012.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 281054
Division – Gateway
Area Served – Berkeley, MO
SAIFI Value – 3.67

Analysis Results:

This circuit serves 1,302 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by trees and underground equipment failures. Circuit 281054 experienced three significant outages in 2011 which resulted in 71% of the total CI experienced on this circuit. The first two outages occurred when high winds caused tree damage on the circuit. The third outage occurred when an underground cable failed.

Corrective Actions:

Tree trimming was performed on this circuit in 2011.

Division engineering personnel performed an inspection of the circuit and several improvement opportunities were identified. These include fusing the transformers on the circuit backbone. This work was performed under DOJM Work Request number 21MT546198 which was completed in March 2012. In addition, two overhead transformers and a pole will be replaced under DOJM Work Request number 21MT546241.

An overhead visual inspection will be performed on this circuit in 2012. The repair work identified as a result of this inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 456055
Division – SEMO
Area Served – Deering, MO
SAIFI Value – 3.64

Analysis Results:

This circuit serves 97 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather and an overhead equipment failure. Circuit 456055 experienced four significant outages in 2011. The first outage occurred when trees fell into the primary during a thunderstorm. Two other outages occurred when the substation breaker tripped when trees contacted the primary during storms. The last outage occurred when a 34kV jumper failed.

Corrective Actions:

A 34kV Viper recloser was installed at the Hayti West substation to replace the old OCB. This 34kV substation serves the 12kV Deering substation. This work was performed under DOJM Work Request number 2TSE093963 which was completed in October 2011.

A visual inspection of this circuit will be performed by division personnel in 2012. This inspection will identify needed animal guarding, tap fusing, and other maintenance items. Repairs will be performed under DOJM Work Request number 2TSE099736.

APPENDIX B

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 466055
Division – SEMO
Area Served – Wardell, MO
SAIFI Value – 3.60

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit (MWPC) based on its performance in 2010 and 2011. The SAIFI values for this circuit in the last two years were 2.48 in 2010 and 3.60 in 2011. This circuit serves 151 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather and overhead equipment failures. Circuit 466055 experienced four significant outages in 2011. The first outage occurred when a fuse blew during calm weather. The second outage occurred when a fuse blew during a thunderstorm. The two other outages occurred when the substation breaker tripped as a result of lightning strikes during thunderstorms.

Corrective Actions:

Previous reliability work performed on this circuit:

The Vegetation Management Department performed mid-cycle maintenance tree trimming in 2010.

A special overhead visual inspection was performed on this circuit in 2011. The inspection identified needed animal guarding, tap-fusing, and other maintenance items. Repairs were performed under DOJM Work Request number 2TSE097100 which was completed in August 2011. Additional work to install reclosers, replace poles, and replace cross arms was performed under DOJM Work Request number 2TSE097706 which was completed in August 2011.

Planned MWPC reliability improvement work:

The previously completed reliability work is expected to improve the performance of this circuit to an acceptable level. No work is planned on this circuit in 2012.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 836051
Division – Central Ozark
Area Served – Marys Home, Eugene, Henley, MO
SAIFI Value – 3.43

Analysis Results:

This circuit serves 295 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by a transmission line failure and tree failures. Circuit 836051 experienced three significant outages in 2011. One outage occurred when the 138kV transmission line which supplies this circuit's substation failed, causing the circuit to fail. Two other outages occurred when tree limbs fell into the lines during two different storms.

Corrective Actions:

Tree trimming will be performed on this circuit in 2012. This work is expected to resolve the only recurring reliability problem on this circuit.

There are no other repetitive causes of the outages experienced on this circuit. Therefore, no other work is planned for this circuit in 2012.

APPENDIX B

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 215053
Division – Gateway
Area Served – Black Jack, MO
SAIFI Value – 3.43

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit (MWPC) based on its performance in 2010 and 2011. The SAIFI values for this circuit in the last two years were: 2.09 in 2010 and 3.43 in 2011. This circuit serves 1,339 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather which resulted in 3,966 CI. Circuit 215053 experienced four significant outages in 2011 which resulted in 83% of the CI experienced on this circuit. The first outage occurred in May 2011 when a pole broke during a thunderstorm and required the circuit to be de-energized while repairs were made. The outage resulted in 893 CI. The second outage occurred in June 2011 when a tree branch broke and fell into the primary during a thunderstorm. The third outage occurred in September 2011 when a tree branch broke and fell into the primary during a thunderstorm. These two storms resulted in 2,052 CI. The fourth outage occurred in September 2011 when a cross arm broke during a thunderstorm and resulted in 1,019 CI.

Corrective Actions:

Previous reliability work performed on this circuit:

Tree trimming was last performed on this circuit in 2009.

Engineering personnel patrolled the circuit in 2010. This patrol identified the need for fusing and animal guarding. This work was performed under DOJM Work Request number 21MT523706 which was completed in April 2011.

Planned MWPC reliability improvement work:

An overhead visual inspection was performed on this circuit in 2011. The repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

Division engineering personnel performed an overhead inspection of the circuit and several improvement opportunities were identified. These included replacement of insulators, lightening arrestors, and deteriorated poles, as well as the installation of animal guards and the coordination and relocation of fuses. The need for additional tree trimming was identified and coordinated with the Vegetation Management Department. The repair work identified as a result of this inspection will be performed under DOJM Work Request number 21MT546755 which will be completed in December 2012.

APPENDIX B

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 455053
Division – SEMO
Area Served – Caruthersville, MO
SAIFI Value – 3.36

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit (MWPC) based on its performance in 2009, 2010, and 2011. The SAIFI values for this circuit in the last three years were: 3.56 in 2009, 2.21 in 2010, and 3.36 in 2011. This circuit serves 817 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather, overhead equipment malfunctions, substation failures, and public vehicle accidents. Circuit 455053 experienced seven significant outages in 2011. The first outage occurred when the Hayti 71 34kV circuit tripped the Hayti Bulk substation during a lightning storm. The second outage occurred when a switch burned during a thunderstorm. The third outage occurred when a jumper burned as a result of a failed connection. Two other outages occurred due to substation faults. The last two outages occurred as a result of public vehicle accidents.

Corrective Actions:

Previous reliability work performed on this circuit:

A major rebuild and re-conductor project was performed on this circuit in 2010. This work was performed under DOJM Work Request numbers 2TSE090495, 2TSE090496, and 2TSE090784 which were completed in November 2010, December 2010, and December 2010 respectively.

A project to build a new 34kV loop to serve the previously radial fed Caruthersville West substation was performed under DOJM Work Request numbers 2TSE090497 and 2TSE091155. This work was completed in August 2010 and September 2010 respectively.

The Vegetation Management Department performed mid-cycle maintenance tree trimming in 2011.

The following upgrades were made to the substation in 2011: Animal spinners were added to the overhead line and a Viper recloser was installed.

An overhead visual inspection was performed on this circuit in 2011. The repair work identified as a result of this inspection was completed in accordance with Ameren Missouri's infrastructure inspection policy. This work was performed under DOJM Work Request number 2TSE097988 which was completed in September 2011.

Planned MWPC reliability improvement work:

An Intellirupter recloser will be installed on this circuit in 2012 to establish a tie with the Caruthersville West (455055) circuit. This work will be performed under DOJM Work Request number 2TSE100085 which will be completed in December 2012.

APPENDIX B

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 454055
Division – SEMO
Area Served – Caruthersville, MO
SAIFI Value – 3.32

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit (MWPC) based on its performance in 2009, 2010, and 2011. The SAIFI values for this circuit in the past three years were: 5.55 in 2009, 3.41 in 2010, and 3.32 in 2011. This circuit serves 1,103 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather and overhead equipment failures. Circuit 454055 experienced five significant outages in 2011. The first outage occurred when the Hayti 71 34kV circuit tripped the Hayti Bulk substation during a lightning storm. A second outage occurred when the substation breaker tripped as a result of a lightning strike. A third outage occurred when a jumper burned as a result of a failed connection. The remaining two outages occurred when trees contacted the line during storms and caused the substation breaker to trip.

Corrective Actions:

Previous reliability work performed on this circuit:

A major rebuild and re-conductor project was performed on this circuit in 2010. This work was performed under DOJM Work Request numbers 2TSE090495, 2TSE090496, and 2TSE090784 which were completed in November 2010, December 2010, and December 2010 respectively.

Tree trimming was performed on this circuit in 2011.

A special overhead visual inspection was performed on this circuit in 2011 which inspected for animal guarding, tap fusing, and maintenance issues. Repairs were performed under DOJM Work Request number 2TSE097702 which was completed in December 2011.

Planned MWPC reliability improvement work:

An Intellirupter recloser will be installed on this circuit in 2012 to establish a tie with the Caruthersville West (455053) circuit. This work will be performed under DOJM Work Request number 2TSE100086 which will be completed in December 2012.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 451054
Division – SEMO
Area Served – Viburnum, MO
SAIFI Value – 3.31

Analysis Results:

This circuit serves 403 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by trees, pole hardware failures, and wire failures. Circuit 451054 did not experience significant outages in 2011, but did experience a number of smaller device outages that together resulted in enough CI to place this circuit on the WPC list. The majority of these outages occurred on three different reclosers which tripped on multiple occasions. These failures were caused by tree contacts, overhead equipment failures, and primary failures.

Corrective Actions:

Tree trimming was last performed on this circuit in 2009 in accordance with the 6 year rural schedule.

Additional reclosers, fuses, and switches were installed on various sections of this circuit to improve reliability and increase fault isolation during outages. This work was performed under DOJM Work Request numbers 28IR034384 and 28IR034193 in December 2010 and January 2011, respectively.

An overhead visual inspection and a ground line inspection were performed on this circuit in 2011. These inspections identified approximately 150 pole replacements and various other hardware repairs. The repair work identified as a result of the inspection is in progress and will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

The Vegetation Management Department will perform a mid-cycle patrol of this circuit in 2012 to identify and remove tree hazards.

Automated switch installations on single phase circuit taps will be performed under DOJM Work Request number 28IR036322 in 2012.

The substation 451054 circuit breaker will be replaced with a new SCADA controlled Viper circuit breaker with single phase trip capability in 2012.

APPENDIX B

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 546054
Division – Meramec Valley
Area Served – House Springs, MO
SAIFI Value – 3.17

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit (MWPC) based on its performance in 2010 and 2011. The SAIFI values for this circuit in the last two years were: 2.80 in 2010 and 3.17 in 2011. This circuit serves 155 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by equipment malfunctions and public vehicle accidents, resulting in 335 CI. Circuit 546054 experienced three significant outages in 2011. Two outages were caused by underground feeder exit cable failures near the circuit substation. The third outage occurred as a result of a public vehicle hitting a pole.

Corrective Actions:

Previous reliability work performed on this circuit:

A recloser which caused an outage due to a cold load pickup failure was replaced under DOJM Work Request number 26JF110855. This job was completed in February 2010.

The Vegetation Management Department performed spot tree trimming on the circuit in 2011.

Planned MWPC reliability improvement work:

An overhead visual inspection was performed on this circuit in 2011. The repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

Two jobs were created to address problems identified in 2011. Animal guards will be installed on the circuit under DOJM Work Request number 26JF119050 and fuses will be installed on un-fused taps along the circuit backbone under DOJM Work Request number 26JF119359. These jobs will be completed in 2012.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 134051
Division – Gateway
Area Served – Florissant, MO
SAIFI Value – 3.14

Analysis Results:

This circuit serves 1,377 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by an operator error and weather. Circuit 134051 experienced five significant outages in 2011. The first outage occurred when a pole broke during a storm. The second outage occurred due to a lightning strike during a thunderstorm. The third outage occurred when a thunderstorm caused a tree branch to fall into the line. The fourth outage also occurred when a thunderstorm caused a tree branch to fall into the line. The last outage occurred when an operator made a switching error on the circuit.

Corrective Actions:

Tree trimming was performed on this circuit in 2011.

APPENDIX B

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 452053
Division – SEMO
Area Served – Braggadocio, MO
SAIFI Value – 3.11

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit (MWPC) based on its performance in 2009, 2010, and 2011. The SAIFI values for this circuit in the last three years were: 3.04 in 2009, 2.32 in 2010, and 3.11 in 2011. This circuit serves 288 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather. Circuit 452053 experienced five significant outages in 2011. The first outage occurred when the Hayti 72 34kV circuit tripped the Hayti Bulk substation during a lightning storm. Two other outages occurred when the primary failed during storms. The remaining two outages occurred when trees contacted the line during storms and caused the substation breaker to trip.

Corrective Actions:

Previous reliability work performed on this circuit:

The Vegetation Management Department performed mid-cycle maintenance tree trimming in 2010.

A project to coordinate and add fuses to this circuit was performed in 2010. The work was performed under DOJM Work Request number 2TSE092735 which was completed in October 2010.

An overhead visual inspection was performed on this circuit in 2011 which inspected for animal guarding, tap fusing, and maintenance issues. Repairs were performed under DOJM Work Request numbers 2TSE096750 and 2TSE097700 which were completed in June 2011 and October 2011 respectively.

Planned MWPC reliability improvement work:

The previously completed reliability work is expected to improve the performance of this circuit. No work is planned on this circuit in 2012.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 203058
Division – Gateway
Area Served – Bridgeton, MO
SAIFI Value – 3.05

Analysis Result

This circuit serves 811 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather, an underground cable fault, and unknown causes. Circuit 203058 experienced three significant outages in 2011. The first outage occurred for unknown reasons as no cause was found at the time. The second outage occurred when a tornado caused a tree contact. The third outage occurred when an underground cable faulted.

Corrective Actions:

The faulted cable was repaired under DOJM Work Request number 21MT532814 which was completed in July 2011.

Tree trimming will be performed on this circuit in 2012.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 824003
Division – SEMO
Area Served – Bernie, MO
SAIFI Value – 2.97

Analysis Results:

This circuit serves 421 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather. Circuit 824003 experienced three significant outages in 2011. Two of these outages occurred when the substation breaker tripped during high winds and storms. The other outage occurred when a tree made contact with the primary during a storm which caused the substation breaker to trip.

Corrective Actions:

Tree trimming was performed on this circuit in 2011.

A visual inspection of this circuit will be performed by division personnel in 2012. This inspection will identify needed animal guarding, tap fusing, and other maintenance items. Repairs will be performed under DOJM Work Request number 2TSE099753.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 120003
Division – Archview
Area Served – Pine Lawn, North St. Louis County, MO
SAIFI Value – 2.85

Analysis Results:

The customer interruptions (CI) experienced on this circuit in 2011 were caused by a tree failure. Circuit 120003 experienced a significant outage during a storm when a large limb fell on the overhead primary and broke a pole and the wire. The outage was partially restored and following the partial restoration the number of customers affected was miscounted. Instead of 374 customers, only 38 customers remained out of service following the partial restoration. This would have resulted in an overall circuit SAIFI value of 1.43. Therefore, no corrective actions are necessary for this circuit.

Corrective Actions:

No work is planned on this circuit in 2012.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 134054
Division – Gateway
Area Served – Florissant, MO
SAIFI Value – 2.84

Analysis Results:

This circuit serves 1,857 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather, animal intrusions, operator errors, overhead equipment failures, and unknown causes. Circuit 134054 experienced five significant outages in 2011. The first outage occurred when a lightning arrestor failed. The second outage occurred for an unknown reason, but did occur on a day with high winds and thunderstorms. The third outage occurred due to a lightning strike on the circuit. The fourth outage occurred due to the improper calibration of the substation relays. The fifth outage occurred when an animal intrusion into the substation caused the substation to trip.

Corrective Actions:

Tree trimming was performed on this circuit in 2011.

The relay settings at the substation where the outage occurred have been re-calibrated.

Line guards will be installed on the overhead lines into the Shackelford substation to prevent animal intrusions. This work will be performed under DOJM Work Request number 21MT548008.

APPENDIX B

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 082051
Division – Underground
Area Served – Saint Louis, MO
SAIFI Value – 2.83

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit (MWPC) based on its performance in 2010 and 2011. The SAIFI values for this circuit in the past two years were: 2.99 in 2010 and 2.83 in 2011. This circuit serves 371 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by an underground cable failure, customer equipment failures, and a substation equipment failure. Circuit 082051 experienced four significant outages in 2011. The first outage occurred in April when a water main break flooded the Sigma-Aldrich primary switchgear. The resulting fault tripped the entire Cole 51 circuit. The second outage occurred in October when a cable splice in the manhole at 15th and Washington failed. The third outage occurred in November when a fault in the CPI Building primary switchgear tripped the entire Cole 51 circuit. The fault at the CPI Building appeared to have been caused by a lightning arrester failure. Due to the Cole 51 damage at the CPI Building, the Cole 51 load was switched to the Cole 52 circuit until Cole 51 repairs could be made. The fourth outage occurred when a Traveling Substation Operator performing an inspection on the Cole Substation opened the bus tie cabinet door to record breaker operation counts and substation equipment malfunctioned causing the Cole 52 circuit to trip. Cole 51 customers switched to Cole 52 experienced this additional outage.

The Cole circuit has unique features that do not exist at other locations, including high fault currents that cause coordination problems. The underground Cole 51 circuit has no sectionalizing devices because they cannot coordinate with the instantaneous trip settings on the Cole 51 circuit. The instantaneous trip setting is set at 4500 Amperes to limit the amount of fault current, and resulting damage, to the circuit. The Cole Substation has no reactors so the low instantaneous trip setting cannot be raised. In addition, the System Relay Department has indicated that there are no known devices that can coordinate with the required instantaneous settings at the Cole substation.

A second issue with the Cole 51 circuit is the circuit exposure length. There are essentially two sections of the circuit: the area east of Jefferson Ave. and the area west of Jefferson Ave. In addition, there are no available feeder spaces at the Cole substation. Between the inability to sectionalize the circuit, and the large amount of exposure on the circuit, there are challenges with the reliability of the Cole circuit.

Corrective Actions:

Previous reliability work performed on this circuit:

An automated switchgear tie between Cole 51 and Cole 52 was installed at switch pad 18414 in 2011. This equipment will transfer customers to alternative circuits following feeder lockout. It will not prevent circuit outages but it will reduce customer minutes out.

Planned MWPC reliability improvement work:

Distribution automation equipment will be installed at Beaumont and Market Streets in 2012.

The Cole substation will be eliminated and circuits will transfer to the new Martin Luther King (MLK) switching station in 2014. The customers will ultimately be fed from new Ashley circuits via the new MLK switching station. Much of the cable for the area will be replaced as customers transition to the new feed. Route diversity for the supplies has been incorporated into the designs. These system improvements should help the overall reliability of this circuit.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 585052
Division – Meramec Valley
Area Served – Franklin District, MO
SAIFI Value – 2.82

Analysis Results:

This circuit serves 280 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by animal intrusions, trees, and a substation malfunction, resulting in 790 CI. Circuit 585052 experienced two significant outages in 2011 which resulted in 65% of the CI experienced on this circuit. The first outage occurred when a tree contacted the line and a substation breaker failed. The tree was cleared and the substation breaker auxiliary switch was replaced. A second outage was caused by a tree falling onto the circuit during a major storm. In addition to these outages, smaller outages on this circuit were caused by animal intrusions. Animal intrusions caused 30% of the CI experienced on this circuit.

Corrective Actions:

Animal guards were added to three transformers in 2011. This work was performed under DOJM Work Request numbers 21MT524424, 21MT529542, and 21MT538804 which were completed March 2011, June 2011, and October 2011 respectively.

Division engineering personnel performed an inspection of the circuit in 2012 and several improvement opportunities were identified. Animal guards will be added to six transformers on the circuit under DOJM Work Request number 21MT546972.

The taps off of this circuit serve wooded residential areas and many of the trees are much taller than the poles and wires. Several of these locations were provided to the Vegetation Management Department for detailed review.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 561053
Division – SEMO
Area Served – Terre Du Lac, MO
SAIFI Value – 2.82

Analysis Results:

This circuit serves 765 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by sub-transmission outages, wire problems, and faulty pole hardware. Circuit 561053 experienced significant outages in 2011 due to outages on sub-transmission circuit ESTR-74, which is the single supply to the Terre Du Lac substation, caused by trees and an unknown outage (possibly ground wire theft). Other circuit outages were caused by excess slack in the phase wires and faulty pole hardware.

Corrective Actions:

Tree trimming was last performed on this circuit and sub-transmission circuit ESTR-74 in 2010.

Additional tap fusing was performed on this circuit to protect the 3 phase backbone. This work was performed under DOJM Work Request number 28SF033326 which was completed in March of 2010.

Additional Lightning protection and grounding were installed on sub-transmission circuit ESTR-74. This work was performed under DOJM Work Request number 28SF034579 which was completed in February of 2011.

Substation relay settings were adjusted on circuit 561053 in 2011 to reduce momentary outages.

Line voltage regulators were installed on B & C phases of the circuit to eliminate low voltage complaints. This work was performed under DOJM Work Request numbers 28SF034748 and 28SF035853, which were completed in May 2011 and January 2012 respectively.

An overhead visual inspection and a ground line inspection will be performed on sub-transmission circuit ESTR-74 in 2012. The repair work identified as a result of these inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

A project to install fuses on long single phase taps under DOJM Work Request number 28SF035921 will be performed in 2012.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 800001
Division – Boone Trails
Area Served – Benton City, Audrain County, MO
SAIFI Value – 2.68

Analysis Results:

This circuit serves 90 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather and unknown causes resulting in 241 CI. Circuit 800001 experienced three significant outages in 2011. The first outage occurred when a tree fell into the lines during a thunderstorm. The second outage occurred when a fuse blew at the substation two hours after the first outage was restored. No cause was found for this outage. The third outage occurred when the subtransmission conductor failed during a thunderstorm.

Corrective Actions:

Tree trimming is not scheduled for this circuit until 2014. However, several tree issues were identified and reported to the Vegetation Management Department for spot tree trimming.

Division engineering personnel performed an Infrared (IR) inspection on the Benton City Substation and significant components on the circuit backbone. No thermal problems were found.

Division engineering personnel performed an inspection of the circuit and several improvement opportunities were identified. These included replacement of cracked or distorted cross arms, insulators, lightening arrestors, un-fused transformers, and deteriorated poles. This work will be performed under DOJM Work Request number 2DLD075107 and will be completed in June 2012.

APPENDIX B

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 672053
Division – Boone Trails
Area Served – Wentzville, MO
SAIFI Value – 2.65

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit (MWPC) based on its performance in 2009 and 2011. The SAIFI values for this circuit in the last three years were: 2.66 in 2009, 0.69 in 2010, and 2.65 in 2011. This circuit serves 287 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by vegetation, trees, and weather. Circuit 672053 experienced three significant outages in 2011. Two of the outages occurred due to a vine which caused the circuit neutral and primary to contact each other during a storm. The third outage occurred when a tree limb fell on the primary.

Corrective Actions:

Previous reliability work performed on this circuit:

Tree trimming was last performed on this circuit in 2009.

The tap on Highway UU experienced multiple outages in 2009. Fuses and reclosers were added to the circuit under DOJM Work Request number 2WWZ133177, which was completed in September 2009. In addition, a third phase was extended to balance the load and allow better coordination between fuses and reclosers. This work was performed under DOJM Work Request number 2WWZ134219 which was completed in July 2010.

Almost a mile of this circuit along Highway NN and Pike Rd 269 was rebuilt. This work was performed under DOJM Work Request numbers 2WWZ138595 and 2WWZ141786 which were completed in November 2010.

The vine which caused the circuit neutral and primary to contact each other in 2011 has been removed. In addition, the wire spacing in this area has been improved.

Planned MWPC reliability improvement work:

The rest of this circuit will be moved to Highway D and Pike Rd 251 under DOJM Work Request number 2WWZ136674.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 209055
Division – Gateway
Area Served – Bridgeton, MO
SAIFI Value – 2.62

Analysis Results:

This circuit serves 245 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by trees and overhead malfunctions resulting in 642 CI. Circuit 209055 experienced two significant outages in 2011. The first outage occurred when a tree contacted the lines. The second outage occurred due to an overhead malfunction.

Corrective Actions:

An underground visual inspection was performed on this circuit in 2011. The repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

Tree trimming will be performed on this circuit in 2012.

An overhead visual inspection will be performed on this circuit in 2012. The repair work identified as a result of this inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 131005
Division – Gateway
Area Served – Ferguson, MO
SAIFI Value – 2.56

Analysis Results:

This circuit serves 581 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by severe weather. Circuit 131005 experienced four significant outages in 2011. Three of these outages occurred over a three day period in April 2011 when this circuit experienced a tornado and severe winds. The fourth outage occurred when a tree branch fell into the primary during a thunderstorm.

Corrective Actions:

Tree trimming will be performed on this circuit in 2012.

Division engineering personnel performed an analysis of circuit protection coordination. Three fuses were identified as not coordinating properly and were corrected.

APPENDIX B

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 167054
Division – Gateway
Area Served – Northern Bellefontaine Neighbors, MO
SAIFI Value – 2.56

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit (MWPC) based on its performance in 2009 and 2011. The SAIFI values for this circuit in the past three years were: 2.12 in 2009, 0.27 in 2010, and 2.56 in 2011. This circuit serves 1,601 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather. Circuit 167054 experienced four significant outages in 2011, all occurring during adverse weather conditions and resulting in 80% of the total CI experienced on this circuit. All four of these outages occurred when the primary failed during bad weather.

Corrective Actions:

Previous reliability work performed on this circuit:

A project to install animal guards, fuses, replace damaged hardware, and relocate transformers was performed in 2009.

Tree trimming was last performed on this circuit in 2009.

Planned MWPC reliability improvement work:

An overhead visual inspection was performed on this circuit in 2011. The repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

Division engineering personnel performed an overhead inspection of the circuit and several improvement opportunities were identified. These included replacement of cracked or distorted cross arms, insulators, lightening arrestors, and deteriorated poles, as well as the installation of animal guards and the coordination and relocation of fuses. The need for additional tree trimming was identified and coordinated with the Vegetation Management Department. The repair work identified as a result of this inspection will be performed under DOJM Work Request number 21MT547212 which will be completed in August 2012.

APPENDIX B

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 465055
Division – SEMO
Area Served – Steele, MO
SAIFI Value – 2.52

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit (MWPC) based on its performance in 2009 and 2011. The SAIFI values for this circuit in the past three years were: 7.05 in 2009, 0.48 in 2010, and 2.52 in 2011. This circuit serves 989 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather. Circuit 465055 experienced four significant outages in 2011. Two outages occurred when the primary failed during storms. The remaining two outages occurred when the Hayti 72 34kV subtransmission circuit tripped due to lightning and storms.

Corrective Actions:

Previous reliability work performed on this circuit:

A project to re-conductor 8.6 miles of this circuit was performed under DOJM Work Request numbers 2TSE086706, 2TSE086705, and 2TSE086295 which were completed in October 2009, November 2009, and December 2009 respectively.

The Vegetation Management Department performed mid-cycle maintenance tree trimming on this circuit in 2010.

Tap fuses were added to un-fused taps on this circuit under DOJM Work Request number 2TSE090755 which was completed in January 2010.

A special overhead visual inspection was performed on this circuit in 2010. The inspection identified needed animal guarding, tap-fusing, and other maintenance items. Repairs were performed under DOJM Work Request number 2TSE093496 which was completed in October 2010.

Planned MWPC reliability improvement work:

An overhead visual inspection was performed on this circuit in 2011 which inspected for animal guarding, tap fusing, and other maintenance issues. Repairs will be performed under DOJM Work Request number 2TSE099556 which will be completed in 2012.

An overhead visual and ground line inspection will be performed on this circuit in 2012. The repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 256054
Division – Gateway
Area Served – Maryland Heights, MO
SAIFI Value – 2.51

Analysis Results:

This circuit serves 1,639 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by trees and overhead equipment malfunctions. Circuit 256054 experienced three smaller outages in 2011. The first outage occurred when the phases contacted each other during windy conditions. The second outage occurred due to a tree contact. The third outage occurred when the primary failed. All of these outages occurred on a portion of the circuit downstream of automatic switch R1081.

Corrective Actions:

Tree trimming was performed on this circuit in 2011.

The primary failure was replaced under DOJM Work Request number 21MT527755, which was completed in April 2011.

Two overhead connectors which overheated were repaired under DOJM Work Request numbers 21MT534111 and 21MT534113, both of which were completed in August 2011.

Fiberglass spacers were installed on the circuit to prevent momentary outages or recloser trips. This work was performed under DOJM Work Request number 21MT544819 which was completed in February 2012.

Decayed poles located on private property were replaced under DOJM Work Request numbers 21MT537058, 21MT537174, 21MT537176, 21MT537175, 21MT537172, 21MT537173, 21MT537177, and 21MT537171 which were completed in October 2011, December 2011, January 2012, January 2012, February 2012, February 2012, February 2012, and March 2012 respectively.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 272053
Division – Gateway
Area Served – Spanish Lake, MO
SAIFI Value – 2.46

Analysis Results:

This circuit serves 409 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather. Circuit 272053 experienced two significant outages in 2011 which resulted in over 80% of the total CI experienced on this circuit. The first outage occurred when a pole broke during a thunderstorm. The second outage occurred when a tree limb fell into the primary during inclement weather.

Corrective Actions:

Tree trimming was last performed on this circuit in 2010.

Division engineering personnel performed an inspection of the circuit and several improvement opportunities were identified. These included replacement of failed lightening arrestors, fusing of transformers, installation of animal guards, and coordination and relocation of fuses. This work will be performed under DOJM Work Request number 21MT548400 and will be completed in 2012.

An overhead visual inspection will be performed on this circuit in 2012. The repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 871057
Division – SEMO
Area Served – Scott City, MO
SAIFI Value – 2.44

Analysis Results:

This circuit serves 268 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by tree failures and weather. Circuit 871057 experienced two significant outages in 2011. The first outage occurred due to tree contact on the lines during high winds. The second outage occurred when the substation breaker tripped following a lightning strike.

Corrective Actions:

The Vegetation Management Department performed a mid-cycle patrol of this circuit in 2011.

A visual inspection of this circuit will be performed by division personnel in 2012. This inspection will identify needed animal guarding, tap fusing, and other maintenance items. Repairs will be performed under DOJM Work Request number 2TSE099754.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 503052
Division – Meramec Valley
Area Served – Franklin District, MO
SAIFI Value – 2.43

Analysis Results:

This circuit serves 403 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by a substation malfunction and an operating error, resulting in 981 CI. Circuit 503052 experienced two significant outages in 2011 which resulted in 82% of the CI experienced on this circuit. The first outage occurred when a circuit relay at the substation failed. The second outage was caused by an operating error on the circuit.

Corrective Actions:

Tree trimming was performed on this circuit in 2011.

A project to extend a 34.5kV circuit and replace one mile of existing 3/0ACSR conductor on this 12kV circuit with 556AAA conductor was completed in 2011. In addition, the existing transformers on this section of the circuit had fused switches and animal guards installed. This work was performed under DOJM Work Request number DOJM 23FR049411 and completed in September 2011.

Division engineering personnel performed an inspection of the circuit in 2012 and several improvement opportunities were identified. Animal guards will be added to one transformer and fused switches will be added to nine transformers on the circuit backbone under DOJM Work Request number 23FR051911.

APPENDIX B

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 674052
Division – Boone Trails
Area Served – Wentzville, MO
SAIFI Value – 2.43

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit (MWPC) based on its performance in 2010 and 2011. The SAIFI values for this circuit in the last two years were: 3.53 in 2010 and 2.43 in 2011. This circuit serves 424 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by public vehicle accidents, trees, and overhead equipment failures. Circuit 674052 experienced three significant outages in 2011. The first outage occurred when a public vehicle accident broke a pole and caused the primary to fail. The second outage occurred when an overhead jumper burned. The third outage occurred when a tree limb fell on the primary and broke it.

Corrective Actions:

Previous reliability work performed on this circuit:

Fuses and animal guards were added to the circuit under DOJM Work Request number 2WWZ137084. This work was completed in March 2010.

The overhead circuits on Highway BB, Mackville Road, and Paris Branch Road were improved under DOJM Work Request number 2WWZ134867 which was completed in August 2010.

A circuit tie was built along Hwy K to tie circuit 674052 with circuit 691052. This work was performed under DOJM Work Request numbers 2WWZ137265 and 2WWZ141067 which were completed in July 2011 and October 2011 respectively.

A special overhead visual inspection was performed on this circuit in 2011. Defective cross arms, insulators, and broken down guys were repaired or replaced. Animal guards and fuses were installed and some poles were replaced. This work was performed under DOJM Work Request numbers 2WWZ143423, 2WWZ145477, and 2WWZ146226 which were completed in May 2011, August 2011, and November 2011 respectively.

A section of 2400V was converted to 7200V and a step down transformer was eliminated under DOJM Work Request number 2WWZ146227 which was completed in September 2011.

Planned MWPC reliability improvement work:

Tree trimming will be performed on this circuit in 2012.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 688007
Division – SEMO
Area Served – Morehouse, MO
SAIFI Value – 2.39

Analysis Results:

This circuit serves 228 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather and flooding. Circuit 688007 experienced two significant outages in 2011. The first outage occurred as a result of unusual spring flooding in the substation. The second outage occurred when the substation breaker tripped following a lightning strike.

Corrective Actions:

An overhead visual and ground line inspection will be performed on this circuit in 2012. The repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 854051
Division – Central Ozark
Area Served – Port Hudson, MO
SAIFI Value – 2.39

Analysis Results:

This circuit serves 452 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by overhead equipment failures. Circuit 854051 experienced two significant outages in 2011 which resulted in 83% of the CI experienced on this circuit. Both of the circuit outages occurred on the same day and were caused by the separate failure of two 34kV insulators. After the first insulator failure, customers were restored by switching the looped 34kV circuit to the backup supply. When the insulator failed on the backup supply, the second customer outage resulted. The outage was restored when the insulators were replaced. The 34kV insulators are thought to have failed because of lightning damage from a severe storm which occurred a week earlier.

Corrective Actions:

Tree trimming was last performed on this circuit in 2009.

The 34kV insulators responsible for the circuit outage were replaced as part of the outage restoration. The circuit was also patrolled to identify any other damaged insulators.

One set of 12kV reclosers located outside the circuit substation are operating near their rated load. These reclosers will be replaced in 2012 with a new radio controlled Viper recloser. This new recloser will provide greater capacity, enhanced circuit protection, and quicker restoration capability in the event of an outage.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 128004
Division – Archview
Area Served – North City of St. Louis, MO
SAIFI Value – 2.36

Analysis Results:

This circuit serves 89 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by an underground cable failure, public damage, unknown causes, and trees, resulting in 210 CI. Circuit 128004 experienced two major outages in 2011 which resulted in 95% of the CI experienced on this circuit. The first outage occurred when an underground feeder exit cable failed. The second outage occurred when a contractor broke the primary while demolishing a building, requiring a circuit outage to facilitate repairs. In addition to these two major outages, smaller outages were caused by tree contact and unknown causes.

Corrective Actions:

Tree trimming was performed on this circuit in 2011.

The feeder exit cable that failed was replaced under DOJM Work Request number 21MT537316 in September 2011.

No work is planned on this circuit in 2012.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 506051
Division – Meramec Valley
Area Served – Franklin District, MO
SAIFI Value – 2.36

Analysis Results:

This circuit serves 716 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by overhead equipment malfunctions, an underground cable failure, and animal intrusions, resulting in 1,687 CI. Circuit 506051 experienced two significant outages in 2011 which resulted in 84% of the CI experienced on this circuit. The first outage occurred when an underground feeder exit cable failed. The second outage occurred when a transformer on the circuit backbone failed. In addition to the two outages, approximately 11% of the CI experienced on this circuit was caused by animal intrusions.

Corrective Actions:

Animal guards were installed on three transformers on this circuit under DOJM Work Request number 23FR050653. This work was completed in December 2011.

Tree trimming will be performed on this circuit in 2012. In addition, several locations were provided to the Vegetation Management Department for detailed review.

Division engineering personnel performed an inspection of the circuit in 2012 and several improvement opportunities were identified. Animal guards will be added to five transformers and two fused switches will be installed on single-phase taps off the circuit backbone under DOJM Work Request numbers 23FR051854 and 23FR051855.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 628053
Division – SEMO
Area Served – Dexter, MO
SAIFI Value – 2.35

Analysis Results:

This circuit serves 601 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather. Circuit 628053 experienced three significant outages in 2011. One outage occurred when trees fell into the primary during a storm. The other two outages occurred when trees fell into the lines during high winds.

Corrective Actions:

Tree trimming will be performed on this circuit in 2012.

A visual inspection of this circuit will be performed by division personnel in 2012. This inspection will identify needed animal guarding, tap fusing, and other maintenance items. Repairs will be performed under DOJM Work Request number 2TSE099756.

An underground visual inspection will be performed on this circuit in 2012. The repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 645052
Division – Boone Trails
Area Served – Saint Charles, MO
SAIFI Value – 2.34

Analysis Results:

This circuit serves 54 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by animal intrusions, weather, and overhead equipment failures. Circuit 645052 experienced five significant outages in 2011. The first outage occurred when an animal contacted the overhead circuit. The second outage occurred when a tree fell into the primary during a thunderstorm. The third outage occurred when a substation transformer bushing failed. The fourth outage occurred when a lightning strike cause a fuse to fail. The fifth outage occurred when a cross arm located on a pole near the substation failed during a thunderstorm.

Corrective Actions:

Tree trimming was performed on this circuit in 2011.

Division engineering personnel will perform an Infrared (IR) inspection of the circuit. Any repair work identified as a result of this inspection will be completed in 2012.

Division engineering personnel will patrol the circuit in 2012 to verify that all backbone transformers are properly fused and to determine if any additional opportunities for circuit sectionalizing exist.

A circuit extension project which will improve reliability in the area as well as increase the number of customers served by the circuit will be completed in 2012. This work will be performed under DOJM Work Request number 2WWZ148513.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 169053
Division – Meramec Valley
Area Served – Ellisville, MO
SAIFI Value – 2.30

Analysis Results:

This circuit serves 184 customers. The area served by this circuit is rural and runs predominately along MO highway 100, Wild Horse Creek Road, and Ossenfort Road within the right-of-way. Wild Horse Creek and Ossenfort Roads are narrow, winding, two lane roads with large trees lining both sides of the road in most areas.

The customer interruptions (CI) experienced on the circuit in 2011 were caused by trees, overhead and underground malfunctions, and unknown causes which resulted in 423 CI. Circuit 169053 experienced one major outage in 2011 which was caused by a broken tree which fell across the lines and broke a pole. This event accounted for approximately 76% of the total CI experience by this circuit. Other tree issues and contacts resulted in an additional 8% of the CI. Another 6% of the CI was the result of overhead malfunctions, underground malfunctions, or unknown causes.

Corrective Actions:

Tree trimming was last performed on this circuit in 2009.

An underground visual inspection was performed on the circuit in 2011. The repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

An overhead visual inspection will be performed on this circuit in 2012. The repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

The Vegetation Management Department will perform a mid-cycle patrol along Wild Horse Creek and Ossenfort Roads in 2012 to identify and remove tree hazards.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 269004
Division – Gateway
Area Served – Berkeley, MO
SAIFI Value – 2.29

Analysis Results:

This circuit serves 819 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by operator error, overhead equipment failures, and trees. Circuit 269004 experienced three significant outages in 2011 which resulted in 73% of the CI experienced on this circuit. The first outage occurred due to tree failures. The second outage occurred due to an operator error. The third outage occurred when a pole broke.

Corrective Actions:

Tree trimming was performed on this circuit in 2011.

Division engineering personnel performed an inspection of the circuit and several improvement opportunities were identified. These include fusing the transformers on the circuit backbone. This work will be performed under DOJM Work Request number 21MT549238.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 265052
Division – Gateway
Area Served – Eastern Florissant, MO
SAIFI Value – 2.28

Analysis Results:

This circuit serves 803 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by public damage and overhead equipment malfunctions. Circuit 265052 experienced two significant outages in 2011 which resulted in over 85% of the CI experienced on this circuit. The first outage occurred when balloons became entangled in the phases. The second outage occurred when a lightning arrestor failed and burned.

Corrective Actions:

Tree trimming will be performed on this circuit in 2012.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 167056
Division – Gateway
Area Served – Bellefontaine Neighbors, MO
SAIFI Value – 2.27

Analysis Results:

This circuit serves 723 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by trees and a switchgear fault. Circuit 167056 experienced two significant outages in 2011 which resulted in over 85% of the CI experienced on this circuit. The first outage occurred when a tree branch failed and fell into the primary. The second outage occurred due to a switchgear fault.

Corrective Actions:

The Vegetation Management Department performed out of cycle tree trimming on the circuit backbone in 2011 to address the tree caused outage.

An overhead visual inspection was performed on this circuit in 2011. The repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

Division engineering personnel performed a circuit protection coordination analysis and corrected protection schemes as needed.

Division engineering personnel patrolled two circuit taps which had experienced multiple device interruptions. These patrols identified deficiencies such as excessive brush, unused primary, bad poles, missing animal guards, bad lightning arrestors, un-fused transformers, transformers needing re-sizing, and non-standard clearances. This work will be performed under DOJM Work Request number 21MT528503 and will be completed in December 2012.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 939053
Division – Boone Trails West
Area Served – Moberly, MO
SAIFI Value – 2.27

Analysis Results:

This circuit serves 577 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by overhead equipment failures, trees, and a public vehicle accident resulting in 1,303 CI. Circuit 939053 experienced one significant outage in 2011, and the 577 CI incurred on this outage resulted in 45% of the total CI experienced on this circuit. Smaller outages were caused by overhead transformer failures and fuse operations, as well as tree obstructions.

Corrective Actions:

Tree trimming was performed on this circuit in 2012.

Division engineering personnel performed an inspection of the circuit and several improvement opportunities were identified. These included replacement of cracked or distorted cross arms, insulators, lightening arrestors, and deteriorated poles.

An overhead visual inspection was performed on this circuit in 2012. The repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 153006
Division – Gateway
Area Served – Castle Point, MO
SAIFI Value – 2.27

Analysis Results:

This circuit serves 741 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by wire failures and underground cable faults. Circuit 153006 experienced two significant outages in 2011 which resulted in over 85% of the total CI experienced on this circuit. The first outage occurred when the primary failed. The second outage occurred when one of the phases of the substation feeder exit cable faulted.

Corrective Actions:

Tree trimming was last performed on this circuit in 2011.

Division engineering personnel performed a circuit protection coordination analysis and corrected protection schemes as needed.

APPENDIX B

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 607054
Division – SEMO
Area Served – Benton, MO
SAIFI Value – 2.26

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit (MWPC) based on its performance in 2009 and 2011. The SAIFI values on this circuit in the last three years were: 9.53 in 2009, 1.81 in 2010, and 2.26 in 2011. This circuit serves 271 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather and animal intrusions. Circuit 607054 experienced five significant outages in 2011. Four of these outages occurred when storms caused the recloser west of I55 to trip. The other outage occurred due to an animal intrusion.

Corrective Actions:

Previous reliability work performed on this circuit:

Tree trimming was last performed on this circuit in 2010.

Reclosers and spacers were installed on this circuit to prevent substation breaker outages. This work was performed under DOJM Work Request number 2TSE086476 which was completed in August 2009.

A special overhead visual inspection was performed on this circuit in 2010 which inspected for animal guarding, tap-fusing, and maintenance issues. Repairs were performed under DOJM Work Request number 2TSE093454 which was completed in August 2010.

Planned MWPC reliability improvement work:

An overhead visual inspection was performed on this circuit in 2011 which inspected for animal guarding, tap fusing, and other maintenance issues. Repairs will be performed under DOJM Work Request number 2TSE099528. This work will be completed in December 2012.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 203051
Division – Gateway
Area Served – Bridgeton, MO
SAIFI Value – 2.26

Analysis Results:

This circuit serves 1,434 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather and relay problems. Circuit 203051 experienced three significant outages in 2011. The first outage occurred when the circuit was struck by a tornado in April 2011. The second outage occurred when the circuit was struck by a wind storm. The third outage occurred as a result of a relay problem.

Corrective Actions:

All damage caused by the tornado was repaired at the time. The majority of the damage was caused by broken trees and poles. These have since been repaired.

The relaying issue has been resolved.

Tree trimming will be performed on this circuit in 2012.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 560053
Division – Meramec Valley
Area Served – High Ridge and Fenton, MO
SAIFI Value – 2.25

Analysis Results:

This circuit serves 1,469 customers. The largest customer interruptions (CI) experienced on this circuit in 2011 were caused by weather and unknown causes, resulting in 2,936 CI (89%) of the total 3,309 CI experienced on the circuit. Circuit 560053 experienced two significant outages in 2011. The first outage occurred when lightning caused a switch malfunction. The second outage occurred due to unknown causes.

Corrective Actions:

Installation of a backbone recloser is being pursued by the Division based on the nature of the reported outages. District personnel are working with the System Protection Department and other departments to identify a suitable location for the recloser. This work will be tracked under DOJM Work Request number 26JF119753.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 607055
Division – SEMO
Area Served – Benton, MO
SAIFI Value – 2.25

Analysis Results:

This circuit serves 278 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by animal intrusions and weather. Circuit 607055 experienced three significant outages in 2011. The first outage occurred as a result of an animal intrusion into the substation. The other two outages occurred as a result of trees falling and breaking the primary during storms.

Corrective Actions:

An overhead visual inspection will be performed on this circuit by division personnel in 2012. This inspection will identify needed animal guarding, tap fusing, and other maintenance issues. Repairs will be performed under DOJM Work Request number 2TSE099757.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 917051
Division – Central Ozark
Area Served – Excelsior Springs, MO
SAIFI Value – 2.20

Analysis Results:

This circuit serves 575 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by a tree failure and public damage. Circuit 917051 experienced two significant outages in 2011 which resulted in 84% of the CI experienced on this circuit. The first outage occurred when a contractor dug into the substation underground exit cable. The second outage occurred when a broken tree limb fell across the wires during a storm.

Corrective Actions:

Tree trimming was performed on this circuit in 2010.

The outages experienced on this circuit were not due to a common cause. Therefore, no work is planned for this circuit in 2012.

APPENDIX B

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 629051
Division – Boone Trails
Area Served – Clarksville, MO
SAIFI Value – 2.19

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit (MWPC) based on its performance in 2010 and 2011. The SAIFI values for this circuit in the last two years were: 2.92 in 2010 and 2.19 in 2011. This circuit serves 484 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather and an overhead equipment failure resulting in 968 CI. Circuit 629051 experienced two significant outages in 2011 resulting in 91% of the total CI experienced on this circuit. The first outage occurred when a tornado/straight line winds hit the town of Clarksville causing extensive damage to the circuit. The second outage occurred when a recloser on a circuit tap failed.

Corrective Actions:

Previous reliability work performed on this circuit:

A special overhead visual inspection was performed on this circuit in 2011. Defective cross arms, insulators, and broken down guys were repaired or replaced. Animal guards and fuses were installed and some poles replaced. This work was performed under DOJM Work Request numbers 2WWZ146067 and 2WWZ147718 which were completed in November 2011.

Planned MWPC reliability improvement work:

Division engineering personnel will perform an inspection of the circuit in 2012. This inspection will identify un-fused backbone transformers and deteriorated guy wires.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 703001
Division – Boone Trails West
Area Served – Brookfield, MO
SAIFI Value – 2.17

Analysis Results:

This circuit serves 1,183 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by overhead equipment failures and trees, resulting in 1,595 CI. Circuit 703001 experienced several significant outages in 2011. 37% of the CI were caused by trees contacting the lines. Another 43% of the CI were cause by overhead equipment malfunctions. The overhead equipment malfunctions consisted of transformer failures and switch failures. Other overhead equipment malfunctions or failures constituted less than 20% of the CI and resulted from animal intrusions and fuses blowing in adverse weather conditions.

Corrective Actions:

Tree trimming was performed on this circuit in 2011.

The Vegetation Management Department will perform a mid-cycle patrol of this circuit in 2012 to identify and remove tree hazards.

Division engineering personnel performed an inspection of the circuit and several improvement opportunities were identified. These included replacement of cracked or distorted cross arms, insulators, lightening arrestors, and deteriorated poles.

An overhead visual inspection will be performed on this circuit in 2012. The repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 160001
Division – Archview
Area Served – North City of St. Louis, MO
SAIFI Value – 2.17

Analysis Results:

This circuit serves 470 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by overhead equipment malfunctions, circuit overloads, a public vehicle accident, and trees, resulting in 1,021 CI. Circuit 160001 experienced one significant outage and several smaller outages in 2011 which resulted in 97% of the CI experienced on this circuit. The significant outage was caused by a public vehicle accident. The smaller outages were caused by broken cross arms, failed transformers, overloaded transformers, broken tree limbs, and a failed switch.

Corrective Actions:

Tree trimming was last performed on this circuit in 2010.

Division personnel repaired the failed equipment at the time of the outage.

In 2011 portions of this circuit were reconfigured and placed underground as a result of the construction of the new Mississippi River Bridge by MODOT. These new facilities should enhance future circuit reliability.

Additional engineering evaluations and field inspections will be performed in 2012 to check circuit loading and equipment conditions. Corrective measures to address overloads and deteriorated equipment and facilities will be performed as required.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 847001
Division – Central Ozark
Area Served – Morrison, MO
SAIFI Value – 2.17

Analysis Results:

This circuit serves 112 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by tree failures. Circuit 847001 experienced several significant outages in 2011 which resulted in 97% of the CI experienced on this circuit. The outages were caused by trees being blown into the wires during storms which occurred during one particularly windy week of the year.

Corrective Actions:

Tree trimming will be performed on this circuit in 2012.

A portion of this circuit will be re-conductored in 2012 to provide better voltage support and increase system capacity. New conductor and several new poles will be installed as a part of this project under DOJM Work Request number 2JCP082697.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 745053
Division – Boone Trails
Area Served – Moberly, MO
SAIFI Value – 2.17

Analysis Results:

This circuit serves 226 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by animal intrusions and overhead equipment failures resulting in 490 CI. Circuit 745053 experienced several significant outages in 2011 which were broken down as follows: 24% of the CI occurred during adverse weather conditions, 47% of the CI were caused by animal intrusions, and 43% of the CI were caused by overhead equipment malfunctions or failures.

Corrective Actions:

Tree trimming was performed on this circuit in 2011. The circuit is currently being spot tree trimmed.

Division engineering personnel performed an inspection of the circuit and several improvement opportunities were identified. These included replacement of cracked or distorted cross arms, insulators, lightening arrestors, and deteriorated poles.

An overhead visual inspection was performed on this circuit in 2011. The repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 577051
Division – Gateway
Area Served – St. Peters, MO
SAIFI Value – 2.17

Analysis Results:

This circuit serves 1,098 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by underground cable faults resulting in 2,181 of the total 2,378 CI. Circuit 577051 experienced two significant outages in 2011 which resulted in 92% of the CI experienced on this circuit. Both circuit outages occurred when the direct buried primary backbone cable faulted.

Corrective Actions:

Both primary cable failures were repaired. Fuses were installed to isolate the section of the circuit where the underground cable failed from the rest of the circuit. This work was performed under DOJM Work Request number 25SC051497 which was completed in June 2011.

A project to replace the existing sections of direct buried primary cable with new primary cable installed in conduit will be performed under DOJM Work Request number 25SC052105. This work will be completed in 2012.

An overhead visual inspection and ground line inspection was performed on this circuit in 2011. The repair work identified as a result of these inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 271055
Division – Archview
Area Served – Fenton, MO
SAIFI Value – 2.16

Analysis Results:

This circuit serves 1,687 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by a public vehicle accident and an outage of unknown cause resulting in 3,268 CI (90%) of the total 3,646 CI experienced on the circuit. The first outage was caused by a public truck hitting and breaking a pole which did not immediately cause an outage, however, work to repair the pole required that all but 317 customers on the circuit be taken out of service while repairs were made. The second outage was caused by a fault on the circuit resulting in the breaker incorrectly locking out after only one trip instead of going through its full reclosing sequence. Since no physical circuit problem was found and the breaker held upon manual reclose, it is likely that a temporary condition caused the trip. Had the reclose sequence operated correctly it is likely that this event would have been only a momentary outage. The outages on this circuit were not due to a common cause.

Corrective Actions:

An overhead visual inspection was performed on the circuit in 2010. The repair work identified as a result of the inspection was completed in accordance with Ameren Missouri's infrastructure inspection policy.

The public vehicle accident was not realistically avoidable and further action to mitigate this problem was not identified.

The circuit outage resulting from the breaker lockout was reviewed and it was determined that the outage would likely have been a momentary outage had the breaker functioned properly. However, it was determined that the vacuum breaker MOC switch bounced during the reclose sequence causing the relay to lock out too quickly. The Substation Maintenance Department completed a job to eliminate this bounce issue shortly after the incident. This work should limit future problems with the reclose sequence.

The Vegetation Management Department performed a mid-cycle patrol of this circuit in 2011 to identify any spot trim locations requiring attention prior to the four year cycle trim scheduled for 2013.

APPENDIX B

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 256059
Division – Gateway
Area Served – Maryland Heights, MO
SAIFI Value – 2.15

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit (MWPC) based on its performance in 2009 and 2011. The SAIFI values for this circuit in the past three years were: 3.08 in 2009, 0.18 in 2010, and 2.15 in 2011. This circuit serves 1,063 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by tree failures, overhead equipment failures, and weather. Circuit 256059 experienced four significant outages in 2011. The first outage occurred when a tree failure caused an outage on circuit 283056 while this circuit and circuit 256059 were abnormally switched. The second outage occurred when the primary broke during windy conditions. The third outage occurred when an overhead jumper burned. The fourth outage occurred when the primary broke during windy conditions.

Corrective Actions:

Previous reliability work performed on this circuit:

Tree trimming was last performed on this circuit in 2010.

The burned jumper was replaced under DOJM Work Request number 21MT532352 which was completed in July 2011.

Planned MWPC reliability improvement work:

An overhead visual inspection was performed on this circuit in 2011. The repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 622054
Division – SEMO
Area Served – Charleston, MO
SAIFI Value – 2.15

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit (MWPC) based on its performance in 2009 and 2011. The SAIFI values for this circuit in the past three years were: 4.71 in 2009, 0.08 in 2010, and 2.15 in 2011. This circuit serves 389 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather. Circuit 622054 experienced two significant outages in 2011. These two outages were caused by tree contacts with the primary during storms which resulted in the substation breaker tripping.

Corrective Actions:

Previous reliability work performed on this circuit:

The Vegetation Management Department performed mid-cycle maintenance tree trimming in 2009.

Un-fused taps were corrected and fuse coordination verified on this circuit in 2010 to minimize future outages. This work was performed under DOJM Work Request number 2TSE092582 which was completed in December 2010.

A special overhead visual inspection was performed on this circuit in 2010. This inspection focused on animal guarding, tap-fusing, and maintenance items. Repairs were performed under DOJM Work Request number 2TSE093546 which was completed in December 2010.

Planned MWPC reliability improvement work:

An overhead visual inspection will be performed on this circuit in 2012. The repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 646052
Division – SEMO
Area Served – Cape Girardeau, MO
SAIFI Value – 2.15

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit based on its performance in 2009 and 2011. The SAIFI values for this circuit in the last three years were: 2.51 in 2009, 0.86 in 2010, and 2.15 in 2011. This circuit serves 949 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather. Circuit 646052 experienced six significant outages in 2011. Three outages occurred due to the substation tripping as a result of tree contacts during storms. Another outage occurred when the primary failed during a storm. Lastly, two outages occurred when the primary failed during high winds.

Corrective Actions:

Previous reliability work performed on this circuit:

Tree trimming was last performed on this circuit in 2009.

Five miles of this circuit were re-conductored under DOJM Work Request numbers 2TSE090516, 2TSE090515, and 2TSE090514, which were completed in November 2010.

A special overhead visual inspection was performed on this circuit in 2010. This inspection focused on animal guards, tap-fusing, and maintenance items. Repairs were performed under DOJM Work Request number 2TSE093453 which was completed in August 2010.

Planned MWPC reliability improvement work:

An overhead visual inspection was performed on this circuit in 2010. This inspection identified needed animal guarding, tap fusing, and other maintenance items. Repairs will be performed under DOJM Work Request number 2TSE099527.

An overhead visual inspection will be performed on this circuit in 2012. The repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

An underground visual inspection will be performed on this circuit in 2012. The repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 096003
Division – Gateway
Area Served – Berkeley, MO
SAIFI Value – 2.14

Analysis Results:

This circuit serves 666 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by underground equipment failures. Circuit 096003 experienced two significant outages in 2011 which resulted in 84% of the total CI experienced on this circuit. Both of the outages occurred when underground cables failed.

Corrective Actions:

Tree trimming was performed on this circuit in 2011.

Division engineering personnel performed an inspection of the circuit and several improvement opportunities were identified. These include fusing the transformers on the circuit backbone. This work will be performed under DOJM Work Request number 21MT549022.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 083006
Division – Archview
Area Served – North City of St. Louis, MO
SAIFI Value – 2.13

Analysis Results:

This circuit serves 71 predominantly light industrial and commercial customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by trees, overhead equipment failures, and unknown causes resulting in 151 CI. Circuit 083006 experienced two significant outages in 2011 which resulted in 96% of the CI experienced on this circuit. The first outage occurred when a tree failure caused a circuit outage. The second outage occurred as a result of unknown causes. In addition, other smaller outages were caused by jumper and connection failures, public vehicle accidents, and localized flooding.

Corrective Actions:

Tree trimming was last performed on this circuit in 2009.

The Vegetation Management Department performed a mid-cycle patrol of this circuit in 2011 and appropriate additional trimming was completed.

A circuit inspection was performed on this circuit in 2011, and repairs initiated on appropriate facilities.

Developers are reconfiguring the landscape of part of the area served by this circuit. As a result, there is a major relocation of part of this circuit's backbone in progress. This new construction on part of the circuit backbone should improve circuit reliability.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 015011
Division – Archview
Area Served – South St. Louis City, MO
SAIFI Value – 2.13

Analysis Results:

This circuit serves 357 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by a tree failure and an underground cable failure resulting in 729 CI (96%) of the total 759 CI experienced on the circuit. Circuit 015011 experienced two circuit outages in 2011**.** The first circuit outage occurred when a tree broke and fell on the wire. The second circuit outage occurred when the underground primary cable failed at Dip GRAV-8.

Corrective Actions:

Tree trimming was performed on this circuit in 2011.

The cable failure was corrected at the time of the outage. There are no repetitive outage causes on this circuit so no further work is planned for 2012.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 255001
Division – Archview
Area Served – North City of St. Louis, MO
SAIFI Value – 2.12

Analysis Results:

This circuit serves 730 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by trees, overhead equipment failures, and unknown causes resulting in 1,549 CI. Circuit 255001 experienced two significant outages in 2011 which resulted in 97% of the CI experienced on this circuit. The first outage occurred as a result of tree failures. The second outage occurred as a result of primary failures during high winds.

Corrective Actions:

Tree trimming was performed on this circuit in 2011.

Repairs to malfunctioning equipment were performed at the time of the outage.

There are no repetitive outage causes on this circuit so no further work is planned for 2012.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 487051
Division – SEMO
Area Served – Richwoods, MO
SAIFI Value – 2.12

Analysis Results:

This circuit serves 123 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by a number of single phase circuit tap outages. This long single phase tap comprises approximately 33% of the total circuit load and experienced seven device outages in 2011. Patrols of this tap never found any definitive causes for the fuse failures experienced on this tap.

Corrective Actions:

Tree trimming was performed on sub-transmission circuit ESTR-73, which supplies this circuit, in 2009.

An overhead visual inspection was performed on this circuit in 2010. The repair work identified as a result of the inspection was completed in accordance with Ameren Missouri's infrastructure inspection policy.

Tree trimming was last performed on this circuit in 2010.

A project to address multiple device outages on the Kingston Rd. circuit tap and address circuit balancing will be performed in 2012 under DOJM Work Request number 28IR035900. This work request includes recloser installation for Kingston Rd. tap protection, and animal guarding.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 020003
Division – Archview
Area Served – South St. Louis City, MO
SAIFI Value – 2.11

Analysis Results:

This circuit serves 61 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by an overhead equipment failure and an outage of unknown cause resulting in 126 CI (98%) of the total 129 CI experienced on the circuit. Circuit 020003 experienced two circuit outages in 2011**.** The first circuit outage occurred during an ice storm when ice loading caused a pin insulator to fail which resulted in two conductors contacting each other. The second circuit outage occurred when the substation breaker tripped four times and then locked out. The substation exit cable was inspected and no faults were found. The circuit was also patrolled and no problems were found. The circuit was then manually reclosed and the substation breaker held.

Corrective Actions:

Tree trimming was last performed on this circuit in 2010.

An underground visual inspection was performed on this circuit in 2011. The repair work identified as a result of this inspection was completed in accordance with Ameren Missouri's infrastructure inspection policy.

Circuit 020003 was patrolled in 2011. As a result of this patrol, a missing cross arm brace was installed under DOJM Work Request number 21MT532873. This work was completed in July 2011.

An overhead visual inspection will be performed on this circuit in 2012. The repair work identified as a result of this inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 181003
Division – Gateway
Area Served – Dellwood, MO
SAIFI Value – 2.10

Analysis Results:

This circuit serves 696 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather. Circuit 181003 experienced three significant outages in 2011 which resulted in over 83% of the CI experienced on this circuit. The three outages were related and occurred on the same day. The outages occurred when a tree branch contacted the line during a thunderstorm.

Corrective Actions:

Tree trimming will be performed on this circuit in 2012.

Division engineering personnel performed a circuit protection coordination analysis and corrected protection schemes as needed.

A project which will enlarge a tie and provide improved access to switching will be performed under DOJM Work Request number 21MT482935.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 295052
Division – Meramec Valley
Area Served – Ellisville, MO
SAIFI Value – 2.10

Analysis Results:

This circuit serves 854 customers. The area serviced by this circuit is rural with several tract lot subdivisions. The subdivisions in the area are predominately serviced by single phase underground laterals. The terrain is rocky, heavily wooded, with rolling hills, and the roadways (outside of MO 109 and the improved tract lot subdivisions) are narrow two lane winding roadways. The circuit predominantly runs cross country and along narrow rural roadways to provide service to individual customers and customers in the tract developments.

The customer interruptions (CI) experienced on this circuit in 2011 were caused by overhead equipment failures, trees, and public vehicle accidents resulting in 1,794 CI. The circuit experienced two major outages resulting from public vehicle accidents which accounted for approximately 45% of the CI. A recloser just outside the substation failed and prior to the failure it opened due to an unknown cause. These two outages resulted in 41% of the CI. Tree limbs on the line and tree contacts resulted in 9% of the CI. Other causes, including animal intrusions or unknown causes accounted for approximately 1.5% of the total CI in 2011.

Corrective Actions:

The recloser outside the substation was replaced in late 2011.

Tree trimming will be performed on this circuit in 2012. This work should address the tree contacts.

An underground detailed inspection will be performed on this circuit in 2012. The repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 185053
Division – Meramec Valley
Area Served – Imperial, MO
SAIFI Value – 2.10

Analysis Results:

This circuit serves 644 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by an overhead equipment failure. Circuit 185053 experienced two significant outages in 2011 which occurred on the same day and resulted in 95% of the CI experienced on this circuit. The first outage occurred when a primary phase failed on the three phase tap and tripped the circuit. When the fault cleared itself the circuit was placed back in service. Later that day, the fault re-occurred and tripped the circuit a second time. The circuit was patrolled and the failed primary phase was discovered and repaired.

Corrective Actions:

Fuses will be installed on two taps on this circuit in 2012 under DOJM Work Request number 26JF119638.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 245051
Division – Archview
Area Served – Affton, MO
SAIFI Value – 2.09

Analysis Results:

This circuit serves 1,318 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by a public vehicle accident and an Ameren crew error resulting in 2,643 CI (96%) of the total 2,752 CI experienced on the circuit. Circuit 245051 experienced two circuit outages in 2011. The first outage occurred when Ameren crews inadvertently contacted a new energized conductor with the neutral while performing relocation work. The second circuit outage occurred when a public vehicle ran into a pole and broke it.

The outages experienced on this circuit were not the result of a common cause. The first circuit outage was due to an error by Ameren crews performing work and would not occur under typical circumstances. The second outage, due to a public vehicle accident, has not been a typical occurrence on this circuit and further action to mitigate this problem was not identified.

Corrective Actions:

An overhead visual inspection was performed on this circuit in 2010. The repair work identified as a result of the inspection was completed in accordance with Ameren Missouri's infrastructure inspection policy.

The Vegetation Management Department performed a mid-cycle patrol of this circuit in 2011 to identify any spot trim locations requiring attention prior to the four year cycle trim scheduled for 2013.

An underground detailed inspection was performed on this circuit in 2011. The repair work identified as a result of the inspection was completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 260053
Division – Gateway
Area Served – Florissant, MO
SAIFI Value – 2.08

Analysis Results:

This circuit serves 404 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather. Circuit 260053 experienced two significant outages in 2011 which resulted in over 95% of the total CI experienced on this circuit. The first outage occurred when a lightning strike caused the primary to fail. The second outage occurred when vines on the primary caused a recloser lock out during a thunderstorm.

Corrective Actions:

Tree trimming will be performed on this circuit in 2012.

Division engineering personnel performed an inspection of the circuit and several improvement opportunities were identified. These included replacing cracked or distorted insulators, lightening arrestors, and deteriorated poles, installation of animal guards, and coordination and relocation of fuses. This work will be performed under DOJM Work Request number 21MT535388 and will be completed by December 2012.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 044006
Division – Archview
Area Served – Ladue, MO
SAIFI Value – 2.07

Analysis Results:

This circuit serves 165 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by a tree failure and a storm. Circuit 044006 experienced two significant outages in 2011 which resulted in 99% of the CI experienced on this circuit. The first outage occurred when a tree fell into the overhead wire resulting in an outage. The second outage occurred during a storm when the primary wire failed, causing an outage.

Corrective Actions:

Tree trimming will be performed on this circuit in 2012.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 105005
Division – Archview
Area Served – Affton, MO
SAIFI Value – 2.07

Analysis Results:

This circuit serves 674 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by a tree failure and an overhead equipment failure resulting in 1,344 CI (96%) of the total 1,397 CI experienced on the circuit. Circuit 105005 experienced two circuit outages in 2011. The first outage was caused by a tree, 30 feet from the circuit, breaking and falling into a second tree as well as into the overhead lines. The second outage occurred when an overhead line broke at an existing splice, causing the line to fall. The outages on this circuit were not due to a common cause.

Corrective Actions:

An overhead visual inspection, an overhead ground line inspection, and an underground detailed inspection were performed on this circuit in 2010. The repair work identified as a result of these inspections was completed in accordance with Ameren Missouri's infrastructure inspection policy.

The tree which broke, and along with a second tree, caused a circuit failure was located outside of the normally trimmed easement. Both of these trees were removed.

Tree trimming will be performed on this circuit in 2012.

The line failure due to the failed splice was repaired at the time of the incident. The circuit has experienced very few other hardware problems.

In January 2012 the Division Engineer inspected the first 2,000 feet of this circuit's backbone. This line runs along private property rear lots and includes the areas associated with the two circuit outages which occurred in 2011. No obvious hardware issues were found.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 285054
Division – Underground
Area Served – St. Louis, MO
SAIFI Value – 2.07

Analysis Results:

This circuit serves 318 customers. This circuit experienced 658 customer interruptions (CI) in 2011. The CI experienced on this circuit in 2011 were caused by animal intrusions and cable faults. Circuit 285054 experienced two significant outages in 2011. The first outage occurred on April 11, when an animal entered switchpad 26363 in the Cupples Station and caused a failure of the entire circuit. The second outage occurred on June 26, when a fault occurred between manholes 63 and 64 in the Blue Cross-Blue Shield parking lot. This outage also affected the entire circuit. A third outage occurred at the building at 2020 Washington on September 27. This building, The Sporting Goods Lofts, is a condominium complex with 106 customers. When Ameren personnel arrived at the building to make repairs, they discovered that the outage was due to building maintenance arranged by building management. The outage was therefore the result of a customer equipment outage and not due to Ameren equipment. Therefore, the 106 CI associated with this outage were not attributable to Ameren equipment. The actual CI for this circuit should have been 552 CI which would have resulted in an overall SAIFI value of 1.74. Therefore no corrective actions are necessary for this circuit.

Corrective Actions:

No work is planned on this circuit in 2012.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 583051
Division – Gateway
Area Served – St. Charles, MO
SAIFI Value – 2.07

Analysis Results:

This circuit serves 992 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by a public vehicle accident and a tree failure resulting in 2,005 of the total 2,049 CI. Circuit 583051 experienced two significant outages in 2011 which resulted in 98% of the CI experienced on this circuit. The first outage occurred when a car hit a pole and broke it. The second outage occurred when a tree branch broke and contacted the lines.

Corrective Actions:

The circuit will be patrolled in 2012 to determine if any additional spot tree trimming is required.

An overhead visual inspection, an overhead ground line inspection, and an underground visual inspection were performed on this circuit in 2011. The repair work identified as a result of these inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

This circuit will be patrolled in 2012 to determine if any additional protection devices must be installed.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 210051
Division – Gateway
Area Served – Berkeley, MO
SAIFI Value – 2.05

Analysis Results:

This circuit serves 1,289 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by overhead equipment failures. Circuit 210051 experienced two significant outages in 2011 which resulted in 97% of the CI experienced on this circuit. The first outage occurred when overhead primary conductors touched during windy conditions. The second outage occurred due to a damaged solid blade switch.

Corrective Actions:

Tree trimming was performed on this circuit in 2011.

Division engineering personnel performed an inspection of the circuit and several improvement opportunities were identified. These include fusing the transformers on the circuit backbone and installing animal protection. This work will be performed under DOJM Work Request number 21MT548360. In addition, a damaged transformer and pole will be replaced under DOJM Work Request number 21MT548368.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 803053
Division – SEMO
Area Served – Nash Road, MO
SAIFI Value – 2.03

Analysis Results:

This circuit serves 58 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by overhead equipment failures and weather. Circuit 803053 experienced two significant outages in 2011. The first outage occurred when the primary fell following a splice failure. The second outage occurred when the primary failed during a thunderstorm.

Corrective Actions:

An overhead visual inspection will be performed on this circuit in 2012. The repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 623003
Division – SEMO
Area Served – Charleston, MO
SAIFI Value – 2.03

Analysis Results:

This circuit serves 284 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather. Circuit 623003 experienced two significant outages in 2011. The first outage occurred when high winds broke a pole. The second outage occurred when a tree fell on the primary during a thunderstorm and caused the substation breaker to trip.

Corrective Actions:

The Vegetation Management Department performed mid-cycle maintenance tree trimming in 2011.

A visual inspection of this circuit will be performed by division personnel in 2012. This inspection will identify needed animal guarding, tap fusing, and other maintenance items. Repairs will be performed under DOJM Work Request number 2TSE099768.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 717051
Division – Central Ozark
Area Served – Wood Heights, Excelsior Springs, MO
SAIFI Value – 2.03

Analysis Results:

This circuit serves 1,116 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by a tree failure and an overhead equipment failure. Circuit 717051 experienced two significant outages in 2011 which resulted in 99% of the CI experienced on this circuit. The first outage occurred when a tree broke and fell into the circuit backbone. The second outage occurred when a circuit phase sagged into a loose guy wire during a wind/ice storm.

Corrective Actions:

The loose guy which caused an outage has been repaired. There are no other repetitive causes of the outages experienced on this circuit.

Tree trimming will be performed on this circuit in 2012.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 194052
Division – Archview
Area Served – South St. Louis County, MO
SAIFI Value – 2.03

Analysis Results:

This circuit serves 1,199 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by tree failures and equipment failures in bad weather, resulting in 2,351 CI (97%) of the total 2,433 CI experienced on the circuit. Circuit 194052 experienced three circuit outages in 2011. The first circuit outage occurred when a tree fell across all three phases of primary wire. The second outage occurred when a storm knocked down several trees which broke the primary and secondary wires. In addition, several fuses blew and transformers tripped. The third outage occurred when high winds caused a deadend to fail at a pole which caused primary to fall on Kock Road.

Corrective Actions:

Tree trimming was performed in select locations on this circuit following the first outage. This work was initially performed by a Troubleman to re-energize the circuit. Additional spot trimming was then performed on this circuit by the Vegetation Management Department.

Overhead and underground visual inspections were performed on this circuit in 2011. The repair work identified as a result of the inspections was completed in accordance with Ameren Missouri's infrastructure inspection policy.

The circuit was patrolled and an animal guard installed at 4345 Bordeaux Dr. under DOJM Work Request number 21MT536636. This work was completed in September 2011.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 705001
Division – Boone Trails
Area Served – Kirksville, MO
SAIFI Value – 2.01

Analysis Results:

This circuit serves 330 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by feeder exit cable failures and overhead equipment failures resulting in 664 CI. Circuit 705001 experienced two significant outages in 2011, resulting in 98% of the total CI experienced on the circuit. The two outages occurred when the feeder exit cables failed. Additional smaller outages occurred due to overhead equipment failures and resulted in less than 2% of the total CI experienced on this circuit.

Corrective Actions:

Tree trimming will be performed on this circuit in 2012.

Division engineering personnel performed an inspection of the circuit and several improvement opportunities were identified. These included replacement of cracked or distorted cross arms, insulators, lightening arrestors, and deteriorated poles.

An overhead visual and thermal inspection will be performed on this circuit in 2012 by Division engineering personnel. The repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 266052
Division – Gateway
Area Served – Earth City, MO
SAIFI Value – 2.01

Analysis Results:

This circuit serves 92 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by underground cable faults and a tree failure, resulting in 185 total CI. Circuit 266052 experienced two significant outages in 2011. The first outage occurred when a cable failed. The second outage occurred when a tree failed.

Corrective Actions:

The cable fault was repaired under DOJM Work Request number 21MT534828 which was completed in September 2011.

Tree trimming was performed on this circuit in 2011.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 858052
Division – Boone Trails
Area Served – Canton, MO
SAIFI Value – 2.00

Analysis Results:

This circuit serves 1 customer, Culver Stockton College. The customer interruptions (CI) experienced on this circuit in 2011 were caused by customer equipment problems downstream of their primary meter. Circuit 858052 experienced two significant outages in 2011. Both outages occurred due to customer equipment problems.

Corrective Actions:

Tree trimming was last performed on this circuit in 2010.

Significant animal guarding work was completed at the Canton Substation in 2011. This animal guarding included installation of Zapshield Wildlife Guards, Critter Line Guards for overhead feeder exit lines, metal flashing around poles and an electric fence inside the substation fence. There were no animal caused circuit outages at the Canton Substation after this work was completed in 2011.

Division engineering personnel are scheduled to perform an infrared (IR) inspection of the circuit backbone and the Canton Substation in 2012. The general condition of the overhead equipment and tree conditions will also be inspected. Any thermal, general maintenance or tree trimming issues found as a result of this inspection will be addressed.

APPENDIX B

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 082052
Division – Underground
Area Served – Saint Louis, MO
SAIFI Value – 1.99

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit (MWPC) based on its performance in 2009 and 2011. The SAIFI values for this circuit in the past three years were: 2.38 in 2009, 0.02 in 2010 and 1.99 in 2011. This circuit serves 170 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by an underground cable failure, customer equipment failures, and a substation equipment failure. Circuit 082052 experienced four significant outages in 2011. The first outage occurred in April when a water main break flooded the Sigma-Aldrich primary switchgear. The resulting fault tripped the entire Cole 52 circuit. The second outage occurred in June when a cable splice in the manhole at 20th and Martin Luther King failed. The third outage to the Cole 52 circuit occurred in November as a result of damage to the Cole 51 circuit at the CPI Building. When Cole 51 repairs were made at the CPI Building a pin hole in the cable was missed by the Underground crew. When the Cole 51 circuit was re-energized it faulted at the CPI Building, tripping both the Cole 51 and Cole 52 circuits. The fourth outage occurred when a Traveling Substation Operator performing an inspection on the Cole Substation opened the bus tie cabinet door to record breaker operation counts and substation equipment malfunctioned, causing the Cole 52 circuit to trip.

The Cole circuit has unique features that do not exist at other locations, including high fault currents that cause coordination problems. The underground Cole 52 circuit has no sectionalizing devices because they cannot coordinate with the instantaneous trip settings on the Cole 52 circuit. The instantaneous trip setting is set at 4500 Amperes to limit the amount of fault current, and resulting damage, to the circuit. The Cole Substation has no reactors so the low instantaneous trip setting cannot be raised. In addition, the System Relay Department has indicated that there are no known devices that can coordinate with the required instantaneous settings at the Cole substation.

A second issue with the Cole 52 circuit is the circuit exposure length. There are essentially two sections of the circuit: the area east of Jefferson Ave. and the area west of Jefferson Ave. In addition, there are no available feeder spaces at the Cole substation. Between the inability to sectionalize the circuit, and the large amount of exposure on the circuit, there are challenges with the reliability of the Cole circuit.

Corrective Actions:

Previous reliability work performed on this circuit:

An automated switchgear tie between Cole 51 and Cole 52 was installed at switch pad 18414 in 2011. This equipment will transfer customers to alternative circuits following feeder lockout. It will not prevent circuit outages but it will reduce customer minutes out.

Planned MWPC reliability improvement work:

Distribution automation equipment will be installed at Beaumont and Market Streets in 2012.

The Cole substation will be eliminated and circuits will transfer to the new Martin Luther King (MLK) switching station in 2014. The customers will ultimately be fed from new Ashley circuits via the new MLK switching station. Much of the cable for the area will be replaced as customers transition to the new feed. Route diversity for the supplies has been incorporated into the designs. These system improvements should help the overall reliability of this circuit.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 647052
Division – Boone Trails
Area Served – Defiance, MO
SAIFI Value – 1.99

Analysis Results:

This circuit serves 308 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather. Circuit 647052 experienced two significant outages in 2011. The first outage occurred when a thunderstorm caused a large tree limb to fall into the primary, damaging it in multiple locations. The second outage occurred when a tree uprooted by a thunderstorm tore down a span of primary.

Corrective Actions:

Tree trimming was performed on this circuit in 2011. Since the completion of this trimming cycle, no major outages have occurred on this circuit.

Division engineering personnel will patrol the circuit in 2012 to verify that all backbone transformers are properly fused and to determine if any additional opportunities for circuit sectionalizing exist.

An overhead visual inspection will be performed on this circuit in 2012. The repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 544055
Division – Gateway
Area Served – St. Charles, MO
SAIFI Value – 1.98

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit (MWPC) based on its performance in 2009 and 2011. The SAIFI values for this circuit in the last three years were: 2.19 in 2009, 0.26 in 2010 and 1.98 in 2011. This circuit serves 869 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by tree failures and overhead equipment failures which resulted in 865 CI. Circuit 544055 experienced one significant outage in 2011 which resulted in 50% of the CI experienced on this circuit. The outage occurred when a tree limp broke and contacted the line. Other minor outages occurred due to overhead equipment malfunctions and tree contacts. A large portion of this circuit is of overhead construction which runs through heavily wooded areas and behind private homes.

Corrective Actions:

Previous reliability work performed on this circuit:

Spot tree trimming was performed near Briarcliff Dr. and Principia Ave. where tree contacts occurred in 2009. This circuit was also patrolled in 2010 to identify any additional areas requiring trimming. All spot tree trimming work performed in 2010 was completed under DOJM Work Request number 25SC048559 in December 2010.

Intellirupter reclosers were installed on this circuit to isolate some of the circuit while still maintaining circuit capacity. This work was performed under DOJM Work Request number 25SC049357 which was completed in September 2010.

An overhead visual inspection and an underground detailed inspection were performed on this circuit in 2010. The repair work identified as a result of these inspections was completed in 2011.

Tree trimming was performed on this circuit in 2011.

Planned MWPC reliability improvement work:

This circuit will be patrolled in May 2012 to determine whether any additional spot tree trimming is required.

This circuit will be patrolled by division personnel in May 2012. Any repair work identified as a result of this inspection will be addressed. Other small device outages due to equipment malfunctions and tree contacts will be reviewed to determine whether any further action is required.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 163003
Division – Gateway
Area Served – Dellwood, MO
SAIFI Value – 1.98

Analysis Results:

This circuit serves 522 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather, operator errors, and unknown causes. Circuit 163003 experienced five significant outages in 2011. The first outage occurred when an operator error caused a subtransmission outage. The second outage occurred when tree limbs contacted the primary during a storm. The third outage occurred due to an unknown cause. The remaining two outages occurred when tree limbs contacted the primary during storms.

Corrective Actions:

Tree trimming was last performed on this circuit in 2010.

The Vegetation Management Department performed an additional patrol of the entire circuit in May 2011 and removed any hazards.

Division engineering personnel performed an inspection of the circuit and several improvement opportunities were identified. These included replacing transformers, insulators, lightening arrestors, and deteriorated poles, installation of animal guards, and coordination and relocation of fuses. This work will be performed under DOJM Work Request number 21MT548932 and will be completed by December 2012.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 039004
Division – Gateway
Area Served – Berkeley, MO
SAIFI Value – 1.96

Analysis Results:

This circuit serves 386 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by overhead equipment failures and trees, resulting in 437 CI. Circuit 039004 experienced one major outage and numerous smaller outages in 2011 which resulted in 96% of the total CI experienced on this circuit. The major outage occurred when a tree failed. The smaller outages occurred when overhead equipment malfunctioned.

Corrective Actions:

Tree trimming was performed on this circuit in 2011.

Division engineering personnel performed an inspection of the circuit and several improvement opportunities were identified. These included fusing the transformers on the circuit backbone. This work will be performed under DOJM Work Request number 21MT548793.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 083008
Division – Archview
Area Served – North City of St. Louis, MO
SAIFI Value – 1.95

Analysis Results:

This circuit serves 40 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by overhead equipment failures resulting in 80 CI. Circuit 083008 experienced two significant outages in 2011 which resulted in 100% of the CI experienced on this circuit. The two outages occurred within an hour of each other and were caused by loose primary connections that caused the unbalanced circuit to trip.

Corrective Actions:

Tree trimming was last performed on this circuit in 2009.

An overhead visual inspection was performed on the circuit in 2011. The repair work identified as a result of the inspection was completed in accordance with Ameren Missouri's infrastructure inspection policy.

No further work is planned for this circuit in 2012.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 259054
Division – Gateway
Area Served – Florissant, MO
SAIFI Value – 1.93

Analysis Results:

This circuit serves 2,030 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by a wire failure. Circuit 259054 experienced two significant outages in 2011 which resulted in 94% of the CI experienced on this circuit. The first outage occurred when the primary failed. The second outage occurred when the circuit tripped a second time following restoration of the first outage.

Corrective Actions:

Tree trimming was performed on this circuit in 2011.

There are no repetitive outage causes on this circuit so no further work is planned for 2012.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 264060
Division – Gateway
Area Served – Creve Coeur, MO
SAIFI Value – 1.89

Analysis Results:

This circuit serves 854 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by a circuit overload, trees, overhead equipment failures, and animal intrusions. Circuit 264060 experienced two major outages and a number of smaller outages in 2011. The first major outage occurred when this circuit was overloaded while it was abnormally switched to supply another circuit while the other circuit was repaired. The second major outage occurred when a switch burned. Other smaller outages occurred due to tree contacts and animal intrusions along a section of the three phase overhead primary which is heavily wooded and located on private property.

Corrective Actions:

All three phases of the burned switch were replaced in September 2011.

An overhead visual inspection and an underground detailed inspection were performed on this circuit in 2011. The repair work identified as a result of these inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

Animal guards will be installed at two transformers under DOJM Work Request numbers 21MT526442 and 21MT541710.

Tree trimming will be performed on this circuit in 2012.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 253052
Division – Archview
Area Served – South St. Louis County, MO
SAIFI Value – 1.89

Analysis Results:

This circuit serves 1,563 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by a tree failure and an overhead equipment failure resulting in 2,656 CI (90%) of the total 2,955 CI experienced on the circuit. Circuit 253052 experienced two significant outages in 2011**.** The first outage occurred during a thunderstorm when a tree limb broke and broke the primary. The second outage occurred when an A phase jumper on the backbone near the circuit terminal pole burned due to a bad connection.

Corrective Actions:

Tree trimming was last performed on this circuit in 2010.

Circuit 253052 was patrolled in 2011. As a result of this patrol, a lightning arrestor was replaced at 5147 Harth Lodge Dr. under DOJM Work Request number 21MT531089. This work was completed in July 2011.

Overhead and underground visual inspections will be performed on this circuit in 2012. The repair work identified as a result of these inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 473053
Division – SEMO
Area Served – Bismarck, MO
SAIFI Value – 1.88

Analysis Results:

This circuit serves 625 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by two long duration outages, equipment failures, trees, animals, and overhead hardware. The two largest outages were caused by regulator failures from lightning, and tree limb caused damage during a storm. Other outages were caused by multiple device failures which occurred on a section of three phase circuit downstream from a recloser at Bismarck Ridge Rd and Highway 32. In addition, smaller outages were caused by trees, animals, and faulty overhead pole hardware.

Corrective Actions:

An automated SCADA controlled 34.5 kV Viper recloser was installed in the circuit substation to allow for faster transfer to a contingent 34.5 kV supply during an outage on the circuit. This work was performed under DOJM Work Request number 28IR033316 which was completed in July of 2010.

A new tie was established between circuits 473053 and 475052 which will enable switching operations and improve reliability for the southern half of circuit 473053. This work was performed under DOJM Work Request number 28IR035635 which was completed in November of 2011.

The Vegetation Management Department will perform a mid-cycle patrol of this circuit in 2012 to identify and remove tree hazards.

An overhead visual and ground line inspection will be performed on this circuit in 2012. The repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

Reliability projects at Bismarck Ridge Rd. and Highway 32 will be performed under DOJM Work Request numbers 28IR035949 and 28IR036217 in 2012. These projects will replace poles, add animal guards, and add fuses in this area.

APPENDIX B

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 627051
Division – Boone Trails
Area Served – St. Peters, MO
SAIFI Value – 1.87

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit (MWPC) based on its performance in 2009 and 2011. The SAIFI values for this circuit in the last three years were: 6.02 in 2009, 0.49 in 2010, and 1.87 in 2011. This circuit serves 589 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather, animal intrusions, and trees. Circuit 627051 experienced six significant outages in 2011. The first outage occurred due to an unknown cause during a thunderstorm. The second outage occurred when a fuse on a three phase tap blew. The third outage occurred when a 140T fuse blew due to a lightning strike during a thunderstorm. The fourth outage occurred when a tree contacted a single phase tap during a thunderstorm. The fifth outage occurred when an animal contacted the line at a single phase terminal pole. The sixth outage occurred when a tree contacted a single phased tap.

Corrective Actions:

Previous reliability work performed on this circuit:

Tree trimming was last performed on this circuit in 2010.

Planned MWPC reliability improvement work:

Division engineering personnel will patrol this circuit in 2012 to determine whether mid-cycle tree trimming is required, to verify that all backbone transformers are properly fused, and to determine if any additional opportunities for circuit sectionalizing exist.

An overhead visual inspection of this circuit will be performed in 2012. The repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 279054
Division – Meramec Valley
Area Served – Ellisville, MO
SAIFI Value – 1.87

Analysis Results:

This circuit serves 1,123 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused primarily by overhead malfunctions, primary wire failures, and underground malfunctions which caused two major outages and resulted in 2,096 CI. The first major outage resulted from a primary fault on a three phase 750 Al cable which accounted for 53% of the CI. The second major outage was the result of an overhead malfunction which was caused by a 600 amp switch failing and causing the primary wire to fail, which resulted in 40% of the CI. These two major outages resulted in 93% of the CI experienced on this circuit. The remaining CI were the result of underground malfunctions (5%), and other causes (less than 1%).

Corrective Actions:

Tree trimming was performed on this circuit in 2011.

The 600 amp switch was replaced and the primary wire repaired following the circuit outage in 2011.

The 3-750 Al cable which failed was located in a conduit system. A new section of cable was pulled in to the conduit to replace the failed section. In addition, two smaller manholes on this Dip were replaced to provide better access for future maintenance of the cable. This work was completed in 2011.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 161051
Division – SEMO
Area Served – Farmington, MO
SAIFI Value – 1.84

Analysis Results:

This circuit serves 997 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by storms, device outages, and animal intrusions. Circuit 161051 experienced one circuit outage and two large device outages due to storm damage, and multiple device outages on fused taps 2070 and 1635 due to animals.

Corrective Actions:

A new feeder exit and re-conductor project was completed along Highway H and Highway AA which relieved heavy loading on circuit 161051 and transferred five miles of circuit 161051 to circuit 161055. This project greatly reduced exposure on circuit 161051 and was performed under DOJM Work Request numbers 28SF033814, 28SF033813, 28SF034575, and 28SF034574, which were completed in October 2010, November 2010, and January 2011, respectively.

Tree trimming was last performed on this circuit in 2010.

APPENDIX B

WPC Analysis and Remedial Action Report

Circuit Number – 104008
Division – Archview
Area Served – North City of St. Louis, MO
SAIFI Value – 1.84

Analysis Results:

This circuit serves 748 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by trees, public vehicle accidents, and equipment malfunctions resulting in 1,374 CI. Circuit 104008 experienced several outages in 2011 which resulted in 98% of the CI experienced on this circuit. The majority of the CI experienced on this circuit were caused by tree contacts and broken limbs. The second largest cause of outages experienced on this circuit was public vehicle accidents. The third largest cause of outages experienced on this circuit was equipment malfunctions.

Corrective Actions:

Tree trimming was last performed on this circuit in 2010.

The Vegetation Management Department will perform a mid-cycle patrol of this circuit in 2012 to identify and remove tree hazards.

No further work is planned on this circuit in 2012.

Appendix A
Ameren Missouri 2011 Worst Performing Circuits

DIVISION	OPERATING AREA	CIRCUIT	VOLT	CUSTOMERS	CI	CMI	SAIDI	SAIFI	2009	2010	2011	Years WPC
ARCHVIEW	GERALDINE	159003	4	63	89	17,487	278	1.41	WPC	WPC		2
GATEWAY	ST CHARLES	193051	12	396	484	127,044	321	1.22	WPC	WPC		2
BOONE TRAILS	WENTZVILLE	638052	12	2	1	11	6	0.50	WPC	WPC		2
SEMO	POTOSI	475052	12	239	105	19,997	84	0.44	WPC	WPC		2
GATEWAY	DORSETT	147057	12	961	308	54,684	57	0.32	WPC	WPC		2
SEMO	POTOSI	488052	12	444	116	19,051	43	0.26	WPC	WPC		2
BOONE TRAILS	WENTZVILLE	795051	12	140	7	1,496	11	0.05	WPC	WPC		2

APPENDIX D

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 159003
Division – Archview
Area Served – North City of St. Louis, MO
SAIFI Value – 1.41

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit (MWPC) based on its performance in 2009 and 2010. This circuit was not a WPC in 2011. The SAIFI values for this circuit in the most recent three year period were: 2.33 in 2009, 3.25 in 2010, and 1.41 in 2011. This shows that reliability has greatly improved in 2011. This circuit now serves 63 customers. A major portion of the customers on this circuit were transferred to the new Gimblin Substation (317007) in 2010. The customer interruptions (CI) experienced on this circuit in 2011 were caused by trees, and lightning strikes resulting in 89 CI. Circuit 159003 experienced several weather related outages in 2011 which resulted in 93% of the CI experienced on this circuit. The majority of the outages were caused by lightning strikes. The second largest cause of outages on this circuit was tree contacts.

Corrective Actions:

Tree trimming was last performed on this circuit in 2009.

A failed underground cable which resulted in a circuit outage in 2009 was replaced under DOJM Work Request number 21MT480720, which was completed in June, 2009.

Portions of this circuit were re-conductored in 2010 to facilitate load relief for the Humboldt Substation. Several new poles, switches, conductors, and other equipment were installed, replacing deteriorated facilities. In addition, a portion of circuit 159003 was transferred to a new circuit 317007 in late 2010 as part of the installation of an additional unit at the Gimblin Substation.

Tree trimming for individual outages was performed as part of the outage restoration. Although tree related outages were a large portion of the CI in 2011, these multiple small occurrences constituted only 37 CI.

An overhead visual inspection was performed on this circuit in 2011. The repair work identified as a result of the inspection will be completed under DOJM Work Request number 21MT525759 in July 2012.

Division engineering personnel will perform reviews of circuit 159003 in 2012. These will include reviews of potential additional tap fusing, increased lightning protection, grounding reviews, increased sectionalizing, fuse coordination, phase balancing, and adverse equipment loading.

APPENDIX D

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 193051
Division – Gateway
Area Served – St. Charles, MO
SAIFI Value – 1.22

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit (MWPC) based on its performance in 2009 and 2010. This circuit was not a WPC in 2011. The SAIFI values for this circuit in the most recent three year period were: 2.31 in 2009, 2.06 in 2010, and 1.22 in 2011. This shows that reliability has greatly improved in 2011. This improvement is a result of the corrective actions taken in 2009 and 2010**.** This circuit serves 396 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by a public vehicle accident resulting in 396 CI. Circuit 193051 experienced one significant outage in 2011 which resulted in 82% of the CI experienced on this circuit. This outage occurred when a car struck a pole and broke it. There were some smaller outages in 2011 which were the result of overhead equipment malfunctions and underground cable failures, which resulted in the remaining CI incurred on this circuit.

Corrective Actions:

A single phase underground primary cable failure was repaired under DOJM Work Request number 25SC047487 which was completed in December 2009.

Device outages due to equipment malfunctions in 2009 and 2010 were inspected at the time and no further action was required.

Tree trimming was last performed on this circuit in 2010. However, this circuit was recently reclassified from a rural circuit to an urban circuit. As a result, tree trimming will be performed on this circuit on a 4 year cycle instead of a 6 year cycle. As a result, this circuit is now scheduled for tree trimming in 2014.

Underground cable failures were repaired under DOJM Work Request numbers 25SC051754 and 25SC052894 which were completed in July 2011 and December 2011 respectively.

An overhead visual inspection and an underground visual inspection will be performed on this circuit in 2012. The repair work identified as a result of these inspections will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX D

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 638052
Division – Boone Trails
Area Served – Wentzville, MO
SAIFI Value – 0.50

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit (MWPC) based on its performance in 2009 and 2010. This circuit was not a WPC in 2011. The SAIFI values for this circuit in the most recent three year period were: 136.0 in 2009, 19.0 in 2010, and 0.50 in 2011. However these SAIFI values were misleading as described in the following paragraphs.

This circuit was on the WPC list in 2009. However, the majority of the customers associated with this circuit were moved to a new Legion Trails substation, which was energized in December 2009. The customer count on this circuit was 712 when the outages recorded on this circuit occurred. At the end of 2009 only 1 customer remained on this circuit. If the original customer count were included, the overall SAIFI calculation for this circuit would have been 0.19.

At the beginning of 2010, 325 customers were moved to this circuit. However, at the end of 2010 this circuit was reconfigured, which reduced the customer count from 325 to 1. This reduced number of customers was used to calculate the SAIFI value which placed this circuit on the 2010 WPC list. If the original customer count were to be included, the overall SAIFI calculation for this circuit would have been 0.06. Therefore, no corrective actions are necessary for this circuit.

Corrective Actions:

No work is planned on this circuit in 2012.

APPENDIX D

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 475052
Division – SEMO
Area Served – Graniteville, MO
SAIFI Value – 0.44

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit (MWPC) based on its performance in 2009 and 2010. This circuit was not a WPC in 2011. The SAIFI values for this circuit in the most recent three year period were: 4.55 in 2009, 4.52 in 2010, and 0.44 in 2011. This shows that reliability has greatly improved in 2011. In 2011 there was one 14 minute circuit outage which was caused by a tree contact on the sub-transmission circuit. After a review of this circuit, no further action is required in 2012.

Corrective Actions:

An overhead visual and ground line inspection was performed on this circuit in 2009. This inspection identified poles which needed repair or replacement. These poles have been repaired or replaced in accordance with Ameren Missouri's infrastructure inspection policy.

Six miles of circuit 475052 were re-conductored in 2010, replacing aging pole hardware and conductors. Tap fusing was completed on the circuit under DOJM Work Request numbers 28IR033579, 28IR034453, and 28IR033581, all of which were completed in October and November of 2010.

A special overhead visual and infrared inspection was performed in 2010 which identified work that was repaired in 2010.

An overhead visual inspection was performed on this circuit in 2011. The repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

A new circuit tie was also established between the Graniteville 475052 and the Bismarck 473053 circuit allowing for switching operations during outages. This will reduce outage duration for some customers on this circuit. This work was performed under DOJM Work Request number 28IR035635 and completed in November 2011.

No additional reliability actions will be required for this circuit in 2012.

APPENDIX D

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 147057
Division – Gateway
Area Served – Creve Coeur, MO
SAIFI Value – 0.32

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit (MWPC) based on its performance in 2009 and 2010. This circuit was not a WPC in 2011. The SAIFI values for this circuit in the most recent three year period were: 3.53 in 2009, 2.92 in 2010, and 0.32 in 2011. This shows that reliability has greatly improved in 2011. This improvement is a result of the corrective actions taken in 2009 and 2010**.** This circuit serves 960 customers. The customer interruptions (CI) experienced on this circuit in 2011 were caused by weather. Circuit 147057 experienced one significant outage in 2011. This outage occurred when a tree broke during a wind storm which occurred on a day classified as a major event day.

Corrective Actions:

Tree trimming was performed on this circuit in 2011.

Risers, down guys, and overhead guys were replaced under DOJM Work Request number 21MT535589 which was completed in February 2012.

Overheated connectors were replaced under DOJM Work Request number 21MT531571 which was completed in March 2012.

An overhead visual inspection was performed on the circuit in 2011. The repair work identified as a result of the inspection will be performed in 2012 under DOJM Work Request numbers 21MT535583, 21MT535584, 21MT535585, 21MT535586, 21MT535587, 21MT535588, 21MT531572, 21MT531573, and 21MT543050.

APPENDIX D

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 488052
Division – SEMO
Area Served – Sunnen, MO
SAIFI Value – 0.26

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit (MWPC) based on its performance in 2009 and 2010. This circuit was not a WPC in 2011. The SAIFI values for this circuit in the most recent three year period were: 2.41 in 2009, 2.98 in 2010, and 0.26 in 2011. This shows that reliability has greatly improved in 2011.

Corrective Actions:

Reclosers were installed in 2009 at two locations on the circuit identified by the Multiple Device Interruption (MDI) program.

Tree trimming was last performed on this circuit in 2010.

Fuses were installed along the three phase backbone of the circuit in 2010. In addition, animal guards and reclosers were installed on various circuit taps in 2010.

An overhead visual inspection was performed on the circuit in 2011. The repair work identified as a result of the inspection was completed in accordance with Ameren Missouri's infrastructure inspection policy.

A new circuit tie was established between the Sunnen 488052 and the Potosi 484052 circuits allowing for switching operations during outages. This will reduce outage duration for some customers on this circuit. This work was performed under DOJM Work Request number 28IR034957 which was completed in September 2011.

A new SCADA controlled Viper recloser was installed in the circuit substation to replace the old 3 phase breaker in 2010. This improvement will eliminate 3 phase outages during single phase fault conditions.

An overhead visual inspection will be performed on this circuit in 2012. The repair work identified as a result of the inspection will be completed in accordance with Ameren Missouri's infrastructure inspection policy.

APPENDIX D

Multi-Year WPC Analysis and Remedial Action Report

Circuit Number – 795051
Division – Boone Trails
Area Served – Wentzville, MO
SAIFI Value – 0.05

Analysis Results:

This circuit is a Multi-Year Worst Performing Circuit (MWPC) based on its performance in 2009 and 2010. This circuit was not a WPC in 2011. The SAIFI values for this circuit in the most recent three year period were: 4.71 in 2009, 3.72 in 2010, and 0.05 in 2011. This shows that reliability has greatly improved in 2011. This improvement is a result of the corrective actions taken in 2009 and 2010. These are described below.

Corrective Actions:

An Intellirupter recloser was installed midway on this radial circuit in September 2009.

Tree trimming was performed on this circuit in 2010, which greatly reduced the number of outages caused by tree related problems.

17,000 feet of the distribution circuit was re-conductored and the associated poles replaced as part of a circuit reliability improvement project. This project was completed in September 2010.

The seven mile 34kV subtransmission line which serves Saverton was rebuilt over the last three years. The last section of this line was completed in 2011.

A project to replace poles and re-conductor the last 12,000 feet of the distribution circuit to eliminate splices in the #4 and #6 copperweld wire will be completed in 2012 under DOJM Work Request number 2WWZ144303.