



Ameren Missouri 20 CSR 4240-23.020 Electrical Corporation Infrastructure Standards Annual Inspection Report for Calendar Year 2023

Introduction

This document is Union Electric (dba Ameren Missouri) Company's annual report detailing its compliance with Missouri Public Service Commission Rule 20 CSR 4240-23.020, Electrical Corporation Infrastructure Standards (referred to in the rest of this document as "the Rule"). This annual report is required by Section (3) (C) of the Rule which states, "*Each electrical corporation subject to this rule shall file...an annual report detailing its compliance with this rule during the prior calendar year....*" This report details the results of the infrastructure inspections conducted in the calendar year 2023.

Definitions

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

1. Patrol – A simple visual inspection of applicable electrical corporation equipment and structures, which is designed to identify obvious structural problems and hazards. Patrols may be carried out in the course of other electrical corporation business.
2. Visual Inspection – A careful visual examination of equipment and structures designed to identify structural problems, hazards, and defective or improperly operating equipment. Equivalent to "Detailed Inspection" as defined in Section (2) (B) of the Rule.
3. Ground Line Inspection – A complete intrusive inspection of overhead poles whereby the pole is excavated to a depth of 18 to 24 inches, tested for internal and external decay, treated with a preservative, and then backfilled. Equivalent to "Intrusive Inspection" as defined in Section (2) (C) of the Rule.
4. Overhead Equipment – Equipment used in the operation of the transmission and distribution system mounted on overhead poles including, but not limited to, conductors, transformers, fuses, switches, insulators, and lightning arresters.
5. Underground Pad-Mounted Equipment – Underground Residential Distribution (URD) system equipment including single phase and three phase pad-mounted transformers, pad-mounted switchgear, junction boxes, non-traffic rated vaults, and pedestals. Equivalent to "Underground-direct buried and conduit" and the equipment noted under Note 3 on the table entitled, "Electrical Corporation System Inspection Cycles (Maximum Intervals in Years)" included with the Rule.
6. Transmission System – That portion of the Ameren Missouri system operated at voltages of 100 kilovolts (kV) and above.
7. Distribution System – That portion of the Ameren Missouri system operated at voltages below 100kV.
8. Streetlights – Automatically controlled lighting for lighting of streets, alleys, walkways, and other thoroughfares open to and reserved for general public use when such lighting facilities are operated and maintained as an extension of Ameren Missouri's distribution system as described in Service Classification 5(M). This definition does not apply to lighting installed on public or private premises for the purpose of providing area or security lighting (i.e., "dusk-to-dawn" lights), customer-owned street and outdoor lighting as described in Service Classification 6(M), and incandescent municipal streetlighting or private streetlighting described under Service Classifications 7(M) and 8(M).



Transmission System Inspections

Ameren Missouri conducted inspections on its Transmission System during calendar year 2023 as required by Missouri Public Service Commission Rule 20 CSR 4240-23.020, Electrical Corporation Infrastructure Standards. The inspections conducted, as well as the deficiencies discovered and repaired as a result of these inspections, are described below.

Table 1
Transmission Circuits Inspected in 2023:

Inspection Type	Inspections Scheduled	Inspections Completed	Inspections Not Completed
“Patrol”	133	133	0
“Detailed”	19	19	0
Ground Line	22	22	0

The results of the lines inspected are summarized as follows:

Table 2
Results of Inspections

Component	Number Inspected	Number Requiring Repairs	%
Wood Poles	5,108	76	1.5%
Wood Structures	12,369	300	2.4%
Non-Wood Structures	5,115	2	0.0%
Conductors*	17,494	1	0.0%
Insulators*	17,494	2	0.0%

The numbers of components requiring repairs in the period are summarized below:

Table 3

Component	Number Requiring Repairs in the Period	Number of Repairs Completed in the Period	%	Number of Repairs Not Completed in the Period	%
Wood Poles	3	3	100%	0	0.0%
Wood Structures	12	12	100%	0	0.0%
Non-Wood Structures	0	0	100%	0	0.0%
Conductors*	0	0	100%	0	0.0%
Insulators*	0	0	100%	0	0.0%



*Note: Because Ameren Missouri's Transmission System Inspection Program is carried out on a per line basis and only those components which required repair are recorded, the number of individual conductors and insulators inspected is not recorded. The number of wood structures (which includes poles) and non-wood structures inspected will be used as the reference for the percentage of equipment requiring corrective action in this annual report.

The following equipment was scheduled for repairs outside the reporting period:

Table 4

Component	Total Number Requiring Repairs Outside the Reporting Period	Number of Open Repairs Outside the Reporting Period	Corrective Action Scheduled Complete			Percent of Equipment in Need of Corrective Action, but with a Scheduled Date Beyond the Reporting Period
			2024	2025	Later	
Wood Poles*	73	70	10	44	16	92.1%
Wood Structures*	288	280	34	83	163	93.3%
Non-Wood Structures*	2	2	2	0	0	100%
Conductors*	1	1	1	0	0	100%
Insulators*	2	2	2	0	0	100%



Distribution System Inspections

Ameren Missouri conducted inspections on its Distribution System during calendar year 2023 as required by Missouri Public Service Commission Rule 20 CSR 4240-23.020, Electrical Corporation Infrastructure Standards. The inspections conducted, as well as the deficiencies discovered and repaired as a result of these inspections, are described below

Distribution Circuits and Components Inspected in 2023

Table 5

Inspection	Inspection Units	Inspections Scheduled	Inspections Completed	Inspections Not Completed
Overhead Visual *	Circuit	350	350	0
Overhead Ground Line *	Circuit	204	204	0
Capacitors	Equipment	1216	1216	0
Voltage Regulators	Equipment	594	594	0
Underground Patrol	Circuit	220	220	0
Underground Detailed	Circuit	199	199	0
Network Vaults ^	Equipment	104	104	0
Manholes #	Equipment	1625	1625	0
Other Underground Structures	Equipment	92	92	0

*Note: Streetlight inspections were performed in conjunction with Overhead Visual and Ground Line inspections, as well as the Underground Patrol and Detailed inspections.



The results of the inspections are summarized as follows:

Table 6
Results of Inspections

Component	Number Inspected	Number Requiring Repairs	Percentage
Poles/Towers*	174,080	1928	1.11%
Anchors*	174,080	10	0.01%
Conductors*	174,080	240	0.14%
Crossarm Braces*	174,080	318	0.18%
Crossarms*	174,080	2272	1.31%
Fuses*	174,080	124	0.07%
Grounding*	174,080	1497	0.86%
Guy Wires*	174,080	878	0.50%
Insulators*	174,080	1100	0.63%
Lightning Arresters*	174,080	530	0.30%
Minor Hardware*#	174,080	1443	0.83%
Overhead Transformers*	174,080	44	0.03%
Reclosers*	174,080	0	0.00%
Sectionalizers*	174,080	0	0.00%
Switches	174,080	1	0.00%
Capacitors*	1203	240	19.74%
Voltage Regulators	580	39	6.57%
UG Pad-Mounted Equipment**	41,519	3260	7.85%
Network Vaults	104	0	0.00%
Manholes*	1625	11	0.01%
Other Underground Structures***	92	0	0.00%
Streetlights	24,399	564	2.31%

*Note: Because Ameren Missouri's Distribution System Circuit Inspection and Ground Line Inspection programs were performed on a per circuit basis and only those components which required repair were recorded, the numbers of these individual devices inspected were not recorded. For these components, the number of poles where problems were identified divided by the number of poles inspected was used as the reference for the percentage of equipment requiring corrective action. Where the actual number of components inspected, such as voltage regulators and capacitors could be ascertained, these numbers were used to calculate the percentage of equipment requiring corrective action.

#Note: Minor Hardware includes risers, pins, jumpers, connectors, splices, terminations, and spacer cable brackets.

**Note: Underground Pad-Mounted Equipment includes pad-mounted transformers, switchgear, junction boxes, non-traffic rated vaults, and pedestals.

***Note: Other Underground Structures includes indoor rooms and manhole transformers.



The numbers of components requiring repairs in the period are summarized below:

Table 7

Component	Number of Repairs Scheduled in the Period	Number of Repairs Completed in the Period	% Repairs Completed in Period	Number of Repairs Not Completed in the Period	% Repairs Not Completed in Period
Poles/Towers*	47	47	100%	0	0.00%
Anchors*	0	0	N/A	0	0.00%
Conductors*	0	0	N/A	0	0.00%
Crossarm Braces*	0	0	N/A	0	0.00%
Crossarms*	0	0	N/A	0	0.00%
Fuses*	0	0	N/A	0	0.00%
Grounding*	0	0	N/A	0	0.00%
Guy Wires*	0	0	N/A	0	0.00%
Insulators*	0	0	N/A	0	0.00%
Lightning Arresters*	0	0	N/A	0	0.00%
Minor Hardware*#	0	0	N/A	0	0.00%
Overhead Transformers*	0	0	N/A	0	0.00%
Reclosers*	0	0	N/A	0	0.00%
Sectionalizers*	0	0	N/A	0	0.00%
Switches	0	0	N/A	0	0.00%
Capacitors*	88	88	100%	0	0.00%
Voltage Regulators	14	14	100%	0	0.00%
UG Pad-Mounted Equipment**	178	178	100%	0	0.00%
Network Vaults	0	0	N/A	0	0.00%
Manholes*	0	0	N/A	0	0.00%
Other Underground Structures***	0	0	N/A	0	0.00%
Streetlights	439	439	100%	0	0.00%



The following equipment was scheduled for repairs outside the reporting period:

Table 8

Component	Total Number Requiring Repairs Outside the Reporting Period (Completed or Scheduled)	Number of Open Repairs Outside the Reporting Period	Corrective Action Scheduled in 2024	Corrective Action Scheduled Later	Percent of Equipment in Need of Corrective Action but with a Scheduled Date Beyond the Reporting Period
Poles/Towers*	1881	1385	1238	147	97.56%
Anchors*	10	10	10	0	100.0%
Conductors*	240	240	203	37	100.0%
Crossarm Braces*	318	318	300	18	100.0%
Crossarms*	2272	2272	2215	57	100.00%
Fuses*	124	124	120	4	100.00%
Grounding*	1497	1497	1325	172	100.00%
Guy Wires*	878	878	749	129	100.00%
Insulators*	1100	1100	1045	55	100.00%
Lightning Arresters*	530	530	480	50	100.00%
Minor Hardware*#	1443	1443	1328	115	100.00%
Overhead Transformers*	44	44	41	3	100.00%
Reclosers*	0	0	0	0	N/A
Sectionalizers*	0	0	0	0	N/A
Switches	1	1	1	0	100.00%
Capacitors*	152	137	137	0	63.33%
Voltage Regulators	25	15	15	0	64.10%
UG Pad-Mounted Equipment**	3060	1219	1201	18	93.87%
Network Vaults	0	0	0	0	N/A
Manholes*	11	11	0	11	100.00%
Other Underground Structures***	0	0	0	0	N/A
Streetlights	125	3	1	2	22.16%



*Note: Because Ameren Missouri's Distribution System Circuit Inspection and Ground Line Inspection programs were performed on a per circuit basis and only those components which required repair were recorded, the numbers of these individual devices inspected were not recorded. For these components, the number of poles where problems were identified divided by the number of poles inspected was used as the reference for the percentage of equipment requiring corrective action. Where the actual number of components inspected, such as voltage regulators and capacitors could be ascertained, these numbers were used to calculate the percentage of equipment requiring corrective action.

#Note: Minor Hardware includes risers, pins, jumpers, connectors, splices, terminations, and spacer cable brackets.

**Note: Underground Pad-Mounted Equipment includes pad-mounted transformers, switchgear, junction boxes, non-traffic rated vaults, and pedestals.

***Note: Other Underground Structures includes indoor rooms and manhole transformers.