



## Ameren Missouri 20 CSR 4240-23.020 Electrical Corporation Infrastructure Standards Annual Inspection Report for Calendar Year 2020

### 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 remainder 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 calendar year 2020.

### 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 2020 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 2020:

Inspection Type	Inspections Scheduled	Inspections Completed	Inspections Not Completed
“Patrol”	140	140	0
“Detailed”	60	60	0
Ground Line	32	32	0

The results of the lines inspected are summarized as follows:

Table 2  
Results of Inspections

Component	Number Inspected	Number Requiring Repairs	%
Wood Poles	13,264	154	1.2%
Wood Structures	14,645	493	3.4%
Non-Wood Structures	5,637	18	0.3%
Conductors*	20,282	0	0.0 %
Insulators*	20,282	6	0.03%

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	0	14	100%	0	0.0%
Wood Structures	32	120	100%	0	0.0%
Non-Wood Structures	10	10	100%	0	0.0%
Conductors*	0	0	100%	0	0.0%
Insulators*	2	25	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
			2021	2022	Later	
Wood Poles*	140	140	25	30	85	90.9%
Wood Structures*	461	373	85	140	148	93.5%
Non-Wood Structures*	8	8	2	6	0	44.4%
Conductors*	0	0	0	0	0	100%
Insulators*	4	4	0	4	0	66.7%



## Distribution System Inspections

Ameren Missouri conducted inspections on its Distribution System during calendar year 2020 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 2020

Table 5

Inspection	Inspection Units	Inspections Scheduled	Inspections Completed	Inspections Not Completed
Overhead Visual *	Circuit	417	417	0
Overhead Ground Line *	Circuit	226	226	0
Capacitors	Equipment	1,250	1,250	0
Voltage Regulators	Equipment	588	588	0
Underground Patrol	Circuit	278	278	0
Underground Detailed	Circuit	252	252	0
Network Vaults ^	Equipment	123	85	38
Manholes	Equipment	1,595	1,595	0
Other Underground Structures ** ^	Equipment	74	68	6

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

\*\*Note: Other Underground Structures include Indoor Rooms and Manhole Transformers.

^ Note: Inspections not completed due to resource constraints resulting from COVID.



The results of the inspections are summarized as follows:

Table 6  
Results of Inspections

Component	Number Inspected	Number Requiring Repairs	Percentage
Poles/Towers*	163,581	2,799	1.7%
Anchors*	163,581	39	0.0%
Conductors*	163,581	279	0.2%
Crossarm Braces*	163,581	668	0.4%
Crossarms*	163,581	2,367	1.4%
Fuses*	163,581	41	0.0%
Grounding*	163,581	1,249	0.8%
Guy Wires*	163,581	1,647	1.0%
Insulators*	163,581	1,474	0.9%
Lightning Arresters*	163,581	500	0.3%
Minor Hardware*#	163,581	2,866	1.8%
Overhead Transformers*	163,581	75	0.0%
Reclosers*		0	
Sectionalizers*		0	
Switches	163,581	5	0.0%
Capacitors*	1,250	419	33.5%
Voltage Regulators	588	41	7.0%
UG Pad-Mounted Equipment**	41,424	3,625	8.8%
Network Vaults	85	9	10.6%
Manholes*	1,595	198	12.4%
Other Underground Structures***	68	0	0.0%
Streetlights	49,311	1352	2.7%

\*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*	144	144	100.0%	0	0.0%
Anchors*	0	0	0.0%	0	0.0%
Conductors*	0	0	0.0%	0	0.0%
Crossarm Braces*	2	2	100.0%	0	0.0%
Crossarms*	7	7	100.0%	0	0.0%
Fuses*	0	0	0.0%	0	0.0%
Grounding*	0	0	0.0%	0	0.0%
Guy Wires*	0	0	0.0%	0	0.0%
Insulators*	1	1	100.0%	0	0.0%
Lightning Arresters*	0	0	0.0%	0	0.0%
Minor Hardware*#	6	6	100.0%	0	0.0%
Overhead Transformers*	0	0	0.0%	0	0.0%
Reclosers*	0	0	0.0%	0	0.0%
Sectionalizers*	0	0	0.0%	0	0.0%
Switches	0	0	0.0%	0	0.0%
Capacitors*	203	203	100.0%	0	0.0%
Voltage Regulators	23	23	100.0%	0	0.0%
UG Pad-Mounted Equipment**	1533	1533	100.0%	0	0.0%
Network Vaults	0	0	0.0%	0	0.0%
Manholes*	0	0	0.0%	0	0.0%
Other Underground Structures***	0	0	0.0%	0	0.0%
Streetlights	583	583	100.0%	0	0.0%



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 2021	Corrective Action Scheduled Later	Percent of Equipment in Need of Corrective Action but with a Scheduled Date Beyond the Reporting Period
Poles/Towers*	2655	2069	2069	0	94.9%
Anchors*	39	39	39	0	100.0%
Conductors*	279	279	279	0	100.0%
Crossarm Braces*	666	665	665	0	99.7%
Crossarms*	2360	2358	2358	0	99.7%
Fuses*	41	40	40	0	100.0%
Grounding*	1249	1247	1247	0	100.0%
Guy Wires*	1647	1646	1646	0	100.0%
Insulators*	1473	1472	1472	0	99.9%
Lightning Arresters*	500	497	497	0	100.0%
Minor Hardware*#	2860	2855	2855	0	99.8%
Overhead Transformers*	75	75	75	0	100.0%
Reclosers*	0	0	0	0	0.0%
Sectionalizers*	0	0	0	0	0.0%
Switches	5	5	5	0	100.0%
Capacitors*	216	89	89	0	51.6%
Voltage Regulators	18	11	11	0	43.9%
UG Pad-Mounted Equipment**	2092	1701	1691	10	57.7%
Network Vaults	9	9	4	5	100.0%
Manholes*	198	198	0	198	100.0%
Other Underground Structures***	0	0	0	0	0.0%
Streetlights	769	683	683	0	56.9%



\*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.