

**BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF MISSOURI**

In the Matter of Union Electric Company d/b/a       )  
Ameren Missouri's 2016 Infrastructure                )  
Inspection Annual Report.                                )       Case No. EO-2017-\_\_\_\_\_

**UNION ELECTRIC COMPANY d/b/a  
AMEREN MISSOURI'S 2016 INFRASTRUCTURE  
INSPECTION ANNUAL REPORT**

**COMES NOW**, Union Electric Company, d/b/a Ameren Missouri, and in compliance with 4 CSR 240-23.020(3)(C) submits the attached report.

Respectfully submitted,

**UNION ELECTRIC COMPANY,  
d/b/a AMEREN MISSOURI**

/s/ Wendy K. Tatro

**Wendy K. Tatro**, # 60261  
Director and Assistant General Counsel  
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Dated: June 30, 2017

## **CERTIFICATE OF SERVICE**

I hereby certify that copies of the foregoing have been electronically mailed to all counsel of record this 30<sup>th</sup> day of June, 2017.

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/s/ Wendy K. Tatro

Wendy K. Tatro



## Ameren Missouri 4 CSR 240-23.020 Electrical Corporation Infrastructure Standards Annual Inspection Report for Calendar Year 2016

### Introduction

This document is Union Electric (dba Ameren Missouri) Company's annual report detailing its compliance with Missouri Public Service Commission Rule 4 CSR 240-23.020, 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 2016.

### 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 2016 as required by Missouri Public Service Commission Rule 4 CSR 240-23.020, Electrical Corporation Infrastructure Standards. The inspections conducted, as well as the deficiencies discovered and repaired as a result of these inspections, are described below.

### Transmission Circuits Inspected in 2016:

Inspection Type	Inspections Scheduled	Inspections Completed	Inspections Not Completed
“Patrol”	140	140	0
“Detailed”	5	5	0
Ground Line	5	5	0

The results of the lines inspected are summarized as follows:

### Results of Inspections

Component	Number Inspected	Number Requiring Repairs	%
Wood Poles	236	0	0.0%
Wood Structures	14,645	57	0.037%
Non-Wood Structures	5,637	9	0.002%
Conductors*	20,282	16	0.0008%
Insulators*	20,282	5	0.0002%

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

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	0	100.0%	0	0.0%
Wood Structures	6	27	100.0%	2	33.3%
Non-Wood Structures	0	2	100.0%	0	0.0%
Conductors*	0	1	100.0%	0	0.0%
Insulators*	1	1	100.0%	1	100.0%

\*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 not repaired as scheduled:

Component	Component Number	Reason Repairs Not Completed	Date Repairs Will be Completed
Insulators	JU147385	Deferred to coincide with a larger project on the same line	12/31/2018
Wood Structures	JU161855	Deferred to coincide with a larger project on the same line	12/31/2017
Wood Structures	JU161741	Deferred to coincide with a larger project on the same line	12/31/2017

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

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
			2017	2018	Later	
Wood Poles*	0	0	0	0	0	0.0%
Wood Structures*	51	28	14	14	0	54.9%
Non-Wood Structures*	9	7	0	7	0	77.7%
Conductors*	16	15	5	10	0	93.7%
Insulators*	4	3	2	1	0	75.0%



### Distribution System Inspections

Ameren Missouri conducted inspections on its Distribution System during calendar year 2016 as required by Missouri Public Service Commission Rule 4 CSR 240-23.020, 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 2016

Inspection	Inspection Units	Inspections Scheduled	Inspections Completed	Inspections Not Completed
Overhead Visual	Circuit	398	398	0
Overhead Ground Line	Circuit	241	241	0
Capacitors	Equipment	2646	2646	0
Voltage Regulators	Equipment	557	557	0
Underground Patrol	Circuit	208	208	0
Underground Detailed	Circuit	221	221	0
Network Vaults	Equipment	130	130	0
Manholes	Equipment	1587	1587	0
Other Underground Structures	Equipment	74	74	0

\*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: During the Underground Patrol and Detailed circuit inspections, Ameren Missouri inspectors encountered various obstructions that prevented inspection of some individual pieces of equipment such as pad-mounted transformers. The obstructions encountered were customer facilities such as fences or landscaping in close proximity to equipment, thereby preventing its full inspection. Many of these situations require negotiations with customers to determine the best remedy for the customer and Ameren Missouri. Ameren Missouri has resolved most of the issues and continues to work with customers to resolve the remaining obstructions in order to complete the inspections of the equipment.



The results of the inspections are summarized as follows:

### Results of Inspections

Component	Number Inspected	Number Requiring Repairs	Percentage
Poles/Towers*	159712	5271	3.3%
Anchors*	159712	36	0.0%
Conductors*	159712	332	0.2%
Crossarm Braces*	159712	803	0.5%
Crossarms*	159712	1132	0.7%
Fuses*	159712	38	0.0%
Grounding*	159712	4437	2.8%
Guy Wires*	159712	6486	4.1%
Insulators*	159712	1466	0.9%
Lightning Arresters*	159712	351	0.2%
Minor Hardware*#	159712	6987	4.4%
Overhead Transformers*	159712	3004	1.9%
Reclosers*	159712	4	0.0%
Sectionalizers*	159712	1	0.0%
Switches	159712	6	0.0%
Capacitors*	2646	543	20.5%
Voltage Regulators	557	74	13.3%
UG Pad-Mounted Equipment**	40093	3202	8.0%
Vaults	130	24	18.5%
Manholes	1587	67	4.2%
Other Underground Structures***	74	0	0.0%
Streetlights	49311	2183	4.4%

\*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:

Component	Number of Repairs Scheduled in the Period	Number of Repairs Completed in the Period	%	Number of Repairs Not Completed in the Period	%
Poles/Towers	940	940	100%	0	0.0%
Anchors	1	1	100%	0	0.0%
Conductors	6	6	100%	0	0.0%
Crossarm Braces	31	31	100%	0	0.0%
Crossarms	9	9	100%	0	0.0%
Fuses	0	0	0.0%	0	0.0%
Grounding	61	61	100%	0	0.0%
Guy Wires	84	84	100%	0	0.0%
Insulators	18	18	100%	0	0.0%
Lightning Arresters	1	1	100%	0	0.0%
Minor Hardware	57	57	100%	0	0.0%
Overhead Transformers	18	18	100%	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	354	354	100%	0	0.0%
Voltage Regulators	39	39	100%	0	0.0%
UG Pad-Mounted Equipment	1585	1585	100%	0	0.0%
Network Vaults	2	2	100%	0	0.0%
Manholes	1	1	100%	0	0.0%
Other Underground Structures	0	0	0.0%	0	0.0%
Streetlights	2022	2022	100%	0	0.0%

All equipment repairs required in the reporting period were completed in the period.





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

Component	Total Number Requiring Repairs Outside the Reporting Period (Completed or Scheduled)	Number of Open Repairs Outside the Reporting Period	Corrective Action Scheduled to be Completed			Percent of Equipment in Need of Corrective Action but with a Scheduled Date Beyond the Reporting Period
			2016	2017	Later	
Poles/Towers	4331	2229	0	2229	0	42.3%
Anchors	35	22	0	22	0	61.1%
Conductors	326	175	0	175	0	52.7%
Crossarm Braces	772	446	0	446	0	55.5%
Crossarms	1123	691	0	691	0	61.0%
Fuses	38	14	0	14	0	36.8%
Grounding	4376	2389	0	2389	0	53.8%
Guy Wires	6402	3721	0	3721	0	57.4%
Insulators	1448	812	0	812	0	55.4%
Lightning Arresters	350	193	0	193	0	55.0%
Minor Hardware	6930	3911	0	3911	0	56.0%
Overhead Transformers	2986	1730	0	1730	0	57.6%
Reclosers	4	3	0	3	0	75.0%
Sectionalizers	1	0	0	0	0	0.0%
Switches	6	3	0	3	0	50.0%
Capacitors	154	85	35	84	1	15.7%
Voltage Regulators	35	31	0	31	0	41.9%
UG Pad- Mounted Equipment	1571	830	46	830	0	25.9%
Network Vaults	22	22	2	0	22	91.7%
Manholes	66	66	1	0	66	98.5%
Other Underground Structures	0	0	0	0	0	0.0%
Streetlights	153	14	8	14	0	0.6%

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Case No. EO-2017-\_\_\_\_\_

**AFFIDAVIT OF MARK C. BIRK**

STATE OF MISSOURI     )  
   ) ss  
CITY OF ST. LOUIS     )

Mark C. Birk, being first duly sworn on his oath, states:

1. My name is Mark C. Birk. I work in the City of St. Louis, Missouri, and I am employed by Union Electric Company d/b/a Ameren Missouri as Senior Vice President, Customer Operations.

2. I hereby swear and affirm that I am the individual who sponsors the attached report filed in accordance with 4 CSR 240-23.020; that said report was prepared under my direction and supervision; that if inquiries are made as to the facts, I would respond as therein set forth; and that the aforesaid is true and correct to the best of my knowledge, information, and belief.



Mark C. Birk

Subscribed and sworn to before me this 30<sup>th</sup> day of June, 2017.

  
Notary Public

My commission expires:

March 7, 2021

