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July 1, 2021

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Energy Department
Missouri Public Service Commission
200 Madison Street, PO Box 360
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RE: Reliability Compliance Report

The Empire District Electric Company ("Liberty") respectfully submits its annual reliability compliance report for calendar year 2020. Commission Rule 20 CSR 4240-23.020(2)(C) requires the production of an annual reliability compliance report including verification of an officer, number of facilities inspected, facilities scheduled for inspection but not inspected, a recovery plan for unperformed inspections, total number and percentage of equipment rated at each condition rating level, total number and percentage of equipment that was or was not corrected, and an explanation of unperformed corrections.

Pursuant to Rule 23.020(2)(C), Liberty's annual Reliability Compliance Report discusses the 2020 infrastructure activities and planned 2021 activities to maintain or improve service reliability for Liberty's electric customers. Please note that this is a working document, and the planned activities are subject to change.

Respectfully submitted,

Sam McGarrah
Director of System Performance



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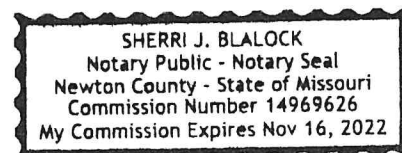
State of Missouri ,
)ss
County of Jasper ,

I, Tim Wilson, having been duly sworn upon my oath, state that I am the Vice President of Electric Operations - The Empire District Electric Company, a Liberty company ("Empire"), that I am duly authorized to make this affidavit on behalf of Empire, and that the matters and things stated in the foregoing are true and correct to the best of my information, knowledge and belief.

Vice President of Electric Operations

Subscribed and sworn before me this 30 day of June, 2021.

Notary





Section 1:

Introduction

The system reliability department and maintenance program for The Empire District Electric Company ("Liberty" or "Company") comply with the requirements of the Missouri Public Service Commission's Electrical Corporation Infrastructure Standards, Rule 20 CSR 4240-23.020. The system reliability department is in its twelfth full year of operation and continues to improve the process of managing infrastructure inspections, corrective action monitoring, data management and reporting necessary to comply with 20 CSR 4240-23.020. Liberty is continually evaluating the infrastructure inspection program as the Company streamlines the inspection processes, data collection, maintenance crew collaboration, and reporting documentation.

Osmose Utility Services, Inc. ("Osmose") is currently contracted to perform infrastructure inspections on Liberty facilities. They have been inspecting Liberty facilities since 2008.

Liberty utilizes its own personnel to perform detail inspections on padmounted equipment, three-phase reclosers, capacitors, and regulators.

Liberty has contracted Hot/Shot Infrared Inspections, Inc. ("Hot Shot") to perform an annual aerial patrol inspection of the transmission system and an infrared inspection of equipment on the transmission system.

Liberty also utilizes Maximo, a work management software solution to maintain records and track the progress associated with the infrastructure inspections and corrective actions.

Compliance Statement

Liberty has complied with the rules established in the State of Missouri's Electrical Corporation Infrastructure Standards, 20 CSR 4240-23.020 for the 2020 calendar year.



Section 2:

2020 Distribution Inspection Plan Summary

Patrol Inspections:

As outlined in the table below, Liberty completed Patrol Inspections on 21,933 Overhead components and 1,720 Streetlight components, utilizing the services of Osmose. The Company also, completed 2,235 underground components in 2020 utilizing internal personnel.

Liberty was unable to complete 1,253 inspections of underground components in 2020. The inspections were not performed due to an unplanned extended leave of absence and reassignment of Underground Inspectors to other projects in 2020. However, the incomplete inspections will be performed in 2021 with additional assistance from Osmose.

Detail Inspections:

Utilizing the services of Osmose, the Company completed 23,749 Detail Inspections on Overhead components and 1,695 Streetlight components. In addition, Liberty completed Detail Inspections on 1,666 Underground components utilizing internal personnel.

Liberty was unable to complete 1,529 inspections of underground components in 2020. The inspections were not performed due to an unplanned extended leave of absence and reassignment of Underground Inspectors to other projects in 2020. However, the incomplete inspections will be performed in 2021 by internal personnel.

Intrusive Inspections:

Utilizing the services of Osmose, the Company completed 14,500 intrusive pole inspections in 2020.

Plan Deviations:

Ten underground inspections (2,782 components) were not completed in 2020 as originally scheduled. Liberty's internal personnel experienced an unplanned extended leave of absence and a reassignment to other projects in 2020 which prevented completion of the scheduled inspections. However, the incomplete inspections will be performed in 2021 utilizing a combination of internal personnel and Osmose personnel.



| 2020 Distribution Inspection Plan Summary | | | | | |
|---|--|--|------------------------------|-----------------------------------|-----------------------------------|
| Inspection Type | Facility Type | Components | Inspections Planned for 2020 | Inspections Completed During 2020 | Inspections Not Completed in 2020 |
| Patrol | Overhead Circuits, Structures, & Equipment | Poles, Transformers, Capacitors, Regulators, Reclosers, Switches | 21,933 | 21,933 | 0 |
| | Streetlight System | Structures | 1,720 | 1,720 | 0 |
| | Underground Structures & Equipment | Sectionalizing Cabinets, Vaults, Transformers, Switches | 3,488 | 2,235 | 1,253 |
| Detail | Overhead Circuits, Structures, & Equipment | Poles, Transformers, Capacitors, Regulators, Reclosers, Switches | 23,749 | 23,749 | 0 |
| | Streetlight System | Structures | 1,695 | 1,695 | 0 |
| | Underground Structures & Equipment | Sectionalizing Cabinets, Vaults, Transformers, Switches | 3,195 | 1,666 | 1,529 |
| Intrusive | Wood Poles | Poles | 14,500 | 14,500 | 0 |

2020 Transmission Inspection Plan Summary

Patrol Inspections:



Liberty completed an aerial Patrol Inspection on 15,429 overhead components using the services of Hot Shot.

Detail Inspections:

Utilizing the services of Osmose, the Company completed 3,620 Detail Inspections on overhead components.

Intrusive Inspections:

Utilizing the services of Osmose, the Company completed 880 Intrusive Inspections.

Plan Deviations:

Liberty experienced no deviations in planned and performed transmission inspections during 2020.

| 2020 Transmission Inspection Plan Summary | | | | | |
|---|---------------------------------|-----------------|------------------------------|-----------------------------------|-----------------------------------|
| Inspection Type | Facility Type | Components | Inspections Planned for 2020 | Inspections Completed During 2020 | Inspections Not Completed in 2020 |
| Patrol | Overhead Structures & Equipment | Poles | 15,429 | 15,429 | 0 |
| Detail | Overhead Structures & Equipment | Poles, Switches | 3,620 | 3,620 | 0 |
| Intrusive | Overhead Structures & Equipment | Poles | 880 | 880 | 0 |

Section 3:

Work Order Rating Summary

Liberty has developed a priority rating system to classify corrective actions and provide appropriate remediation schedules. The priority rating system allows Liberty to balance its



resources to remediate corrective actions in a timely and economical manner while improving the service reliability to its customers. Only items identified during the course of infrastructure inspections will be rated using this system. A listing of the priority ratings description and corresponding scheduling period are detailed in the table below.

| Priority Rating | Description | Corrective Action Scheduling Period |
|-----------------|--|-------------------------------------|
| 5 | Emergency/Safety/Load Limiting/Customer Outage | Immediate |
| 4 | Urgent/May Affect Load | 180 days |
| 3 | Time Critical/Seasonal | 365 days |
| 2 | Routine/Non-Critical | 365 days |
| 1 | Project/Operational Improvements | Liberty's Discretion |



2020 Distribution Work Order Rating

| 2020 Distribution Work Order Rating Summary | | | | | | | |
|---|--|--|------------|------------|------------|------------|------------|
| Inspection Type | Facility Type | Components | Priority 5 | Priority 4 | Priority 3 | Priority 2 | Priority 1 |
| Patrol | Overhead Circuits, Structures, & Equipment | Poles, Transformers, Capacitors, Regulators, Reclosers, Switches | 1 | 210 | 0 | 1,888 | 1 |
| | Underground Structures & Equipment | Sectionalizing Cabinets, Vaults, Transformers, Switches, | 0 | 4 | 0 | 144 | 14 |
| Detail | Overhead Circuits, Structures, & Equipment | Poles, Transformers, Capacitors, Regulators, Reclosers, Switches | 0 | 117 | 0 | 1,856 | 0 |
| | Underground Structures & Equipment | Sectionalizing Cabinets, Vaults, Transformers, Switches, | 0 | 1 | 0 | 49 | 78 |
| Intrusive | Wood Poles & Equipment | Poles | 4 | 41 | 0 | 970 | 0 |



| 2020 Distribution Work Order Rating Summary - Percentage | | | | | | | |
|--|--|--|------------|------------|------------|------------|------------|
| Inspection Type | Facility Type | Components | Priority 5 | Priority 4 | Priority 3 | Priority 2 | Priority 1 |
| Patrol | Overhead Circuits, Structures, & Equipment | Poles, Transformers, Capacitors, Regulators, Reclosers, Switches | 0% | 10% | 0% | 90% | 0% |
| | Underground Structures & Equipment | Sectionalizing Cabinets, Vaults, Transformers, Switches, | 0% | 2% | 0% | 89% | 9% |
| Detail | Overhead Circuits, Structures, & Equipment | Poles, Transformers, Capacitors, Regulators, Reclosers, Switches | 0% | 6% | 0% | 94% | 0% |
| | Underground Structures & Equipment | Sectionalizing Cabinets, Vaults, Transformers, Switches, | 0% | 1% | 0% | 38% | 61% |
| Intrusive | Wood Poles & Equipment | Poles | 0% | 4% | 0% | 96% | 0% |



2020 Transmission Work Order Rating

| 2020 Transmission Work Order Rating Summary | | | | | | | |
|---|---------------------------------|------------------|------------|------------|------------|------------|------------|
| Inspection Type | Facility Type | Components | Priority 5 | Priority 4 | Priority 3 | Priority 2 | Priority 1 |
| Patrol | Overhead Structures & Equipment | Poles | 0 | 1 | 0 | 15 | 0 |
| Detail | Overhead Structures & Equipment | Poles & Switches | 0 | 2 | 0 | 115 | 0 |
| Intrusive | Overhead Structures & Equipment | Poles | 0 | 0 | 0 | 109 | 0 |

| 2020 Transmission Work Order Rating Summary - Percentage | | | | | | | |
|--|---------------------------------|------------------|------------|------------|------------|------------|------------|
| Inspection Type | Facility Type | Components | Priority 5 | Priority 4 | Priority 3 | Priority 2 | Priority 1 |
| Patrol | Overhead Structures & Equipment | Poles | 0% | 6% | 0% | 94% | 0% |
| Detail | Overhead Structures & Equipment | Poles & Switches | 0% | 2% | 0% | 98% | 0% |
| Intrusive | Overhead Structures & Equipment | Poles | 0% | 0% | 0% | 100% | 0% |



Section 4:

2020 Distribution Corrective Action

Liberty completed 3,094 distribution corrective actions of the 10,954 that were planned in 2020.

As of the date of this report, another 2,227 corrective actions have been completed in 2021.

| 2020 Distribution Corrective Action Summary | | | | | | | |
|---|--|--|-----------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|--|
| Inspection Type | Facility Type | Components | Corrective Action Planned in 2020 | Corrective Action Completed in 2020 | Corrective Action Incomplete in 2020 | Corrective Action Completed in 2021 | Corrective Action to Complete in 2021/2022 |
| Patrol | Overhead Circuits, Structures, & Equipment | Poles, Transformers, Capacitors, Regulators, Reclosers, Switches | 3,573 | 781 | 2,792 | 529 | 2,263 |
| | Underground Structures & Equipment | Sectionalizing Cabinets, Vaults, Transformers, Switches | 120 | 72 | 48 | 30 | 18 |
| Detail | Overhead Circuits, Structures, & Equipment | Poles, Transformers, Capacitors, Regulators, Reclosers, Switches | 3,461 | 642 | 2,819 | 924 | 1,895 |
| | Underground Structures & Equipment | Sectionalizing Cabinets, Vaults, Transformers, Switches | 189 | 76 | 113 | 37 | 76 |
| Intrusive | Wood Poles & Equipment | Poles | 3,611 | 1,523 | 2,088 | 707 | 1,381 |



| 2020 Distribution Corrective Action Summary - Percentage | | | | | | | |
|--|--|--|-----------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|--|
| Inspection Type | Facility Type | Components | Corrective Action Planned in 2020 | Corrective Action Completed in 2020 | Corrective Action Incomplete in 2020 | Corrective Action Completed in 2021 | Corrective Action to Complete in 2021/2022 |
| Patrol | Overhead Circuits, Structures, & Equipment | Poles, Transformers, Capacitors, Regulators, Reclosers, Switches | 3,573 | 22% | 78% | 15% | 63% |
| | Underground Structures & Equipment | Sectionalizing Cabinets, Vaults, Transformers, Switches | 120 | 60% | 40% | 25% | 15% |
| Detail | Overhead Circuits, Structures, & Equipment | Poles, Transformers, Capacitors, Regulators, Reclosers, Switches | 3,461 | 19% | 81% | 27% | 55% |
| | Underground Structures & Equipment | Sectionalizing Cabinets, Vaults, Transformers, Switches | 189 | 40% | 60% | 20% | 40% |
| Intrusive | Wood Poles & Equipment | Poles | 3,611 | 42% | 58% | 20% | 38% |

Distribution Plan Deviations:

The Company's ability to complete corrective actions was significantly impaired by retention issues experienced by the Company in 2019 and 2020 as related to its skilled workforce (Lineman retention issues was more fully described in Docket No. ER-2019-0374). The remaining 5,633 distribution corrective actions are planned to be completed by December 31, 2022 as defined in Liberty's infrastructure remediation plan.



2020 Transmission Corrective Action

Empire completed 91 transmission corrective actions of the 1,197 that were planned in 2020. As of the date of this report, another 126 corrective actions were completed in 2021.

| 2020 Transmission Corrective Action Summary | | | | | | | |
|---|---------------------------------|------------------|-----------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|--|
| Inspection Type | Facility Type | Components | Corrective Action Planned in 2020 | Corrective Action Completed in 2020 | Corrective Action Incomplete in 2020 | Corrective Action Completed in 2021 | Corrective Action to Complete in 2021/2022 |
| Patrol | Overhead Structures & Equipment | Poles | 654 | 46 | 608 | 61 | 547 |
| Detail | Overhead Structures & Equipment | Poles & Switches | 297 | 19 | 278 | 15 | 263 |
| Intrusive | Overhead Structures & Equipment | Poles | 246 | 26 | 220 | 50 | 170 |

| 2020 Transmission Corrective Action Summary - Percentage | | | | | | | |
|--|---------------------------------|------------------|-----------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|--|
| Inspection Type | Facility Type | Components | Corrective Action Planned in 2020 | Corrective Action Completed in 2020 | Corrective Action Incomplete in 2020 | Corrective Action Completed in 2021 | Corrective Action to Complete in 2021/2022 |
| Patrol | Overhead Structures & Equipment | Poles | 654 | 7% | 93% | 9% | 84% |
| Detail | Overhead Structures & Equipment | Poles & Switches | 297 | 6% | 94% | 5% | 89% |
| Intrusive | Overhead Structures & Equipment | Poles | 246 | 11% | 89% | 20% | 69% |



Transmission Plan Deviations:

The Company's ability to complete corrective actions was significantly impaired by retention issues experienced by the Company in 2019 and 2020 as related to its skilled workforce (Lineman retention issues was more fully described in Docket No. ER-2019-0374). The remaining 980 corrective actions are planned to be completed by December 31, 2022 as defined in Liberty's infrastructure remediation plan.



Corrective Action Deviations

At the conclusion of 2020, Liberty had 8,902 incomplete corrective actions, which has decreased from 9,701 initially reported in August 2020. The number of total incomplete corrective actions has further decreased to 7,365 in 2021. Liberty has made meaningful progress performing corrective actions, however a deviation from the original plan schedule has occurred. Liberty continues to execute its infrastructure remediation plan, but is trending behind schedule. Liberty anticipates the vast majority of the incomplete corrective actions will be completed by December 31, 2022 as planned. An updated overview of the remediation progress is provided in the chart below.

