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June 29, 2022

Brad Fortson
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 d/b/a Liberty ("Liberty") respectfully submits its annual reliability compliance report. Pursuant to Commission Rule 20 CSR 4240-23.020(3)(C), Liberty's attached Reliability Compliance Report discusses the 2021 infrastructure activities and planned 2022 activities to maintain or improve service reliability for Liberty's electric customers. Please note that this is a working document, the planned activities are subject to change especially given the current supply chain constraints.

Respectfully submitted,

Sam McGarrah
Director of System Performance



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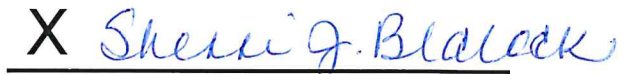
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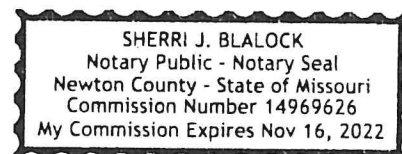
State of Missouri ,
)ss
County of Jasper ,

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, that I am duly authorized to make this affidavit, and that the matters and things stated in the foregoing are true and correct to the best of my information, knowledge, and belief.

X 
Vice President of Electric Operations

Subscribed and sworn before me this 29th day of June, 2022.

X 
Notary Public





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 thirteenth 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 2021 calendar year.



Section 2:

2021 Distribution Inspection Plan Summary

Patrol Inspections:

As outlined in the table below, Liberty completed Patrol Inspections on 16,843 Overhead components and 1,445 Streetlight components, utilizing the services of Osmose. The Company also completed 3,377 underground components in 2021 utilizing Osmose personnel.

Liberty was unable to complete 2,591 inspections of overhead components in 2021. Osmose's ability to complete scheduled inspections was significantly impaired by their employee retention issues experienced during 2021. However, the incomplete inspections were performed and completed by February 2022.

Detail Inspections:

Utilizing the services of Osmose, the Company completed 19,678 Detail Inspections on Overhead components and 1,873 Streetlight components. In addition, Liberty completed Detail Inspections on 4,251 Underground components utilizing internal personnel.

Intrusive Inspections:

Utilizing the services of Osmose, the Company completed 17,867 intrusive pole inspections in 2021. Ten distribution intrusive inspections (8,760 poles) were not completed in 2021 as originally scheduled. Osmose's ability to complete scheduled inspections was significantly impaired by their employee retention issues experienced during 2021. These inspections were completed by February 2022.

Plan Deviations:

Two distribution patrol inspections (2,591 poles) and ten distribution intrusive inspections (8,760 poles) were not completed in 2021 as originally scheduled. Osmose's ability to complete scheduled inspections was significantly impaired by their employee retention issues experienced during 2021. However, the incomplete inspections were performed and completed by February 2022.

2021 Distribution Inspection Plan Summary					
Inspection Type	Facility Type	Components	Inspections Planned for 2021	Inspections Completed During 2021	Inspections Not Completed in 2021



Patrol	Overhead Circuits, Structures, & Equipment	Poles, Transformers, Capacitors, Regulators, Reclosers, Switches	19,341	16,843	2,498
	Streetlight System	Structures	1,538	1,445	93
	Underground Structures & Equipment	Sectionalizing Cabinets, Vaults, Transformers, Switches	3,377	3,377	0
Detail	Overhead Circuits, Structures, & Equipment	Poles, Transformers, Capacitors, Regulators, Reclosers, Switches	19,678	19,678	0
	Streetlight System	Structures	1,873	1,873	0
	Underground Structures & Equipment	Sectionalizing Cabinets, Vaults, Transformers, Switches	4,251	4,251	0
Intrusive	Wood Poles	Poles	26,627	17,867	8,760

2021 Transmission Inspection Plan Summary

Patrol Inspections:

Liberty completed an aerial Patrol Inspection on 15,432 overhead components using the services of Hot Shot.

Detail Inspections:

Utilizing the services of Osmose, the Company completed 3,534 Detail Inspections on overhead components. 5 transmission poles were not inspected. Osmose's ability to complete scheduled



inspections was significantly impaired by their employee retention issues experienced during 2021. However, the incomplete inspections were performed and completed by February 2022.

Intrusive Inspections:

Utilizing the services of Osmose, the Company completed 1,185 Intrusive Inspections.

Plan Deviations:

848 transmission poles were not intrusively inspected, and 5 transmission poles were not detail inspected in 2021 as originally scheduled. Osmose's ability to complete scheduled inspections was significantly impaired by their retention issues experienced during 2021. However, the incomplete inspections were performed and completed by February 2022.

2021 Transmission Inspection Plan Summary					
Inspection Type	Facility Type	Components	Inspections Planned for 2021	Inspections Completed During 2021	Inspections Not Completed in 2021
Patrol	Overhead Structures & Equipment	Poles	15,432	15,432	0
Detail	Overhead Structures & Equipment	Poles, Switches	3,539	3,534	5
Intrusive	Overhead Structures & Equipment	Poles	2,033	1,185	848



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



2021 Distribution Work Order Rating

2021 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	0	58	0	769	0
	Underground Structures & Equipment	Sectionalizing Cabinets, Vaults, Transformers, Switches,	0	0	0	68	77
Detail	Overhead Circuits, Structures, & Equipment	Poles, Transformers, Capacitors, Regulators, Reclosers, Switches	0	58	100	1369	11
	Underground Structures & Equipment	Sectionalizing Cabinets, Vaults, Transformers, Switches,	0	37	0	407	216
Intrusive	Wood Poles & Equipment	Poles	2	27	0	837	0



2021 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%	7%	0%	93%	0%
	Underground Structures & Equipment	Sectionalizing Cabinets, Vaults, Transformers, Switches,	0%	0%	0%	47%	53%
Detail	Overhead Circuits, Structures, & Equipment	Poles, Transformers, Capacitors, Regulators, Reclosers, Switches	0%	4%	7%	89%	1%
	Underground Structures & Equipment	Sectionalizing Cabinets, Vaults, Transformers, Switches,	0%	6%	0%	62%	33%
Intrusive	Wood Poles & Equipment	Poles	0%	3%	0%	97%	0%



2021 Transmission Work Order Rating

2021 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	0	0	6	0
Detail	Overhead Structures & Equipment	Poles & Switches	0	5	0	187	0
Intrusive	Overhead Structures & Equipment	Poles	0	0	0	55	0

2021 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%	0%	0%	100%	0%
Detail	Overhead Structures & Equipment	Poles & Switches	0%	3%	0%	97%	0%
Intrusive	Overhead Structures & Equipment	Poles	0%	0%	0%	98%	2%



Section 4:

2021 Distribution Corrective Action

Liberty completed 6,249 distribution corrective actions of the 12,945 that were planned in 2021. Planned corrective actions scheduled in 2021 are based on the priority rating system due dates. As of the date of this report, another 2,241 corrective actions have been completed in 2022.

2021 Distribution Corrective Action Summary							
Inspection Type	Facility Type	Components	Corrective Action Planned in 2021	Corrective Action Completed in 2021	Corrective Action Incomplete in 2021	Corrective Action Completed in 2022	Corrective Action to Complete in 2022/2023
Patrol	Overhead Circuits, Structures, & Equipment	Poles, Transformers, Capacitors, Regulators, Reclosers, Switches	4,825	2,323	2,502	784	1,718
	Underground Structures & Equipment	Sectionalizing Cabinets, Vaults, Transformers, Switches	178	46	132	28	104
Detail	Overhead Circuits, Structures, & Equipment	Poles, Transformers, Capacitors, Regulators, Reclosers, Switches	4,717	2,032	2,685	946	1,813
	Underground Structures & Equipment	Sectionalizing Cabinets, Vaults, Transformers, Switches	143	42	101	55	46
Intrusive	Wood Poles & Equipment	Poles	3,082	1,806	1,276	428	848



2021 Distribution Corrective Action Summary – Percentage							
Inspection Type	Facility Type	Components	Corrective Action Planned in 2021	Corrective Action Completed in 2021	Corrective Action Incomplete in 2021	Corrective Action Completed in 2022	Corrective Action to Complete in 2022/2023
Patrol	Overhead Circuits, Structures, & Equipment	Poles, Transformers, Capacitors, Regulators, Reclosers, Switches	4,825	48%	52%	16%	36%
	Underground Structures & Equipment	Sectionalizing Cabinets, Vaults, Transformers, Switches	178	26%	74%	16%	58%
Detail	Overhead Circuits, Structures, & Equipment	Poles, Transformers, Capacitors, Regulators, Reclosers, Switches	4,717	43%	57%	20%	38%
	Underground Structures & Equipment	Sectionalizing Cabinets, Vaults, Transformers, Switches	143	29%	71%	38%	32%
Intrusive	Wood Poles & Equipment	Poles	3,082	59%	41%	14%	28%

Distribution Plan Deviations:



The Company's ability to complete corrective actions was previously impaired by retention issues experienced by the Company as related to its skilled workforce. Liberty, with approval of the Commission, addressed this issue by implementing the linemen retention incentive program.

During 2021 supply chain issues, likely because of the Covid-19 pandemic, created material constraints, resulting in a need to conserve existing material inventories. The supply chain issues impaired the company's ability to complete some of its planned corrective actions. The remaining 4,529 distribution corrective actions will be completed under a revised remediation plan based upon supply chain relief and material availability.



2021 Transmission Corrective Action

Liberty completed 410 transmission corrective actions of the 1,206 that were planned in 2021. As of the date of this report, another 99 corrective actions were completed in 2021.

2021 Transmission Corrective Action Summary							
Inspection Type	Facility Type	Components	Corrective Action Planned in 2021	Corrective Action Completed in 2021	Corrective Action Incomplete in 2021	Corrective Action Completed in 2021	Corrective Action to Complete in 2022/2023
Patrol	Overhead Structures & Equipment	Poles	508	170	338	26	312
Detail	Overhead Structures & Equipment	Poles & Switches	379	48	331	60	271
Intrusive	Overhead Structures & Equipment	Poles	319	192	127	13	114

2021 Transmission Corrective Action Summary - Percentage							
Inspection Type	Facility Type	Components	Corrective Action Planned in 2021	Corrective Action Completed in 2021	Corrective Action Incomplete in 2021	Corrective Action Completed in 2021	Corrective Action to Complete in 2021/2022
Patrol	Overhead Structures & Equipment	Poles	508	33%	67%	5%	61%
Detail	Overhead Structures & Equipment	Poles & Switches	379	13%	87%	16%	72%
Intrusive	Overhead Structures & Equipment	Poles	319	60%	40%	4%	36%

**Transmission Plan Deviations:**

The Company's ability to complete corrective actions was previously impaired by retention issues experienced by the Company as related to its skilled workforce. Liberty, with approval of the Commission, addressed this issue by implementing the linemen retention incentive program.

Supply chain issues, likely because of the Covid-19 pandemic, created material constraints resulting in a need to conserve existing material inventories. The supply chain issues impaired the company's ability to complete corrective actions. The remaining 697 transmission corrective actions will be completed under a revised remediation plan based upon supply chain relief and material availability.



Corrective Action Deviations

At the conclusion of 2021, Liberty had 7,179 incomplete corrective actions, which has decreased from the 9,701 initially reported in August 2020. The number of total incomplete corrective actions has further decreased to 5,523 in 2021. Liberty has made meaningful progress performing corrective actions, however, supply chain issues associated with the worldwide Covid-19 pandemic have altered the company's infrastructure remediation plan. These supply chain constraint issues were discussed with the Staff of the Commission and the Office of the Public Counsel in a virtual meeting held on April 20, 2022. Liberty anticipates developing a revised remediation plan subject to relief from the material constraints that currently exist. In an effort to comply with Rule 23.020(3)(C), Liberty proposes a December 2023 date to complete the required correction action. However, reassessment of this date may occur as we navigate the impact of material shortages on our operations. Liberty will make every effort to keep stakeholders apprised of our progress and communicate any unforeseen challenges due to material constraints. An updated overview of the remediation progress is provided in the chart below.

