Exhibit No.
Issue: System Reliability Program
Witness: Samuel S. McGarrah
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Case No.
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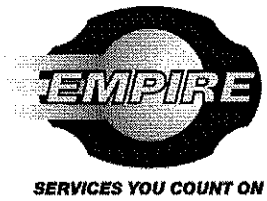
Before the Public Service Commission
of the State of Missouri

Direct Testimony

of

Samuel S. McGarrah

October 2009



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THE EMPIRE DISTRICT ELECTRIC COMPANY

BEFORE THE

MISSOURI PUBLIC SERVICE COMMISSION

DIRECT TESTIMONY

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CASE NO.

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Samuel S. McGarrah, and my business address is 602 S. Joplin Avenue, Joplin, Missouri 64801.

Q. WHO IS YOUR EMPLOYER AND WHAT POSITION DO YOU HOLD?

A. I am employed by The Empire District Electric Company ("Empire" or "Company") and I hold the position of Director – Engineering and Line Services.

Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND.

A. I hold a Masters of Science Degree in Electrical Engineering from the University of Arkansas.

Q. PLEASE DESCRIBE YOUR EMPLOYMENT BACKGROUND WITH EMPIRE.

A. I joined the staff at Empire in June 1994 as a Distribution Engineer. I later served as Planning Engineer and Manager of System Planning and Protection. My employment with Empire has been continuous since 1994 except for a brief employment with TAMKO Roofing from January 2000 to April 2001.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS CASE BEFORE THE MISSOURI PUBLIC SERVICE COMMISSION ("COMMISSION")?

A. My testimony will describe Empire's ongoing efforts in terms of system reliability and Empire's efforts to comply with the recent Commission rules on system reliability and monitoring and infrastructure standards.

II. SYSTEM RELIABILITY PROGRAM

Q. PLEASE DESCRIBE EMPIRE'S CURRENT SYSTEM RELIABILITY PROGRAM.

A. Overall system reliability has been considered a priority for Empire for many years. However, with the adoption of the Electric Utility System Reliability Monitoring and Reporting Submission Requirements Rule (4 CSR 240-23.010) and the Electrical Corporation Infrastructure Standards Rule (4 CSR 240-23.020) in June of 2008, Empire created a separate System Reliability department that focuses on analyzing and improving system reliability. Since the creation of this department is relatively recent (June 2008), many of the tasks that will ultimately be performed by this department have just commenced.

Q. PLEASE DESCRIBE THE FUNCTIONS OF THE NEW DEPARTMENT.

Empire has monitored system outages for several years; however, with the implementation of our Outage Management System ("OMS") in 2005, the outage data that Empire gathers and maintains is more accurate and contains more information than outage statistics prior to 2005. The outage data gathered by the OMS is reviewed by our reliability department monthly to determine if there are

geographical or any other overall trends in system reliability. Each month, outage information (the cause of the outage and the device that opened) for the month's worst performing circuits is documented in a management report. Worst performing circuits are ranked by the System Average Interruption Frequency Index (SAIFI).

Q. HOW DOES THE INSPECTION OF THE SYSTEM FIT INTO EMPIRE'S RELIABILITY PROGRAM?

A. Planned inspections of the distribution and transmission systems are a key aspect of the system reliability program that Empire has put into place. Empire has contracted with Osmose Utility Services ("Osmose") to provide trained personnel that can inspect Empire's electrical facilities according to the new system reliability standards put in place to comply with the new rules. Osmose started providing services to Empire under the new reliability standards in December of 2008 by intrusively inspecting Empire's transmission poles. An intrusive inspection is checking for external rot at the ground line and drilling into the pole to check the internal integrity of a wooden pole. Osmose has continued to expand their inspection services to Empire since December of 2008 with distribution system patrols starting in May 2009 and detailed distribution inspections beginning in June 2009.

Q. WHY IS THERE A DIFFERENCE IN THE STARTING DATES OF THE TRANSMISSION INSPECTIONS AND THE DISTRIBUTION INSPECTIONS?

A. The difference in the starting dates is primarily due to Empire's prior use of Osmose to provide intrusive inspections services on the transmission system. Therefore, minor modifications to the program were required to comply with the new rules. In addition, the job planning and documentation requirements related to distribution inspections and any related remediation efforts are quite detailed and have taken a significant amount of lead time to plan our efforts prior to the actual start up of the programs.

Q. HOW HAS EMPIRE'S SYSTEM RELIABILITY PROCESS CHANGED SINCE THE COMMISSION ADOPTED NEW STANDARDS AND RULES ON SYSTEM RELIABILITY?

A. As I mentioned earlier, a System Reliability Department was created as a result of this new rule. Previously, Empire's system reliability responsibilities were spread over several departments. This division of duties led to a lack of coordination in lines of communication between the departments in the investigation and mitigation of reliability issues. With the creation of the System Reliability Department, all reliability data has been centralized, which shortened and better coordinated the lines of communication. This will improve our ability to analyze the data and determine the cause of service issues, which will help in our remediation efforts on poor performing circuits.

Q. DESCRIBE EMPIRE'S SYSTEM RELIABILITY PROCESS PRIOR TO THE COMMISSION'S NEW RULE ON INFRASTRUCTURE STANDARDS?

A. The patrol aspect of Empire's infrastructure inspection prior to the new rule was performed by Empire personnel carrying out their normal duties and reporting any issues with either the transmission or distribution system to the Line Operations Manager of the service area. The manager would schedule the remediation required to rectify each reported situation. The exact timing of the remediation work would depend upon the severity of the situation; however, no documentation of the remediation efforts was systematically maintained under the old system. In addition, prior to the new rule, an annual aerial patrol was performed on the transmission system, and the transmission system was on a 12 year cycle for intrusive inspections and treatment.

Q. HOW HAS THE EMPIRE INSPECTION PROCESS CHANGED WITH THE ADOPTION OF THE NEW COMMISSION RULE?

A. Several modifications have occurred as a result of the new rule. For example, a significant modification took place with the purchase of a new work management system, Maximo, in December of 2008. This system enables Empire to schedule jobs, track job progress, and fully document the inspection process and remediation efforts. As with any new software, it has required a significant amount of effort and time to get the system set up to start testing. Furthermore, developing procedures that track the process from inspection through remediation required significant resources. As this process in this area continues to evolve, it seems likely that additional staff will be required to keep the required documentation current.

Q. WHAT OTHER CHANGES DID EMPIRE MAKE?

A. The scheduling and process used in Empire's transmission and distribution system inspections has changed as a result of the Commission's new rule. For example, our infrastructure inspections are now performed systematically by Osmose. The inspectors are informed of the facilities that require inspection electronically. The inspector electronically records any issues with the facilities that may require remediation in a format that allows it to be imported into Maximo. A work order for the remediation work is developed, and when the remediation work is completed, the work order is closed. The new process also enables Empire to fully document the work performed.

Our outside contractor, Osmose, also performs the detailed inspection of Empire's overhead facilities similar to the patrol inspection. Under the new rules, this includes an inspection of each pole and any equipment on the pole. The inspection results of each pole and attached equipment are fully documented.

As a result of the new rule, Empire also utilizes Osmose to perform an intrusive inspection of distribution wood poles. Intrusive inspections are also scheduled, tracked, and the results are logged electronically.

Q. DOES OSMOSE PERFORM ALL OF THE INSPECTIONS REQUIRED BY THE COMMISSION'S RULE?

A. No. Due to the hazards associated with a detailed inspection of pad-mounted electrical equipment, Empire has opted to create an employee position to perform the inspections related to this type of equipment. The documentation associated with these inspections will be similar to that maintained on other inspections.

Q. HAS THE COMMISSION'S NEW INFRASTRUCTURE RULE CHANGED EMPIRE'S DOCUMENTATION PROCESS?

A. Yes. As I mentioned earlier, our remediation efforts are now fully documented. In addition, to help with the documentation of our inspection program, Empire has installed a unique identification tag on all poles that have either street lights or primary conductors attached and on all pad-mounted transformers, pedestals, and other switching devices for the primary distribution system.

Q. HOW MANY NEW POSITIONS HAS EMPIRE CREATED AS A RESULT OF THE NEW COMMISSION RULES ON INFRASTRUCTURE STANDARDS AND SYSTEM RELIABILITY AND REPORTING?

A. In addition to the outside contractors that have been retained to perform certain functions required by the new rules, the requirements of the new rules have initially resulted in the creation of 5 new positions to adequately manage and maintain the various processes. As previously stated, a new System Reliability Department was created to support both of the new rules. This department has a manager, an administrative position to help with data management and reporting, and a technical position that assists with the auditing of the outside contractor inspections as well as providing design assistance on the remediation projects that result from the inspection process. Recently, two additional inspection positions have been created such that trained Empire personnel can perform the required inspection of pad-mounted electrical equipment. The inspection procedure required on pad-mounted equipment requires the equipment to be opened for a

visual and an infrared inspection. Since some of Empire's pad-mounted equipment has "live front" connections, which are un-insulated primary connections, the inspectors performing this work must have the proper training so that this inspection is performed safely. Due to the potential hazards associated with the inspection of these facilities, this inspection work will be performed by Empire personnel.

Q. HAVE THE ONGOING COSTS ASSOCIATED WITH THESE COMMISSION RULES BEEN INCLUDED IN THE COST OF SERVICE IN THIS RATE CASE?

A. Yes. Empire witness Jayna Long discusses the financial aspects of this process in her direct testimony.

III MAY 8, 2009 STORM RESPONSE

Q. WAS EMPIRE'S SERVICE AREA STRUCK BY A SEVERE STORM ON MAY 8, 2009?

A. Yes.

Q. PLEASE DESCRIBE THE EXTENT OF THE STORM'S IMPACT ON THE COMPANY'S SERVICE AREA.

A. On Friday, May 8, 2009, a severe thunderstorm with sustained winds in excess of 85 mph ripped across Empire's service area. According to Bill Davis, head of the National Weather Service station in Springfield, Missouri, "It was like an inland hurricane. The winds were of hurricane force." The storm itself moved across Empire's territory at 60 to 70 mph and caused damage to many homes and businesses. Thousands of trees were broken or blown down, roofs damaged or

blown off, as well as a considerable number of buildings destroyed. On the west side of Joplin, the storm toppled KSNF's 1017 ft. tall broadcasting tower damaging two nearby homes.

Q. HOW DID THE STORM AFFECT ELECTRIC SERVICE IN EMPIRE'S SERVICE AREA?

A. The storm damaged our transmission and distribution system and left approximately 83,000 customers, or 49.5 % of our customer base, without power. Only the far southern region of the Neosho service territory and the entire Hollister service territory were spared significant damage.

Q. WHAT WAS THE EXTENT OF THE DAMAGE TO EMPIRE'S FACILITIES?

A. This storm caused significant damage on both our transmission and distribution systems. The storm damaged approximately 170 transmission structures curtailing electric service to over 40 substations. Approximately 580 distribution poles were broken in addition to the conductor damage caused by tree branches and entire tress that fell through our distribution lines. As with any storm that inflicts significant damage to trees, many electrical service drops were damaged. The damage to our system was so widespread that it is difficult to summarize. However, during the restoration of electrical service we replaced 750 poles, 460 crossarms, and 215 transformers.

Q. HOW DID EMPIRE RESPOND TO THE STORM AND RESTORE SERVICE TO CUSTOMERS?

A. The storm moved across Empire's territory from West to East. As soon as the storm passed over an area and the immediate danger from the storm was over, assessment teams were dispatched to provide initial damage assessment. While the damage was being assessed, line contractors and neighboring utilities were contacted and a mutual assistance conference call was scheduled to determine the availability of linemen.

From a review of the damage assessments and the availability of linemen within a reasonable travel distance, we determined that approximately 230 linemen were required to assist with the restoration effort. Of the linemen brought in to assist with this effort, 91 linemen were from Kansas City Power and Light ("KCPL") and 34 linemen were from American Electric Power Company ("AEP"). The remaining linemen were supplied by line contractors.

As restoration efforts were completed in an area, both the outside crews and Empire crews were reassigned to areas still requiring support. The restoration of service was completed when our Webb City service area, which had sustained some of the worst impact from the storm, was restored to service on May 15th.

Q. WERE THERE OTHER WEATHER RELATED ISSUES THAT SURFACED DURING THE SERVICE RESTORATION EFFORT?

A. Yes. Due to the wet conditions that existed in our service area prior to the storm and the additional rain that fell during our restoration effort, many of the line trucks required the assistance of bulldozers or other track type equipment to drag them to the work location and drag the trucks back out after the work was

complete. Unfortunately, these work conditions extended the time required to restore service.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes it does.