Public Version

Exhibit No.:	
Issue:	Reliability, Storm Reserve
Witness:	Bruce Akin
Type of Exhibit:	Direct Testimony
Sponsoring Party:	Evergy Missouri Metro
Case No.:	ER-2022-0129
Date Testimony Prepared:	January 7, 2022

MISSOURI PUBLIC SERVICE COMMISSION

CASE NOS.: ER-2022-0129

DIRECT TESTIMONY

OF

BRUCK AKIN

ON BEHALF OF

EVERGY MISSOURI METRO

Kansas City, Missouri
January 2022

DIRECT TESTIMONY

OF

BRUCE AKIN

Case No. ER-2022-0129

Q: Please state your name and business address.

A: My name is Bruce Akin. My business address is 818 S. Kansas Avenue, Topeka, Kansas.

Q: By whom and in what capacity are you employed?

A: I am employed by Evergy Metro, Inc. I serve as Vice President, Transmission and Distribution ("T&D") for Evergy Metro, Inc. d/b/a as Evergy Missouri Metro ("Evergy Missouri Metro"), Evergy Missouri West, Inc. d/b/a Evergy Missouri West ("Evergy Missouri West"), Evergy Metro, Inc. d/b/a Evergy Kansas Metro ("Evergy Kansas Metro"), and Evergy Kansas Central, Inc. and Evergy South, Inc., collectively d/b/a as Evergy Kansas Central ("Evergy Kansas Central") the operating utilities of Evergy, Inc.

Q: Who are you testifying for?

A: I am testifying on behalf of Missouri Metro. I will refer to Evergy Missouri West and Evergy Missouri Metro collectively as "Company" or "Evergy" in my testimony.

Q: What are your responsibilities?

A: I am responsible for oversite of construction, operation, and maintenance functions for T&D throughout all of Evergy's jurisdictional territories including

the execution of T&D projects identified as part of Evergy's capital plan, as well as all customer outage restoration field activities.

Q: Please describe your education, experience and employment history.

A: I received a Bachelor of Business Administration degree with a major in Accounting from Washburn University in 1987 and a Master's Degree in Business Administration in 1998. I have worked for Evergy, including one of its predecessors, Westar Energy, for 34 years with broad experience across many functions in both administrative areas and utility operations. My present position is Vice President, Transmission and Distribution, which includes responsibility for all transmission, substation and distribution plant and operations.

Q: Have you previously testified in a proceeding at the Missouri Public Service Commission ("MPSC" or "Commission") or before any other utility regulatory agency?

A: Yes, I have previously testified before the MPSC and the Corporation Commission for the State of Kansas ("KCC").

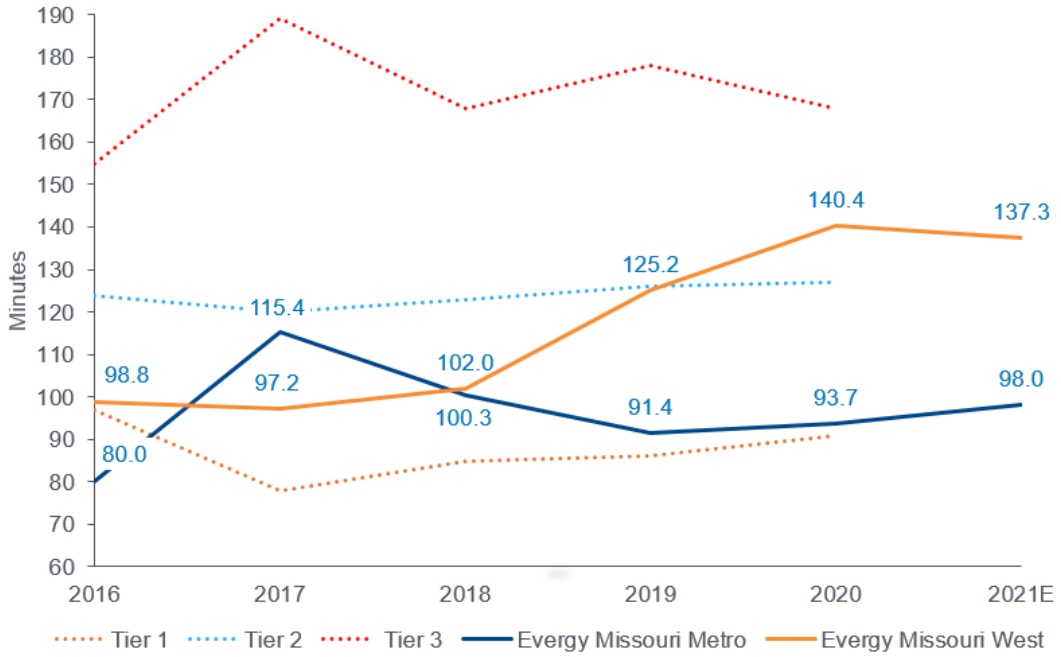
Q: What is the purpose of your testimony?

A: I will discuss the current state of Evergy's T&D infrastructure and reliability performance. Then I will describe Evergy's processes to prioritize and execute T&D capital improvement projects along with anticipated benefits that customers can expect to receive. I will also discuss the benefits of establishing a storm reserve.

Q: How is Evergy's T&D system currently performing?

A: From a reliability metric perspective, Evergy and the companies that formed Evergy have a track record of solid performance. Figure 1 illustrates consistent reliability performance within Tier 2 of peer utilities based on System Average Interruption Duration Index ("SAIDI"). SAIDI averages the total of all customer interruption durations across the total number of customers served and is the most common reliability indicator used in the electric utility industry.

Figure 1 – Historical IEEE Normalized SAIDI Comparison



Q: What drives reliability performance?

A: There are a number of factors. The largest factors include weather, vegetation management, age and asset condition, and response time. While we cannot control the weather, through proper vegetation and asset management, along with limiting the duration of outage events, we can attempt to mitigate the impact of weather and other causes of outages on our system.

Q: Describe Evergy's vegetation management strategy.

A: In the broadest sense, Evergy's vegetation management strategy is one of continual improvement through a proactive focus on reliability, safety, productivity, and regulatory compliance. We deploy program strategies centrally and tailor our approach based on regional variation across the service territory. Management decisions are informed through extensive data collection specific to vegetation conditions as part of our circuit assessments and trimming operations. This allows us to optimize key elements of the program such as workload, labor needs, finances, customer impact, etc. on a year over year basis. Additionally, the data collection allows for analyses of contract labor productivity and efficiency that we utilize for performance-based incentives and penalties.

Q: What improvements have recently been made to vegetation management at Evergy?

A: Two recent examples of programmatic improvements specific to vegetation management are the deployment of a digital, geospatially based work management software in 2020, and the completion of a large data analytics project focused on vegetation outage risk modeling. This work management software allows for more precise and granular data capture as well as a move to a paperless work stream. The vegetation risk modeling project resulted in vegetation induced outage risk scores at the circuit and sub-circuit level across the distribution network. It is our aim to refine existing vegetation assessments and trimming operations by combining the geospatial capabilities of the work management software with risk mapping produced in the data analytics project.

Q: Have Evergy Missouri Metro and Evergy Missouri West opted into Plant In Service Accounting ("PISA")?

A: Yes. After the legislature passed Senate Bill 564 on May 16, 2018 (signed by the Governor on June 1, 2018), Evergy Missouri Metro and Evergy Missouri West filed to adopt PISA on December 31, 2018. We have been actively investing in our system with a focus on reliability and grid modernization under capital investment plans that have been provided to stakeholders and the Commission annually in February with our latest capital investment plan filed on February 26, 2021.

Q: Please provide summarizing comments regarding your team's processes and approach to capital asset management planning?

A: We take seriously our obligation to be good stewards of customer dollars in strategically investing in our system to provide the safe and reliable service our customers deserve and expect. With that in mind, I will describe in more detail below a significant number of targeted programmatic system investment areas and the range of benefits they provide. I will also describe our process for evaluating and prioritizing specific project investments beyond the programmatic investments. Our objectives are to invest the right dollars, in the right assets at the right time through data and experience driven analysis to achieve optimal outcomes for reliability, resiliency and customer experience.

Q: Why are T&D capital investments in the public interest and necessary in addition to effective vegetation management practices?

A: A safe, reliable electric system is expected by our customers and stakeholders. As the electric system ages, modern upgrades and improved grid resiliency need to be built into the system to meet those expectations.

Q: What is grid resiliency?

A: Grid resiliency refers to a utility's ability to recover quickly from damage, when it does inevitably occur. "Resiliency measures do not prevent damage; rather they enable facilities to continue operating despite damage and/or promote a rapid return to normal operations." Edison Electric Institute, "Before and After the Storm" (January 2013).

Q: What is system hardening?

A: System hardening refers to replacing assets with those that are more likely to withstand major storm impacts such as high wind or ice accumulation.

Q: What are some types of equipment typically used for system hardening and grid resiliency?

A: There is a range of investments, from simply replacing existing obsolete equipment with equipment built to modern standards, to upgrading switches for automation with real time intelligence that communicate condition and circumstances. A one-size-fits-all solution does not exist. What we deploy depends on the circuit, the load, the number of customers served by it, and the nature of the service they are taking.

Q: What is Evergy's asset management strategy?

A: Evergy's asset management strategy is focused on identification of high impact assets that can be maintained or replaced prior to failure to minimize or prevent customer outages. Ranking methodologies have been developed based on data and analytics to support the identification of lines, circuits, laterals, substations, and individual assets at risk. These methodologies utilize asset data - such as age and manufacturer model; asset condition data – from inspections and testing; historical outage information; and various other inputs. The risk scores are used to prioritize individual asset replacement and as an input to prioritize larger capital projects.

Q: What types of asset management programs exist for distribution assets?

A: Within Distribution there are multiple programs that support our asset management strategy.

- The Lateral Improvement Program targets aging infrastructure, excessive lateral outage events, and customer complaints generated from these events. In 2019, a risk-based investment model (AssetLens) was developed to identify overhead distribution primary conductor and poles for replacement in Missouri. The model uses several sources of data, including asset characteristics, asset condition, and historical outage information. In 2021, the risk-based investment model was expanded to include underground and network equipment across all areas.
- The Wood Pole Life Extension and Replacement Program is a capital program focused on wood pole replacement or pole reinforcement based

on the results from the annual intrusive wood pole inspections. These inspections are required per the MPSC on a 12-year cycle. The intrusive inspection includes ground line inspection via soil excavation, bore/plug, and chemical treatment. This program improves the reliability and resiliency of our system by replacing or reinforcing poles at an increased risk of failure.

- The Proactive Cable Replacement/Rehabilitation Program targets direct buried underground residential distribution ("URD") primary cables that are shown to have elevated risk of failure based on historical cable failure analysis. The program targets high risk URD cables which are identified based on age, condition, performance among other factors. High risk cable segments are evaluated using partial discharge testing to determine the cable's condition. Based upon the results of these tests, cable segments are selected to be replaced. Replacement of these cable segments prevents failures on the system and reduces customer outage minutes.
- The Manhole Vault Top Replacement Program focuses on degraded underground manhole ceilings identified during the detailed manhole inspections. The manholes are inspected on an 8-year cycle as mandated in Missouri by the MPSC. Replacement of these manhole vault tops prevents damage to installed underground electrical equipment and reduces public safety concerns.
- The Network Rehabilitation Program uses Evergy craft knowledge and results from the detailed manhole inspections mandated in Missouri by the

MPSC to identify structures for replacement or remediation. Evergy uses an independent contractor who is an expert in manhole restoration and high-voltage electrical repairs. The work is prioritized based on greatest risk to worker/public safety and impact to customer reliability.

- The High Outage Count Customers Program, also known as the "Worst Performing Circuit" Program, is a circuit-based program addressing service reliability issues associated with customers experiencing abnormally high outage counts, based upon MPSC regulatory standards. Evergy identifies high outage count customers, investigates their outage events, and develops solutions to improve their circuit reliability. Analyzing annual outage management system records and field ultrasound inspection results assists in understanding root causes and the ensuing action required to mitigate future incidents.
- The CEMI Improvement Program focuses on making repairs and improvements for customers experiencing 6 or more interruptions over a 12-month period. Interruption cause code data is analyzed to determine the root causes and appropriate corrective actions required to mitigate future incidents. This program was developed and rolled out in 2021 in the Missouri jurisdictions.
- The Feeder Improvement Program is a new program starting in 2022. This program will target feeder segments identified as being high risk through data driven tools like AssetLens. Corrective actions that will be considered include undergrounding, rebuilding and reconductoring.

Q: What types of asset management programs exist for substation assets?

A: Our substation asset management strategy is focused on the key asset types of transformers, breakers, and station batteries. For each of these asset types, unique risk scores have been developed based on inspection data, testing data, asset characteristics, and criticality information. As an example, for substation transformers the risk score is primarily driven on dissolved gas test results and trends identified over multiple test results. Specific gases monitored include acetylene, methane, hydrogen, and the carbon dioxide to carbon monoxide ratio. These risk scores are used to identify assets at increased risk of failure. The identified assets are evaluated and prioritized for replacement. Replacement of these assets prior to failure minimizes or eliminates potential outages to customers.

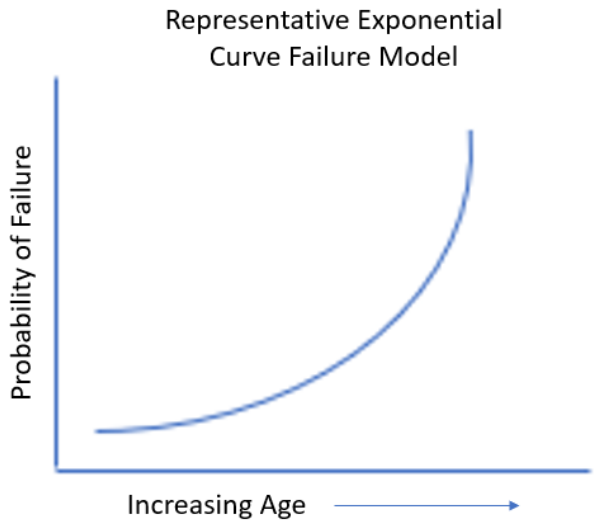
Q: What types of asset management programs exist for transmission assets?

A: There is separate program for wood pole inspections that is very similar to the program for distribution poles.

Q: How does asset age factor into the previously mentioned asset management programs?

A: Expected asset lives are gathered from a variety of industry sources and input in the asset management programs. A common characteristic of all asset classes is that as they age the rate of failure increases dramatically at a nearly exponential rate. An example of this 'hockey stick' failure curve can be seen in figure 2.

Figure 2



Q: What can be learned from the failure curves of various asset classes?

A: To prevent reliability issues associated with aging infrastructure we should replace assets at a pace that stays ahead of the failure curve of each respective asset.

Q: Have historical asset replacement levels been adequate to address system needs related to aging infrastructure?

A: No. In Missouri the pace of replacing aging assets was not keeping up as evidenced by the two tables below which show the average age for major assets for T&D compared to the expected life of such assets.

Table 1 - Transmission Assets Age Comparison

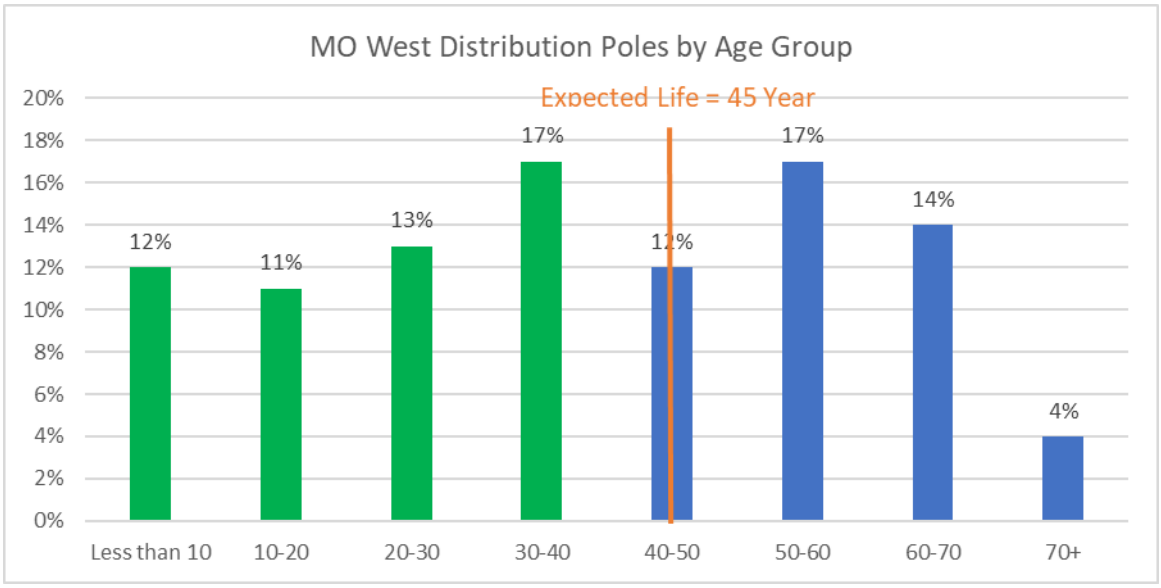
Key Asset Types	Average Age (years)		Expected Life (years)
	MO West	MO Metro	
Wood Poles	44	43	40-45
Overhead Conductor	39	34	50
Substation Transformer - Non-LTC	31	42	45-50
Circuit Breakers - Air	41	43	40
Circuit Breakers - Oil	52	54	40

Table 2 – Distribution Assets Age Comparison

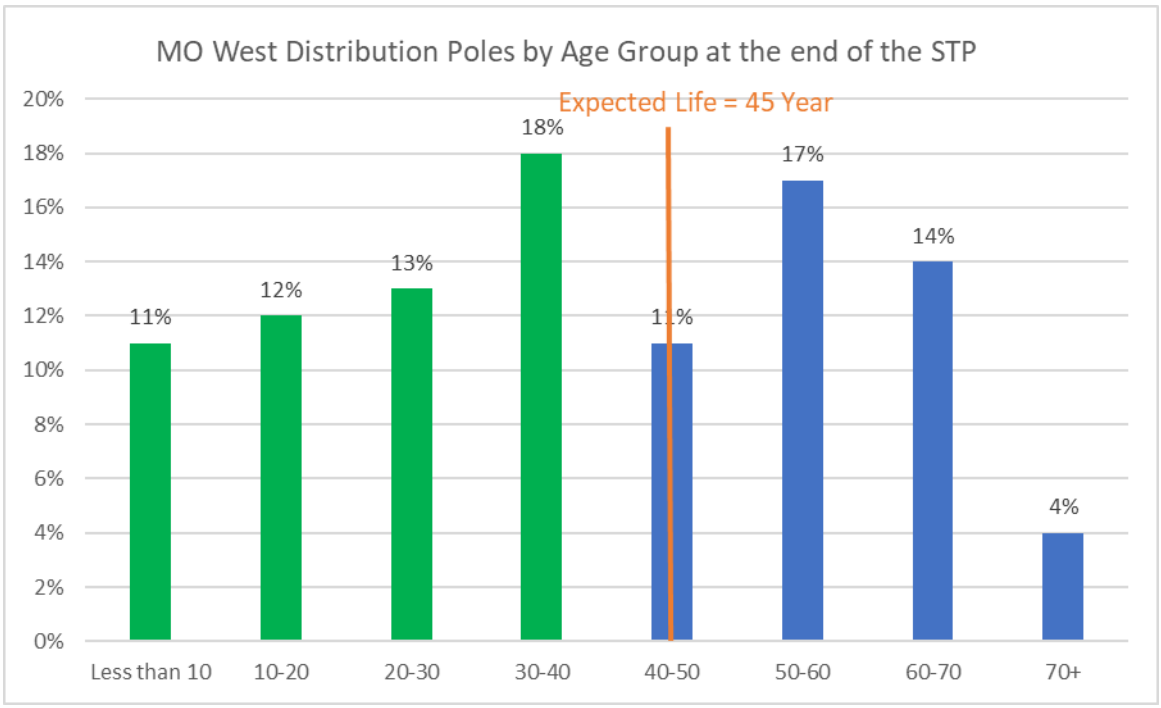
Key Asset Types	Average Age[1] (years)		Expected Life (years)
	MO West	MO Metro	
Overhead Conductors	38	37	30
Underground Conductors	29	22	30
Poles	37	39	40-45
Line Transformers	35	34	20
Padmount Transformers	33	25	20

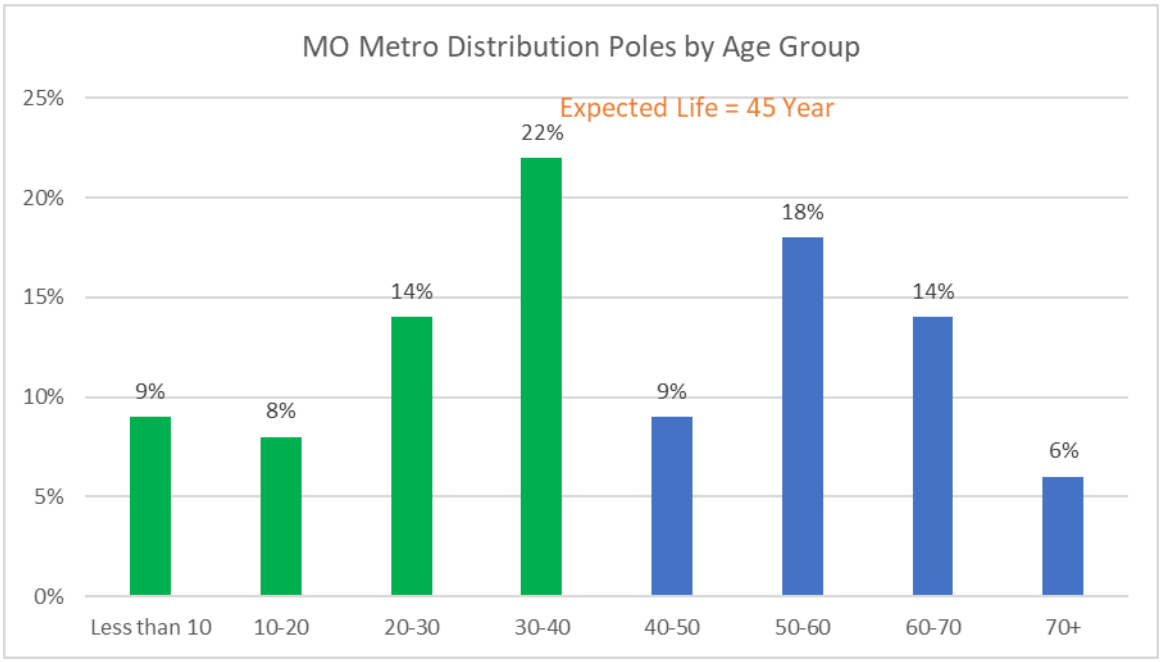
What the table above shows is that the average age of assets is nearing or exceeding expected life of such assets. Currently, approximately 47% of Evergy Missouri West's and 47% Evergy Missouri Metro's distribution poles are either nearing or exceeding their expected useful life. We expect the rate to drop to 46% by the end of 2024 as shown in the figures below.

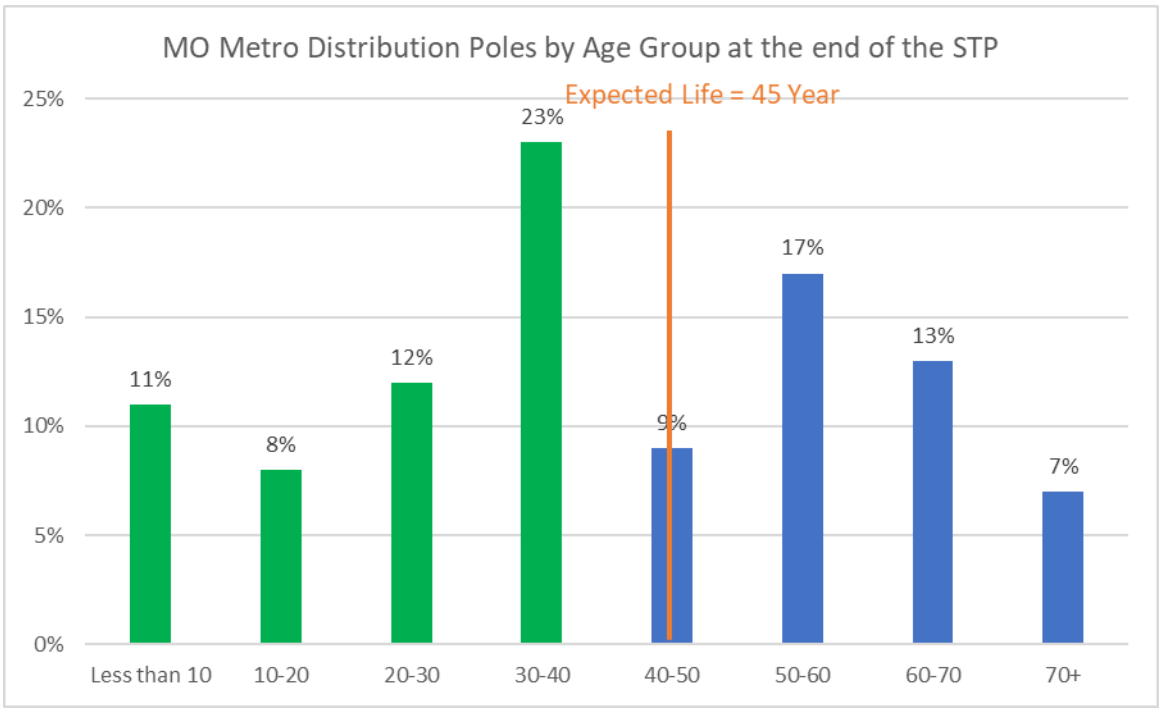
1


MO West Distribution Poles by Age Group
Expected Life = 45 Year
20%
18%
16%
14%
12%
10%
8%
6%
4%
2%
0%
12%
11%
13%
17%
12%
17%
14%
4%
Less than 10
10-20
20-30
30-40
40-50
50-60
60-70
70+

2


MO West Distribution Poles by Age Group at the end of the STP
Expected Life = 45 Year
20%
18%
16%
14%
12%
10%
8%
6%
4%
2%
0%
11%
12%
13%
18%
11%
17%
14%
4%
Less than 10
10-20
20-30
30-40
40-50
50-60
60-70
70+


MO Metro Distribution Poles by Age Group
Expected Life = 45 Year
25%
20%
15%
10%
5%
0%
9%
8%
14%
22%
9%
18%
14%
6%
Less than 10
10-20
20-30
30-40
40-50
50-60
60-70
70+


MO Metro Distribution Poles by Age Group at the end of the STP
Expected Life = 45 Year
25%
20%
15%
10%
5%
0%
11%
8%
12%
23%
9%
17%
13%
7%
Less than 10
10-20
20-30
30-40
40-50
50-60
60-70
70+

Q: Have customer rates benefitted from the historical asset replacement levels in Missouri by deferring asset replacements?

A: Yes, previous replacement levels have benefited customer rates by forestalling needed investments at some expense of reliability. However, the backlog of asset replacements is not sustainable at previous levels without a much larger negative impact on customer reliability as failure curves tend to increase exponentially over time.

Q: Will replacing aging infrastructure have a direct impact on reliability performance?

A: Yes, it will have a direct reliability impact on circuits or sections of the grid where work occurs, but it will not necessarily be reflected in a system-wide decrease of outage minutes experienced until we are much further down the road with our asset replacement programs. The majority of the benefit from asset replacements is to prevent future outages from happening that are not currently occurring on the system by replacing the assets right before the end of their useful life.

Q: What other types of capital investments is Evergy implementing to improve system performance?

A: In addition to programmatic asset replacement system improvements, specific projects are also prioritized and budgeted which focus on increasing system resiliency through the addition of contingency options, ensuring sufficient capacity to meet expected future loads, and implementation of automation and communicating devices. These specific projects often include replacement of aged assets, but do so as part of a larger, geographically targeted project (as

opposed to programmatic asset replacement which is prioritized across the service territory).

Q: How are these specific projects prioritized as part of Evergy's budgeting process?

A: As mentioned above, these projects can have a variety of potential benefits, from improving system resiliency through the addition of contingency options to replacing aged assets. As a result, these projects are scored across several differently weighted value dimensions to create an overall score which can be used to gauge the relative benefits provided by various multi-faceted projects. The benefit categories used in calculating these scores are outlined below:

- Customer Reliability: Within Customer Reliability, score is based on a composite of: Asset Criticality, Health and Risk, Power Quality Impacts, Risk of Potential Overload, and Availability of Contingency. Transmission projects also incorporate the benefits of relieving congestion.
- Public Impact: Includes potential benefits for critical customers or mitigation of public impact risks (e.g., environmental events).
- Employee Benefit: Benefits in reducing employee safety risk or improving workforce productivity.
- Growth & Technology: Benefits in implementing new, strategic technologies (e.g., automation) or supporting a strategic initiative in some way (e.g., conversion to standard voltages).

- Financial – Net Present Value ("NPV") of Revenue Requirements & NPV of Net Income: These financial metrics are still being refined and do not currently impact the relative score of distribution projects because they essentially offset each other. Fundamentally, they are meant to represent the customer cost impact (revenue requirement) and the net income impact of capital expenditures.

Q: What are 'contingency options' in the context of Evergy's T&D system?

A: Contingency options are system configuration changes that can be implemented in the event of an outage to restore service without causing an overload for an affected area. Examples of contingency projects include, but are not limited to, building new ties between circuits, adding new switching options and capacity within substations, increasing circuit or line segment capacities to offer more switching options, and installing a new substation to provide an alternate voltage source for a particular area. The availability of contingencies is assessed through annual planning evaluations and budget projects are identified for prioritization as an output of these evaluations.

Q: What are the benefits of contingency-based projects to the T&D capital investment plan?

A: While adding contingencies does not mitigate the risk of outages occurring, they make the system more resilient and better able to respond, often reducing the duration of outages. Contingencies can often be added at a lower cost than a full rebuild or broad asset replacements.

Q: Are there other ways that Evergy's capital investment plan can impact the duration of outages?

A: In addition to traditional asset replacement and specific budget projects, we have initiatives to install new communicating devices (e.g. reclosers) that will integrate with existing and future software systems to provide real-time visibility into system performance, as well as reduce or in some cases eliminate outage times experienced by our customers by automating some restoration activities.

Q: How do customers benefit from Evergy's investments in infrastructure?

A: There are a variety of benefits including lower operating costs, enhanced grid resiliency, upgraded system visibility for quicker outage response times, improved asset data quality to enable predictive maintenance (i.e., systemically replace aging infrastructure before the end of useful life), more flexibility to incorporate distributed generation into the system, meeting evolving expectations related to increasingly sensitive customer equipment and power quality requirements, and reducing energy losses experienced in older equipment.

Q: Has Evergy had any third party review of its current capital investment strategy?

A: We engaged the UMS Group, a firm specializing in enterprise-level value creation, performance management solutions, and utility asset management, to study our capital plan. A copy of the study is attached as Schedule BA-1.

Q: What were the results of the study conducted by UMS Group?

A: UMS confirmed Evergy's capital investment levels and prioritization processes that are designed to deliver benefits to customers. An excerpt from its executive

summary reads: "The Plan, as presented, will produce commensurate benefits within a reasonable timeframe, while appropriately addressing the major risks that could affect the Company's ability to provide safe, reliable and cost-effective service to its Kansas and Missouri customers. Further, it positions Evergy for the impending energy transition that is expected to occur over the next decade, assuring a strong foundation with sufficient flexibility to manage through most foreseeable uncertainties."

Q: What benefits did UMS Group determine would be realized from Evergy's latest T&D capital investment plan?

A: UMS Group found reliability improvements, operational savings, and customer benefits, as summarized below in Table 3.

Q: How long does it take for the benefits listed in Table 3 to be realized?

A: There is generally a two to three-year lag between an increase in capital investment geared toward improving the delivery system and the actual realization of benefits. It should also be noted that UMS Group's study encompasses T&D infrastructure investment projects for fiscal years 2020 through 2024, of which only 24 months has been executed at the time of this filing. The calculated benefits in the table below only apply to assets impacted by the plan and do not consider overall system results.

Q: Are there any other benefits of Evergy's current capital plan?

A Yes, the current capital plan will have a positive effect on existing reliability levels by proactively replacing assets and hardening the system before components fail. Other benefits include operational efficiencies which consist of

outage elimination savings and reduced reactive work savings. In addition, benefits include customer benefits of "Reduced Overtime Savings" and "Avoided Customer Interruptions Savings." All benefits are summarized in Table 3 below.

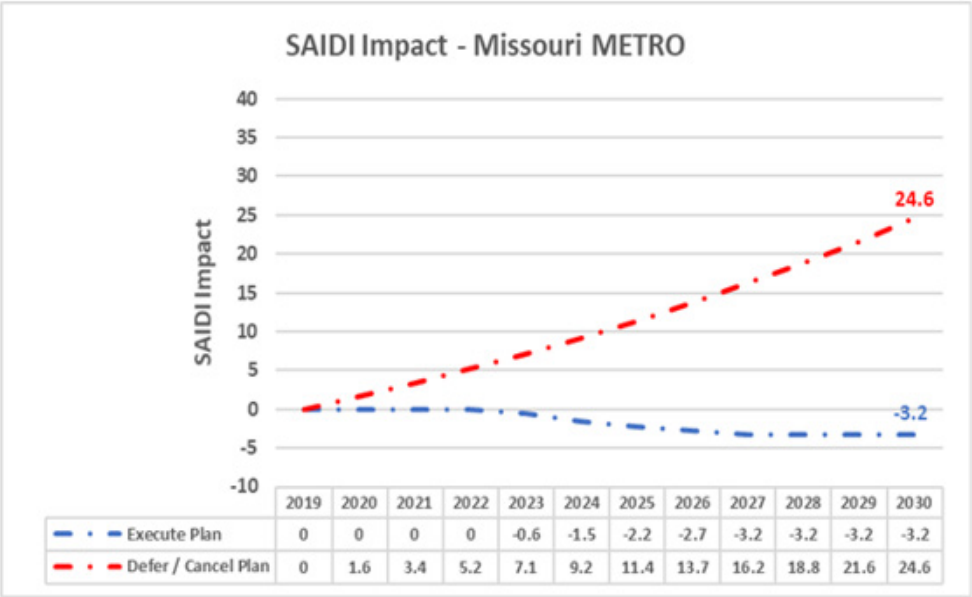
Table 3

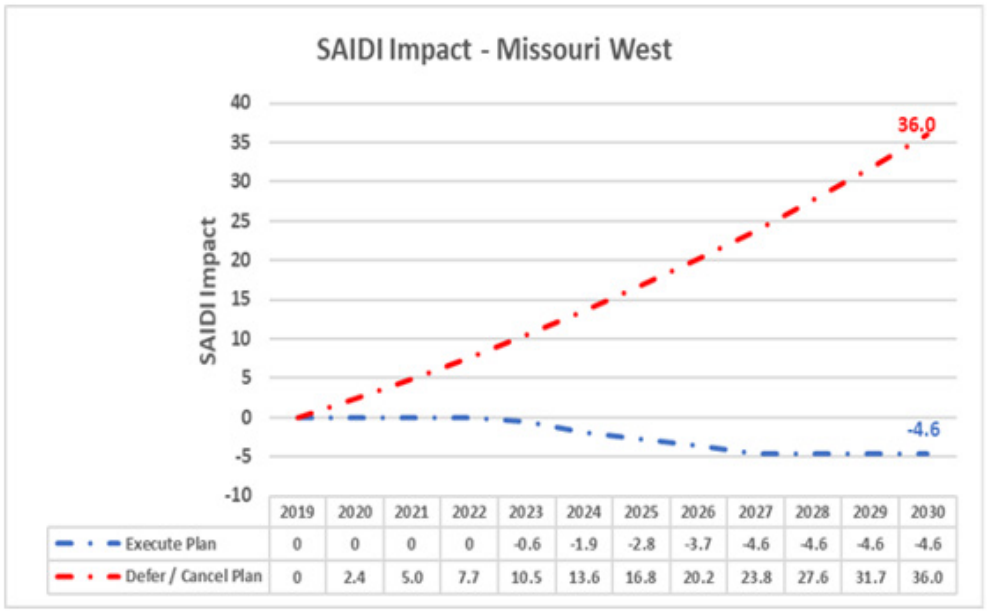
Category	Metric	End-of-Plan Incremental (Annual) Impacts (in millions)		
		Missouri Metro	Missouri West	Total
Operational Efficiencies	Outage Elimination Savings	$5.30	$8.80	**$14.10**
	Reduced Reactive Work Savings	$1.50	$1.70	**$3.20**
Customer Benefits	Reduced Overtime Savings	$4.20	$6.90	**$11.10**
	Avoided Customer Interruption Savings (DOE ICE Model)	$4.20	$7.10	**$11.30**
Total Operational Efficiencies and Customer Benefits		**$15.20**	**$24.50**	**$39.70**

Q: Is there a risk to the T&D system absent the increased spend in Evergy's capital plan?

A: Yes. If the current T&D capital plan was not in effect, both of Evergy's Missouri jurisdictions would have been at higher risk of experiencing a degradation of reliability compared to 2019 levels, according to UMS Group's analysis. The differences are shown in Figure 4.

Figure 2





Q: Were the T&D investments discussed in your testimony made consistent with Section 393.1400 RSMo. which allows certain utility investments to be deferred to a regulatory asset?

A: Yes, the T&D projects are qualifying electric plant. Please refer to Company witness Ronald Klote for more discussion regarding PISA requests in this case.

Q: Please describe the rationale for the storm reserve requested in this case?

A: A storm reserve is a systematic method to collect revenues from customers to be set aside and used for extraordinary storm Operating & Maintenance ("O&M") expenses. Any non-labor O&M costs above $200,000 would be charged against the reserve. The adequacy of the reserve could be reviewed at each rate proceeding.

Q: How could a storm reserve benefit customers and the Company?

A: The storm reserve benefits customers by smoothing out major storm expenses year-over-year to be recovered in rates. This smoothing of storm expenses will create less rate volatility from rate case to rate case. The nature of storms creates volatility in expense, and a reserve will help to smooth the cost of these events in rates for customers. The Company receives a benefit from this mechanism because there is a smoothing of storm expenses from an operating perspective. By recording a levelized expense amount on a monthly basis in a storm reserve liability account, storm expenses can be charged against this liability when they occur. This creates less volatility in earnings associated with these significant storm events.

Q: Do you have personal history operating with a storm reserve in place?

A: Yes, for many years and during the entirety of my time with Westar Energy, now doing business as Evergy Kansas Central, we maintained a storm reserve and rates were set by the Kansas Corporation Commission that supported the maintenance of the storm reserve.

Q: In your experience has the Evergy Kansas Central storm reserve been effective and operated as described?

A: Yes. We modeled the requested storm reserve in this case after the Evergy Kansas Central storm reserve. For many years we have found that the storm reserve operates as intended in smoothing the amounts requested from customers in rates while also providing the opportunity to smooth potential utility operating earnings volatility year-to-year that can result from variations in storm intensity.

Q: What is the proposed process associated with this request for Evergy in this case?

A: Please see the Direct Testimony of Company Witness Ronald Klote for a discussion on the establishment of the reserve, the management of the reserve, and the plan to follow when the costs of storm damage exceed the storm reserve balance.

Q: Does this conclude your testimony?

A: Yes, it does.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Evergy Metro, Inc. d/b/a Evergy Missouri Metro's Request for Authority to Implement A General Rate Increase for Electric Service	))))	Case No. ER-2022-0129

AFFIDAVIT OF BRUCE AKIN

STATE OF MISSOURI)
) ss
COUNTY OF JACKSON)

Bruce Akin, being first duly sworn on his oath, states:

1. My name is Bruce Akin. I work in Topeka, Kansas, and I am employed by Evergy Metro, Inc. as Vice President, Transmission and Distribution.

2. Attached hereto and made a part hereof for all purposes is my Direct Testimony on behalf of Evergy Missouri Metro consisting of twenty-three (23) pages, having been prepared in written form for introduction into evidence in the above-captioned docket.

3. I have knowledge of the matters set forth therein. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded, including any attachments thereto, are true and accurate to the best of my knowledge, information and belief.

Bruce Akin

Subscribed and sworn before me this 7th day of January 2022.

Notary Public

My commission expires: 4/26/2025

ANTHONY R. WESTENKIRCHNER
NOTARY PUBLIC - NOTARY SEAL
STATE OF MISSOURI
MY COMMISSION EXPIRES APRIL 26, 2025
PLATTE COUNTY
COMMISSION #17279952

SCHEDULE BA-1

CONTAINS CONFIDENTIAL INFORMATION NOT AVAILABLE TO THE PUBLIC.

ORIGINALS FILED UNDER SEAL.