

Exhibit No. 3

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
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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

1 **Q: Please state your name and business address.**

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

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

5 A: I am employed by Evergy Metro, Inc. I serve as Vice President, Transmission
6 and Distribution (“T&D”) for Evergy Metro, Inc. d/b/a as Evergy Missouri Metro
7 (“Evergy Missouri Metro”), Evergy Missouri West, Inc. d/b/a Evergy Missouri
8 West (“Evergy Missouri West”), Evergy Metro, Inc. d/b/a Evergy Kansas Metro
9 (“Evergy Kansas Metro”), and Evergy Kansas Central, Inc. and Evergy South,
10 Inc., collectively d/b/a as Evergy Kansas Central (“Evergy Kansas Central”) the
11 operating utilities of Evergy, Inc.

12 **Q: Who are you testifying for?**

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

16 **Q: What are your responsibilities?**

17 A: I am responsible for oversight of construction, operation, and maintenance
18 functions for T&D throughout all of Evergy’s jurisdictional territories including

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

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

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

11 **Q: Have you previously testified in a proceeding at the Missouri Public Service
12 Commission (“MPSC” or “Commission”) or before any other utility
13 regulatory agency?**

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

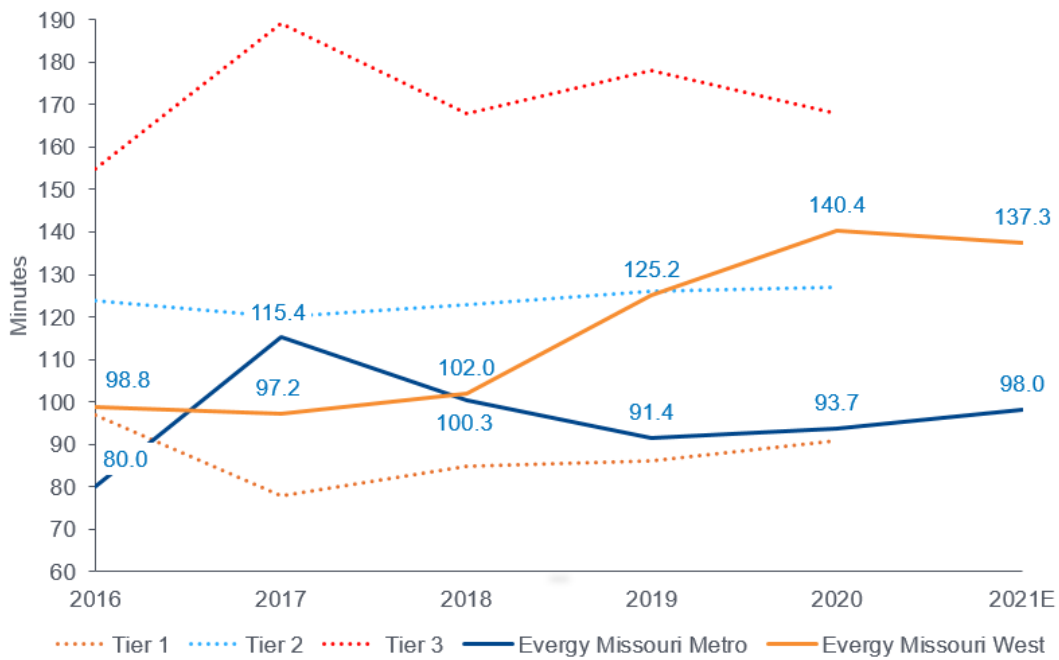
16 **Q: What is the purpose of your testimony?**

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

1 **Q: How is Evergy’s T&D system currently performing?**

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

8 **Figure 1 – Historical IEEE Normalized SAIDI Comparison**



9
10 **Q: What drives reliability performance?**

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

1 **Q: Describe Evergy’s vegetation management strategy.**

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

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

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

1 **Q: Have Evergy Missouri Metro and Evergy Missouri West opted into Plant In**
2 **Service Accounting (“PISA”)?**

3 A: Yes. After the legislature passed Senate Bill 564 on May 16, 2018 (signed by the
4 Governor on June 1, 2018), Evergy Missouri Metro and Evergy Missouri West
5 filed to adopt PISA on December 31, 2018. We have been actively investing in
6 our system with a focus on reliability and grid modernization under capital
7 investment plans that have been provided to stakeholders and the Commission
8 annually in February with our latest capital investment plan filed on February 26,
9 2021.

10 **Q: Please provide summarizing comments regarding your team’s processes and**
11 **approach to capital asset management planning?**

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

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

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

6 **Q: What is grid resiliency?**

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

12 **Q: What is system hardening?**

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

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

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

1 **Q: What is Evergy’s asset management strategy?**

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

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

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

14 ▪ The Lateral Improvement Program targets aging infrastructure, excessive
15 lateral outage events, and customer complaints generated from these
16 events. In 2019, a risk-based investment model (AssetLens) was
17 developed to identify overhead distribution primary conductor and poles
18 for replacement in Missouri. The model uses several sources of data,
19 including asset characteristics, asset condition, and historical outage
20 information. In 2021, the risk-based investment model was expanded to
21 include underground and network equipment across all areas.

22 ▪ The Wood Pole Life Extension and Replacement Program is a capital
23 program focused on wood pole replacement or pole reinforcement based

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

7 ▪ The Proactive Cable Replacement/Rehabilitation Program targets direct
8 buried underground residential distribution (“URD”) primary cables that
9 are shown to have elevated risk of failure based on historical cable failure
10 analysis. The program targets high risk URD cables which are identified
11 based on age, condition, performance among other factors. High risk cable
12 segments are evaluated using partial discharge testing to determine the
13 cable’s condition. Based upon the results of these tests, cable segments
14 are selected to be replaced. Replacement of these cable segments prevents
15 failures on the system and reduces customer outage minutes.

16 ▪ The Manhole Vault Top Replacement Program focuses on degraded
17 underground manhole ceilings identified during the detailed manhole
18 inspections. The manholes are inspected on an 8-year cycle as mandated
19 in Missouri by the MPSC. Replacement of these manhole vault tops
20 prevents damage to installed underground electrical equipment and
21 reduces public safety concerns.

22 ▪ The Network Rehabilitation Program uses Evergy craft knowledge and
23 results from the detailed manhole inspections mandated in Missouri by the

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

- 5 ■ The High Outage Count Customers Program, also known as the “Worst
6 Performing Circuit” Program, is a circuit-based program addressing
7 service reliability issues associated with customers experiencing
8 abnormally high outage counts, based upon MPSC regulatory standards.
9 Evergy identifies high outage count customers, investigates their outage
10 events, and develops solutions to improve their circuit reliability.
11 Analyzing annual outage management system records and field ultrasound
12 inspection results assists in understanding root causes and the ensuing
13 action required to mitigate future incidents.

- 14 ■ The CEMI Improvement Program focuses on making repairs and
15 improvements for customers experiencing 6 or more interruptions over a
16 12-month period. Interruption cause code data is analyzed to determine
17 the root causes and appropriate corrective actions required to mitigate
18 future incidents. This program was developed and rolled out in 2021 in
19 the Missouri jurisdictions.

- 20 ■ The Feeder Improvement Program is a new program starting in 2022.
21 This program will target feeder segments identified as being high risk
22 through data driven tools like AssetLens. Corrective actions that will be
23 considered include undergrounding, rebuilding and reconductoring.

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

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

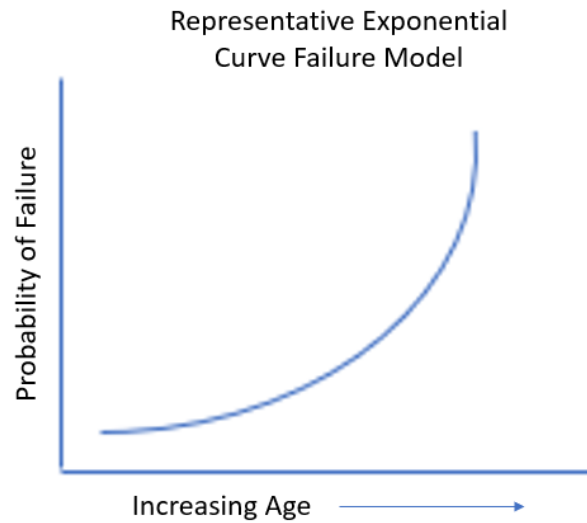
13 **Q: What types of asset management programs exist for transmission assets?**

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

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

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

Figure 2



1

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

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

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

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

1

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

2

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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

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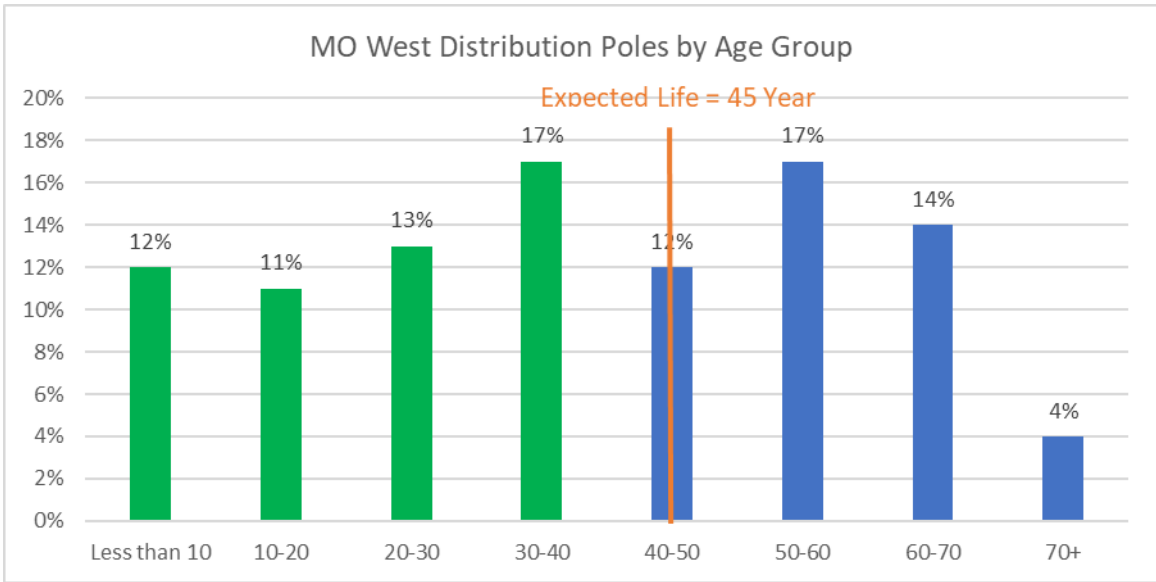
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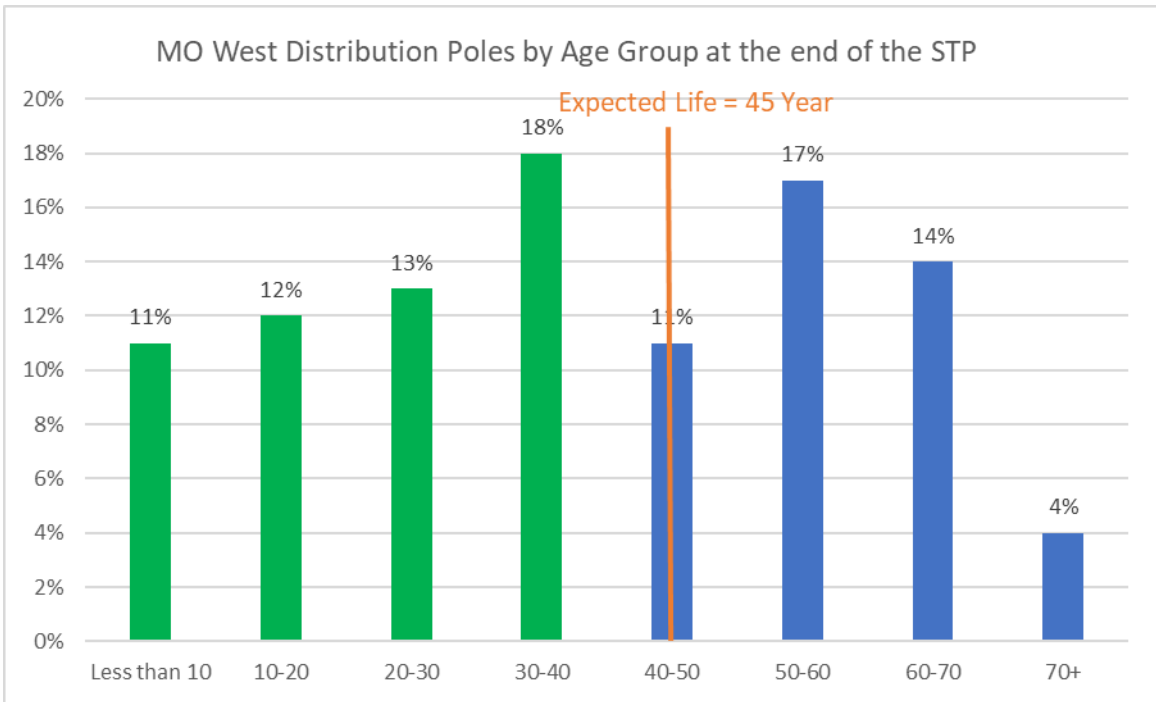
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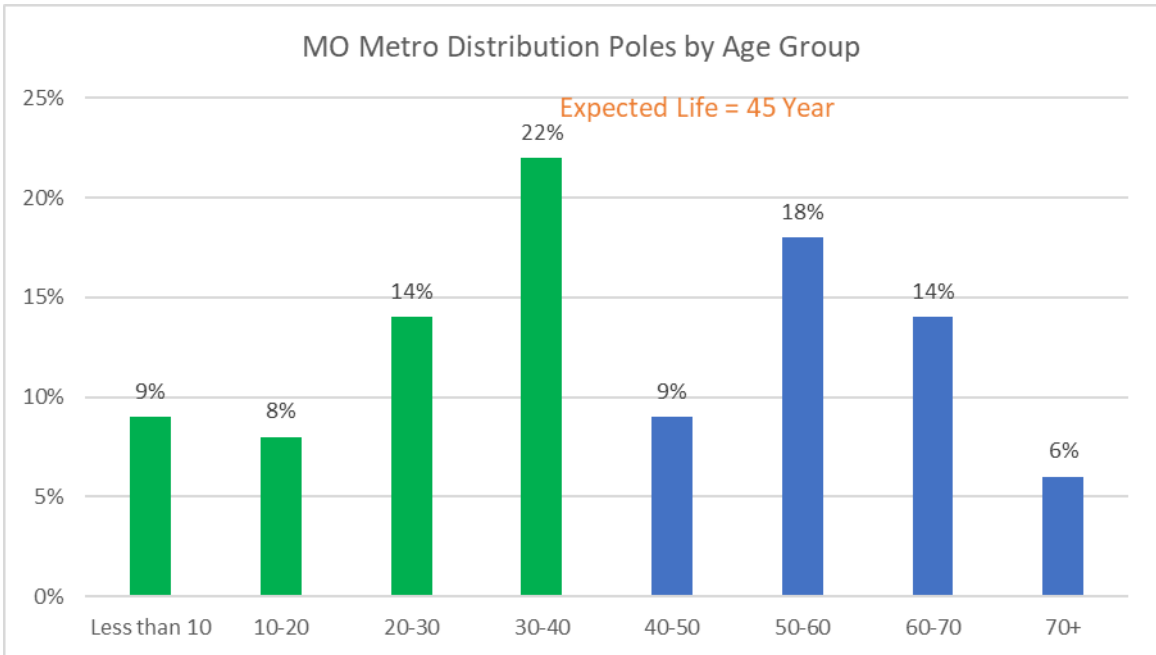
What the table above shows is that the average age of assets is nearing or exceeding expected life of such assets. Currently, approximately 47% of Evergy Missouri West's and 47% Evergy Missouri Metro's distribution poles are either nearing or exceeding their expected useful life. We expect the rate to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



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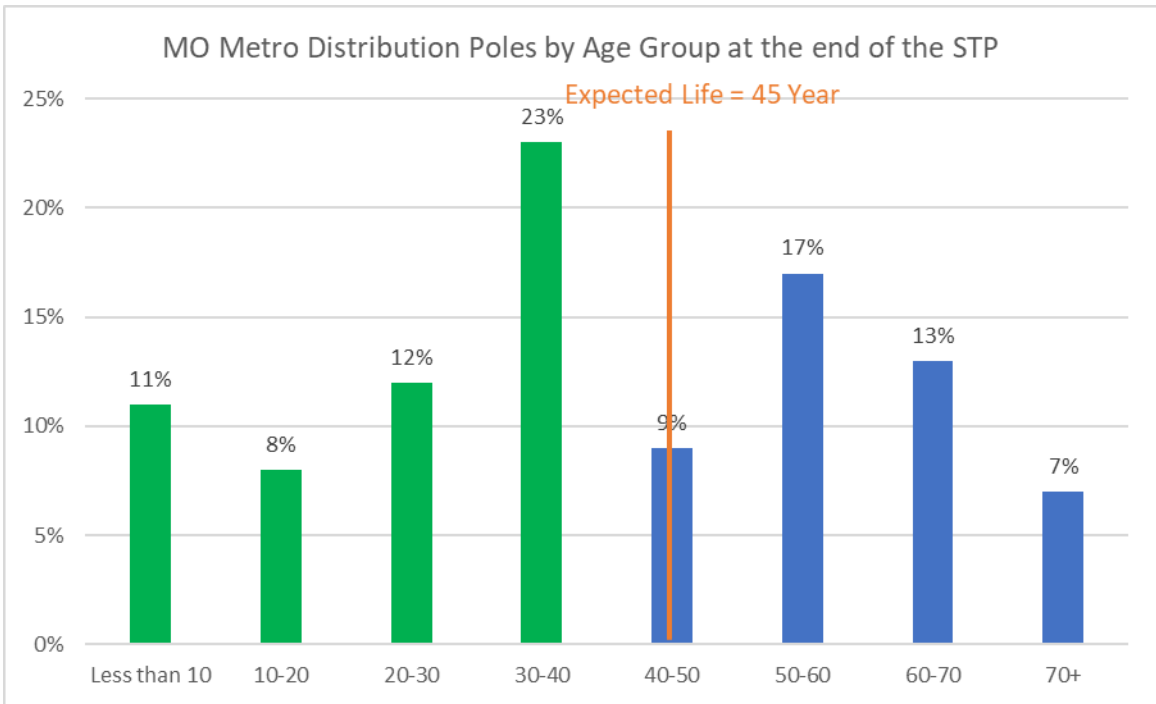


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1 **Q: Have customer rates benefitted from the historical asset replacement levels in**
2 **Missouri by deferring asset replacements?**

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

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

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

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

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

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

3 **Q: How are these specific projects prioritized as part of Evergy’s budgeting**
4 **process?**

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

10 The benefit categories used in calculating these scores are outlined below:

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

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

7 **Q: What are ‘contingency options’ in the context of Evergy’s T&D system?**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

20 **Q: Are there any other benefits of Evergy’s current capital plan?**

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

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

4 **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

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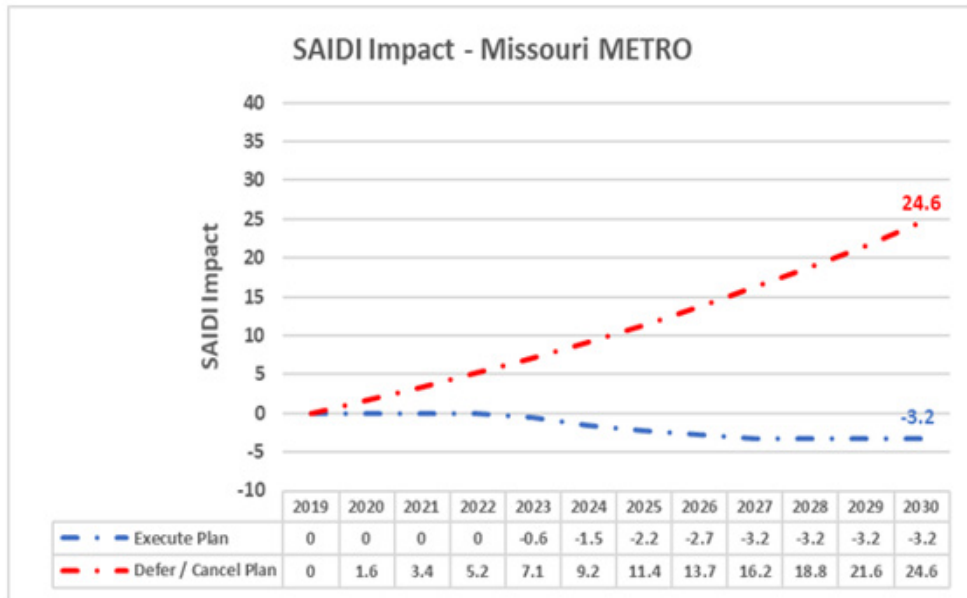
6 **Q: Is there a risk to the T&D system absent the increased spend in Evergy’s**
 7 **capital plan?**

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

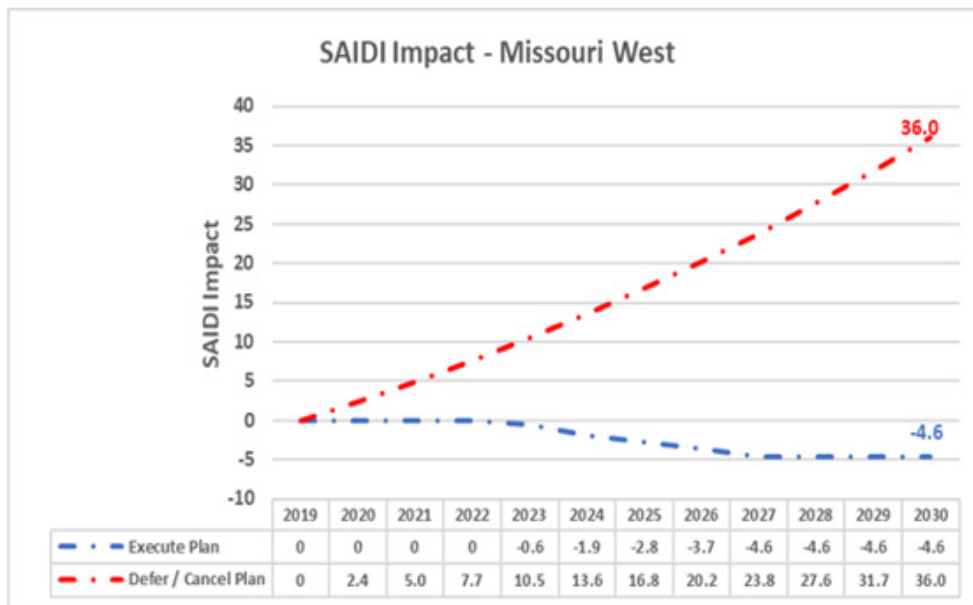
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Figure 2



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

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

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

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

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

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

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

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

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

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

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

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

14 **Q: Does this conclude your testimony?**

15 A: Yes, it does.

SCHEDULE BA-1

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