

**BEFORE THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS**

DIRECT TESTIMONY OF

RYAN P. MULVANY

**ON BEHALF OF EVERGY METRO, INC., EVERGY KANSAS
CENTRAL, INC. AND EVERGY KANSAS SOUTH, INC.**

**IN THE MATTER OF THE APPLICATION OF EVERGY
KANSAS METRO, INC., EVERGY KANSAS SOUTH, INC.
AND EVERGY KANSAS CENTRAL, INC. TO MAKE CERTAIN
CHANGES IN THEIR CHARGES FOR ELECTRIC SERVICE
PURSUANT TO K.S.A. 66-117.**

Docket No. 23-EKCE-775-RTS

April 25, 2023

1 **I. INTRODUCTION**

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

3 A: Ryan P. Mulvany. My business address is 1200 Main, Kansas City, Missouri 64105.

4 **Q: On whose behalf are you testifying?**

5 A: I am testifying on behalf of Evergy Kansas Central, Inc. and Evergy Kansas South, Inc.
6 (referred to collectively as “EKC”) and Evergy Kansas Metro, Inc. (“EKM”), (collectively
7 “Evergy Kansas” or the “Company” in this proceeding.) For clarity in this testimony, I refer
8 to EKM’s and EKC’s parent company as Evergy, Inc.

9 **Q: What are your responsibilities with the Company?**

10 A: My responsibilities include oversight of construction, operation, and maintenance
11 functions for Distribution throughout all of Evergy, Inc.’s jurisdictional territories. This
12 includes the execution of Distribution projects identified as part of Evergy’s capital plan,
13 as well as all customer outage restoration field activities.

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

15 A: I received a bachelor’s degree with a major in Business Administration from the University
16 of Kansas in 2001 and a master’s degree in Business Administration in 2006. I began my
17 career as a Staff Auditor for the KCC in 2001. I have worked for Evergy (including one of
18 its predecessors, KCP&L) since 2003. During my tenure with the Company, I have gained
19 broad experience across many functions in both administrative areas and utility operations.
20 My present position is Vice President, Distribution, which includes responsibility for all
21 distribution plant and operations.

22 **Q: Have you previously testified in a proceeding before the Kansas Corporation**
23 **Commission (“Commission” or “KCC”) or before any other utility regulatory agency?**

1 A: Yes. I have previously filed testimony as a KCC staff member in Docket No. 03-KGSG-
2 02-RTS and Docket No. 02-EPDE-488-RTS.

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

4 A: My testimony (a) describes the EKM and EKC distribution systems; (b) identifies and
5 discusses reliability performance; (c) describes specific challenges to maintaining and/or
6 improving Evergy Kansas' distribution system reliability; (d) explains our distribution
7 system investment strategy and the underlying process for selecting projects based on
8 affordability and maximizing customer value; and (e) identifies the major investments and
9 programs that are the product of this strategic process. I also discuss our external review
10 process for its distribution assets and urge approval of a storm reserve for EKM similar to
11 the KCC-authorized storm reserve that has been in place for EKC since 2002.

12 **II. EVERGY KANSAS DISTRIBUTION SYSTEM: MAGNITUDE,**
13 **COMPONENTS AND PERFORMANCE**
14

15 **Q. Please describe the major components of the Evergy Kansas distribution system.**

16 A. The Evergy Kansas distribution system includes approximately 40,000 line-miles, 800,000
17 distribution poles, 242,000 overhead distribution transformers, and 100,000 underground
18 distribution transformers. Together, EKM and EKC serve more than a million retail
19 customers.

20 **Q. What is the average age of Evergy Kansas' distribution assets?**

21 A. Table 1 below shows the average age of key asset types (conductors, poles, and
22 transformers) for both EKM and EKC as well as the expected lives for those asset types.

1

Table 1: Average Age and Expected Life of Key Asset Types

Key Asset Type	Average Age (years)		Expected Life (years)
	Kansas Central	Kansas Metro	
Overhead Conductors	37	37	30
Underground Conductors	24	23	30
Poles	39	37	40-45
Overhead Transformer	26	34	20
Underground Transformers	20	26	20

2

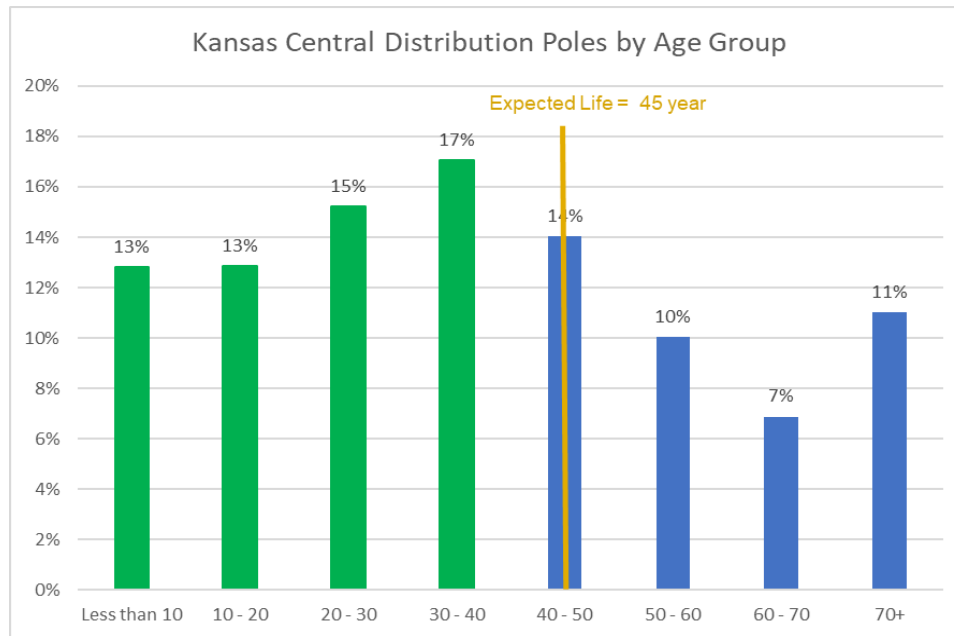
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4 Figures 1 and 2 below contain a more granular display of the age of distribution poles by 10-year
5 age groupings for each entity.

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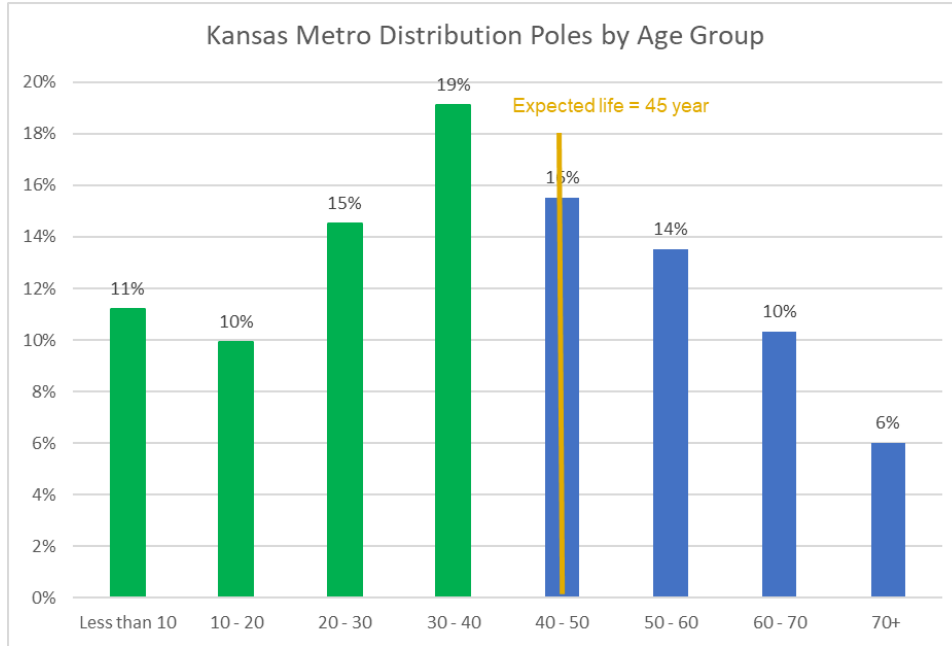
Figure 1: EKC Distribution Pole Age Groupings



8

1

Figure 2: EKM Distribution Pole Age Groupings



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4 **Q. Although you do not have direct administrative responsibility for the Company's**
5 **transmission system, are you familiar with the age of those assets?**

6 A. Yes. I am familiar with the age of the Company's transmission assets. Similar to our
7 distribution system, much of the transmission system is relatively old with a significant
8 percentage of those assets exceeding their expected useful lives.

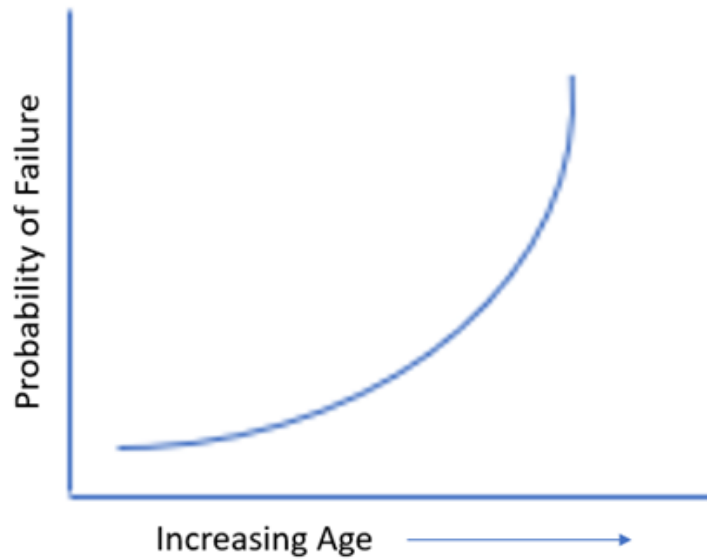
9 **Q. Does the age of key distribution and transmission assets affect reliability of performance?**

10 A. Yes. A common characteristic of all asset classes is that the rate of failure increases
11 dramatically as they age – ultimately occurring at an exponential rate. An illustration of
12 this “hockey stick” failure curve is displayed in Figure 3 below.

1

Figure 3: Failure Curve

Representative Exponential
Curve Failure Model



2

3 To avoid the negative age-driven impacts on system reliability, assets should be replaced
 4 at a pace that stays ahead of their respective failure curves. Accomplishing this objective
 5 in a manner that is consistent with our focus on affordability and maximizing customer
 6 value is an important element of our distribution system investment strategy.

7 **III. RELIABILITY PERFORMANCE MEASURES AND CHALLENGES**

8 **Q. What industry metrics are generally utilized to assess an electric utility’s reliability**
 9 **performance?**

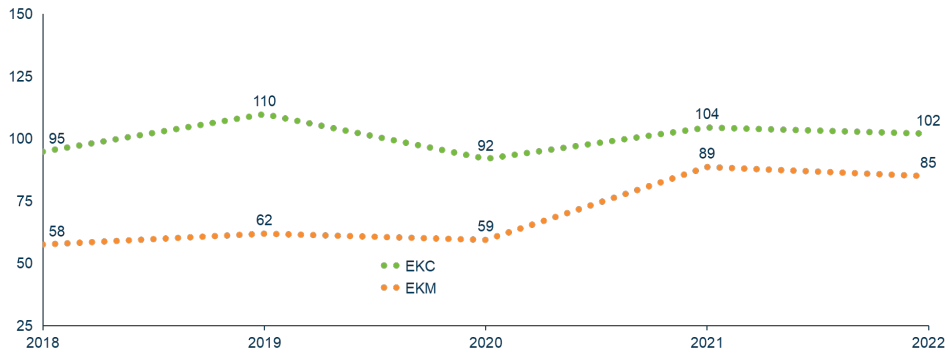
10 A. The most common industry metric used to track a utility’s reliability performance is the
 11 System Average Interruption Duration Index (“SAIDI”). SAIDI measures the total duration
 12 of the average customer interruption. SAIDI averages the total of all customer interruption
 13 durations across the total number of customers served. Another common reliability metric
 14 is the System Average Interruption Frequency Index (“SAIFI”). SAIFI measures how often
 15 customers, on average, experience a sustained service interruption over a predefined

1 period. This metric is derived by dividing the total number of customer interruptions by the
2 total number of customers served.

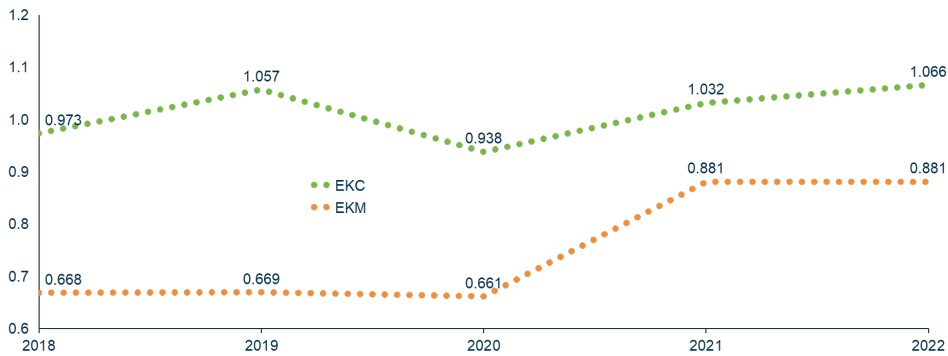
3 **Q. What are the historical reliability metrics for EKM and EKC from 2018 to 2022?**

4 A. Historical SAIDI and SAIFI performance for both entities is shown in Figure 4 below.

5
6 **Figure 4: Historical SAIDI**



7
8 **Historical SAIFI**

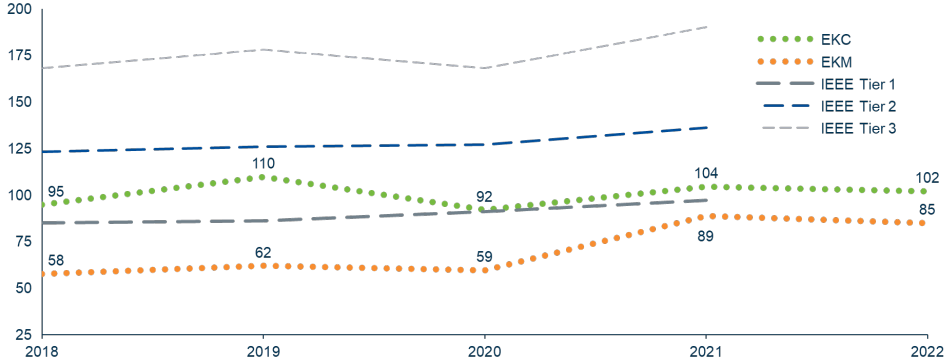


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10
11 **Q. How has SAIDI performance for Evergy Kansas compared historically with the
12 industry generally?**

13 A. Reliability benchmarking shows that Evergy Kansas' SAIDI performance compares
14 favorably with the industry at large. As shown in Figure 5 below, EKC has maintained Tier

1 2 normalized SAIDI performance levels, and EKM has maintained Tier 1 normalized
 2 SAIDI performance levels.

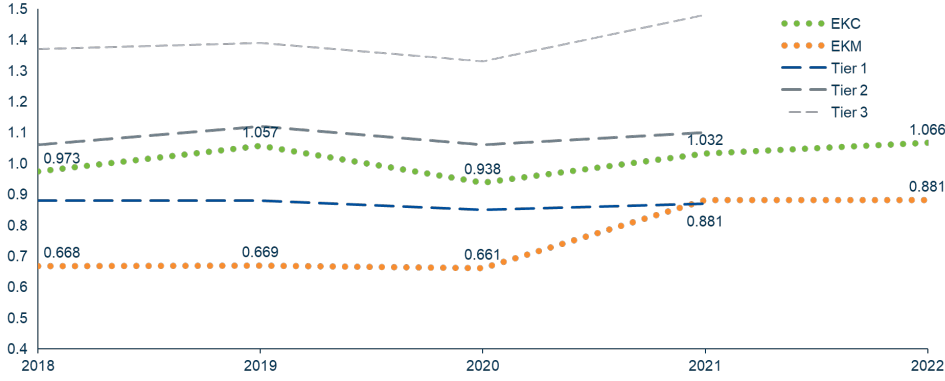
3 **Figure 5: Historical IEEE Normalized SAIDI Comparison**



4
 5
 6 **Q. How has SAIFI performance for Evergy Kansas compared historically with the**
 7 **industry generally?**

8 A. Reliability benchmarking shows that Evergy Kansas’ SAIFI performance also compares
 9 favorably with the industry at large. As shown in Figure 6 below, EKC has maintained
 10 Tier 2 normalized SAIFI performance levels, and EKM has tracked closely with Tier 1
 11 normalized industry performance.

12 **Figure 6: Historical IEEE Normalized SAIFI Comparison**



1 **Q. What trends do you draw from these metrics?**

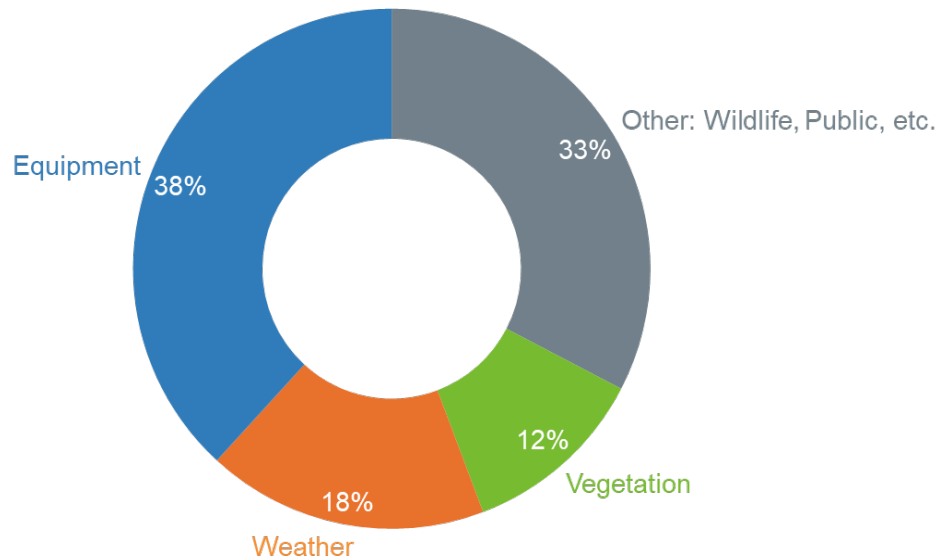
2 A. EKC and EKM have a track record of strong reliability performance. Since 2020, EKC's
3 SAIDI and SAIFI performance has remained relatively consistent while EKM's
4 performance has experienced some degradation. Even with that degradation, however,
5 EKM continues to maintain strong reliability performance metrics relative to peer utilities.

6 **Q. What are the most significant factors affecting Evergy Kansas' reliability performance?**

7 A. A number of factors affect our reliability performance. As I have testified, the age of assets
8 is a significant factor. Other significant factors include asset condition and maintenance,
9 weather, response times, vegetation management, and various impacts from the public and
10 wildlife. Figure 7 below shows the relative percentage of customer outages by cause for
11 Evergy Kansas in the past five years.

12 **Figure 7: Drivers of Customer Outage by Cause**

13 Institute of Electrical and Electronics Engineers (IEEE) normalized percent of Evergy Kansas SAIDI.



14

15 **Q. What specific challenges do you perceive to maintaining and strategically improving**
16 **Evergy's Kansas system reliability and overall quality of service?**

1 A. From a distribution perspective there are four broad challenges we must address to continue
2 meeting the reliability and service expectations of our customers: (1) managing and
3 replacing aging infrastructure; (2) improving our ability to withstand more severe weather
4 patterns; (3) meeting changing demands occasioned by the addition of large-scale
5 renewable generation and behind-the-meter resources as well as the increase in EV
6 penetration; and (4) efficiently deploying new cost-effective technologies that enhance
7 outage performance and improve our predictive maintenance capability. Our ability to meet
8 these challenges is largely investment dependent.

9 **IV. DISTRIBUTION SYSTEM INVESTMENT STRATEGY & PROCESS**

10 **Q. Historically, has Evergy Kansas' investment in distribution assets been adequate to**
11 **address the problem of aging distribution infrastructure?**

12 A. Evergy Kansas' level of investment in distribution assets has not kept pace with the aging
13 distribution infrastructure. As shown above in Table 1, the average age of many key
14 distribution assets is beyond the expected lives of those assets.

15 **Q. What is the magnitude of the increase in distribution asset investments from the 2021**
16 **to the 2022 five-year plans?**

17 A. From 2021 to 2022 the planned five-year investment in distribution assets increased by
18 approximately \$240M.

19 **Q. Please identify the most significant factors contributing to the increase in those**
20 **planned investment levels.**

21 A. The most significant factors contributing to the increase in planned investments are: (1)
22 targeted, condition-based asset replacement, (2) deployment of automation, (3) growth in
23 new customers, (4) and increased input cost. The increased investment will enhance

1 distribution grid resiliency and public safety and will reduce outages resulting from
2 equipment failure. Moreover, increased deployment of distribution automation and
3 technology will support efficient operations of the distribution grid.

4 **Q. Describe the process that has resulted in these adjustments to planned distribution**
5 **asset investments?**

6 A. Evergy Kansas has a systematic annual investment planning process that we use to develop
7 our updated five-year capital investment plan. Identification of specific distribution
8 investments is also part of Evergy Kansas' ongoing budget planning process. This
9 investment planning process is summarized in the chart attached as **EXHIBIT RPM-1**.

10 **Q. How are these projects prioritized?**

11 A. Our asset management strategy is to minimize or prevent customer outages by identifying
12 high-impact assets that can be maintained or replaced prior to failure. Ranking
13 methodologies have been developed based on data and analytics to support the
14 identification of lines, circuits, laterals, substations, and individual assets at risk. These
15 methodologies utilize asset data (such as age, manufacturer model, and condition) gathered
16 through inspections and testing, historical outage information, and various other inputs.
17 Risk scores are used to prioritize individual asset replacement and as inputs to prioritize
18 larger capital projects. Projects can have a variety of benefits, from improving system
19 resiliency through the addition of contingency options to replacing aged assets. Projects
20 are scored across several differently weighted value dimensions to create an overall score
21 that can be used to gauge the relative benefits provided by various multi-faceted projects.
22 The benefit categories used in calculating these scores are outlined below:

- 1 ▪ *Customer Reliability.* The Customer Reliability score is based on a composite of Asset
2 Criticality, Health and Risk, Power Quality Impacts, Risk of Potential Overload, and
3 Availability of Contingency. Transmission projects also incorporate the benefits of
4 relieving congestion.
- 5 ▪ *Public Impact.* The Public Impact score includes potential benefits for critical
6 customers or mitigation of public impact risks (e.g., environmental events).
- 7 ▪ *Employee Benefit.* The Employee Benefit score focuses on reducing employee safety
8 risk and improving workforce productivity.
- 9 ▪ *Growth & Technology.* The Growth & Technology score measures the potential benefits
10 of implementing new, strategic technologies (e.g., automation) or supporting a strategic
11 initiative in some way (e.g., conversion to standard voltages).
- 12 ▪ *Financial.* The Financial score measures the Net Present Value (“NPV”) of Revenue
13 Requirements and Net Income. These financial metrics are still being refined and do
14 not currently impact the relative score of distribution projects because they essentially
15 offset each other. Fundamentally, they are meant to represent the customer cost impact
16 (revenue requirement) and the net income impact of capital expenditures.

17 **Q. Please describe the major program initiatives directed toward economically improving**
18 **distribution system reliability that are the product of Evergy Kansas’ annual planning**
19 **process.**

20 A. There are multiple programs that support improving distribution system reliability:

- 21 ▪ The Lateral Improvement Program targets aging infrastructure and excessive lateral
22 outage events as well as customer complaints related to those events. In 2021, a risk-
23 based investment model (AssetLens) was expanded to include all Kansas overhead

1 distribution primary conductors and poles for evaluation. The model uses several
2 sources of data including asset characteristics, asset condition, and historical outage
3 information. The Lateral Improvement Program has been in place in our EKM areas
4 for many years and will be launched in our EKC areas in 2024.

- 5 ■ The Wood Pole Life Extension and Replacement Program focuses on wood pole
6 replacement or reinforcement based on the results of intrusive wood pole inspections.
7 These inspections are on a 12-year cycle. The intrusive inspection includes ground line
8 inspection via soil excavation, bore/plug, and chemical treatment. This program
9 improves the reliability and resiliency of our system by replacing or reinforcing poles
10 identified as having an increased risk of failure.
- 11 ■ The Proactive Cable Replacement/Rehabilitation Program targets direct buried
12 underground residential distribution (“URD”) primary cables that are identified as
13 having an elevated risk of failure based on historical cable failure analysis. The program
14 targets high-risk URD cables based on age, condition, performance, and various other
15 factors. High-risk cable segments are evaluated using partial discharge testing to
16 determine the cable’s condition. Cable segments are selected for replacement based on
17 the results of these tests. Replacement of high-risk cable segments prevents failures on
18 the system and reduces customer outage minutes.
- 19 ■ The Manhole Vault Top Replacement Program focuses on degraded underground
20 manhole ceilings identified during detailed manhole inspections. Replacement of
21 degraded manhole vault tops prevents damage to installed underground electrical
22 equipment and reduces public safety concerns.

- 1 ▪ The Network Rehabilitation Program uses Evergy Kansas craft knowledge and results
2 from the detailed manhole inspections to identify structures for replacement or
3 remediation. Evergy uses an independent contractor who is an expert in manhole
4 restoration and high-voltage electrical repairs. The work is prioritized based on greatest
5 risk to worker/public safety and impact to customer reliability.
- 6 ▪ The High Outage Count Customers Program, also known as the “Worst Performing
7 Circuit” Program, is a circuit-based program that addresses service reliability issues
8 associated with customers experiencing abnormally high outage counts under KCC
9 regulatory standards. Evergy identifies high outage count customers, investigates their
10 outage events, and develops solutions to improve their circuit reliability. Analyzing
11 annual outage management system records and field inspection results assists in
12 understanding root causes and the ensuing action required to mitigate future incidents.
- 13 ▪ The Customers Experiencing Multiple Interruptions (“CEMI”) Improvement Program
14 focuses on making repairs and improvements for customers experiencing six or more
15 interruptions over a 12-month period. Interruption cause code data is analyzed to determine
16 the root causes and appropriate corrective actions required to mitigate future incidents.
- 17 ▪ The Feeder Improvement Program was launched in 2022. This program targets high-
18 risk feeder segments identified through data driven tools like AssetLens. Corrective
19 actions that will be considered include undergrounding, rebuilding, and
20 reconductoring.

21 **Q. How will Evergy Kansas customers benefit from increased investment in distribution**
22 **assets?**

1 A. There will be multiple customer benefits from increased distribution investment. These
2 benefits include lower operating costs, upgraded system visibility for quicker outage
3 response times, improved asset data quality to enable predictive maintenance (*i.e.*, systematic
4 and timely replacement of aging infrastructure), more flexibility to incorporate distributed
5 generation into the system, meeting evolving expectations relating to increasingly sensitive
6 customer equipment and power quality requirements, and reducing energy losses
7 experienced in older equipment and assets.

8 **V. EXTERNAL REVIEW**

9 **Q. Has the Company engaged a third party to review its current capital investment**
10 **strategy, including investment in distribution assets?**

11 A. Yes. We engaged the UMS Group to study our 2020-2024 Grid Modernization Plan. The
12 UMS Group specializes in enterprise-level value creation, performance management
13 solutions, and utility asset management.

14 **Q. What were the UMS Group conclusions regarding the Company's planned**
15 **distribution asset investments?**

16 A. The UMS Group confirmed the Company's capital investment levels and prioritization
17 processes are designed to deliver benefits to customers. An excerpt from its executive
18 summary reads:

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

1 **Q. Please identify the reasons for any changes in distribution investment levels now**
2 **planned for the Evergy Kansas system compared to the distribution investment levels**
3 **considered in the UMS Group study.**

4 A. Since 2020, investment in risk-based programs has increased to maintain and improve
5 reliability performance. EKC’s annual investment in asset management programs has
6 increased to support proactive 12-year wood pole inspection, proactive underground cable
7 testing and replacement, and continued investment in circuit and circuit segment level
8 system rebuilds. EKM’s annual investments in asset management programs have similarly
9 increased with a focus on lateral improvement projects, expansion of the CEMI program
10 to improve reliability to customers experiencing multiple outages, and feeder improvement
11 projects identified based on risk (e.g., age and condition) to improve reliability.

12 **VI. STORM RESERVE FOR EKM**

13 **Q. Is EKM proposing the establishment of a storm reserve?**

14 A. Yes. Over 20 years ago, the KCC approved a storm reserve for EKC and set rates that
15 supported the maintenance of the reserve. The reserve provides a systematic method to
16 collect revenues to be used for extraordinary storm Operating and Maintenance expenses.
17 The adequacy of the reserve is reviewed in each general rate proceeding. In this proceeding,
18 we are requesting the establishment of a similar reserve for EKM.

19 **Q. How does the storm reserve benefit customers and the utility?**

20 A. The reserve benefits customers by smoothing major storm expenses year-over-year for
21 recovery in rates over time. This smoothing of storm expenses creates less rate volatility
22 from rate case to rate case and helps stabilize the cost of these events in customer rates.
23 The unpredictable nature of storms and the amount of destruction they cause create

1 volatility in expenses. A storm reserve helps flatten the effect of these events in customer
2 rates. The reserve also eliminates the possibility of the Company over-collecting for storm
3 costs if the actual costs of storm damage are lower than what has been established in rates.
4 This is done through evaluation in each general rate case of available storm reserves
5 remaining as compared to expected requirements in determining annual amounts to be
6 included in rates to maintain adequate reserves. Similarly, the utility benefits from the
7 reserve because it also realizes a smoothing of storm expenses from an operating
8 perspective. This, in turn, reduces volatility in earnings associated with significant storm
9 events. As I am certain the KCC is aware, the reserve has worked as intended for EKC and
10 its customers to smooth the amounts requested from customers in rates while also providing
11 the opportunity to smooth potential utility operating earnings volatility year-to-year that
12 may result from variations in storm intensity.

13 **Q. Are the provisions of the proposed storm reserve for EKM the same as those that have**
14 **been approved for EKC?**

15 A. Yes, the proposed EKM storm reserve is identical to the EKC storm reserve. Specific
16 provisions of the requested EKM reserve, including how the reserve would be established,
17 funded and managed, are described in the direct testimony of Company witness Ronald
18 Klote.

19 **VII. PANASONIC FACILITIES INVESTMENT**

20 **Q. Is Evergy Kansas requesting authorization to recover any costs associated with the**
21 **Panasonic project in this general rate case?**

1 A. No. As Company witness Darrin Ives states in his direct testimony, Evergy Kansas is
2 seeking permission from the Commission to file an abbreviated rate case that would allow
3 a request to update rates to reflect Panasonic load related investments.

4 **Q. What facilities investments is Evergy Kansas making to serve the new Panasonic plant**
5 **related load?**

6 A. Investments will be necessary to provide reliable service to the Panasonic plant load. At
7 full production, the Panasonic plant is projected to have roughly 200 to 250 Megawatts of
8 demand. EKC's investments to serve Panasonic include: (1) construction of two new
9 substations, (2) upgrades at three existing substations, and (3) extending or rebuilding
10 approximately 31 miles of transmission lines. Construction activities commenced in the
11 first quarter of 2023, and construction is expected to be complete by the fourth quarter of
12 2025.

13 **Q. How will the costs associated with these investments be recovered?**

14 A. Distribution-related costs will be recovered through rate base additions typically addressed
15 in rate case proceedings.

16 **Q. Does Panasonic not have the obligation to bear the costs of upgrades required to**
17 **serve its load?**

18 A. Panasonic has the obligation to pay for a part of the upgrades, such as distribution
19 investments required to interconnect its load. EKC has the obligation to serve the load and
20 ensure reliability of the power system. Due to the large load addition, system upgrades will
21 be necessary to ensure reliability for all customers. EKC intends to negotiate a special
22 contract with Panasonic and file an application for approval with the Commission on a
23 special contract rate for the associated load related investments.

1 **Q. Please describe the shared benefits that will be derived from upgrades to facilities**
2 **that serve all customers in the area.**

3 A. Typical or smaller scale load additions do not require this level of investment. Due to the
4 size of the Panasonic load, facilities need to be constructed to reliably serve the load and
5 ancillary growth. The Panasonic load is considered the equivalent of a small city and cannot
6 be served from a nearby distribution substation. Facilities will need to be constructed from
7 a reliable source. While the substation is constructed for the purpose of serving this
8 customer, the facilities will result in increased reliability and increased redundancy for
9 other customers and will allow for additional load growth in the area.

10 **Q. Does this conclude your testimony?**

11 A: Yes, it does.

EVERGY ANNUAL CAPITAL INVESTMENT PLANNING PROCESS



For example:

- New customers / customer **growth**
- Future **capacity** requirements
- **Contingency** options to increase resiliency
- Historical **reliability** issues causing customer outages and/or increased maintenance costs
- Changes in **mix of generation** requiring investment in stability and reliability
- Aging **asset condition** or asset not aligning with current standards

Projects or Programs:

- **Projects:** Evaluated based on benefits provided, projects define an effort targeted to address one or more of the identified needs.
- **Programs:** Evaluated based on condition, reliability and criticality, programs define overall efforts that target a specific asset type within one jurisdiction.

Engineering estimates, created to define funding required for each project

Program amounts are estimated based on overall needs within each respective asset category

Projects and Programs are prioritized and moved between years based on:

- Relative **benefits** provided by different solutions
- **Funding availability** by year
- **Interdependencies** between projects or timing requirements
- **Labor availability** for execution in different areas

Prioritized Projects and Programs are combined with annual, recurring budget items and reviewed with a cross-functional team (T&D, Generation, IT, Customer and Finance) prior to incorporation into the final budget

Based on Final Budgets, labor and materials plans are developed to support execution:

Labor:

- Baseline and forecast requirements
- Outline labor strategy
- Design pricing and policies to incentivize labor
- Engage in contractor partnership

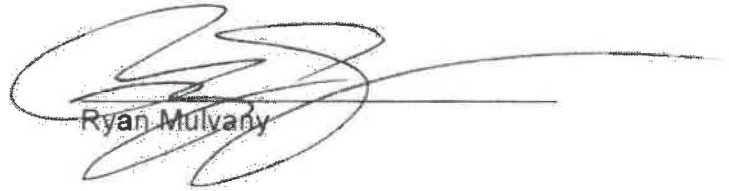
Materials:

- Baseline and forecast long-term materials requirements
- Build trusted supplier discussions in-line with demand
- Lock in trusted suppliers with the right terms
- Set guardrails for procurement within the larger EPC strategy

STATE OF KANSAS)
) ss:
COUNTY OF SHAWNEE)

VERIFICATION

Ryan Mulvany, being duly sworn upon his oath deposes and states that he is the Vice President Distribution, for Evergy, Inc. that he has read and is familiar with the foregoing Direct Testimony, and attests that the statements contained therein are true and correct to the best of his knowledge, information and belief.


Ryan Mulvany

Subscribed and sworn to before me this 24 day of April, 2023.


Notary Public

My Appointment Expires: May 30, 2026

