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State Corporation Commission
of Kansas

BEFORE THE STATE CORPORATION COMMISSION

OF THE STATE OF KANSAS

DIRECT TESTIMONY

OF

JESSICA L. TUCKER

EVERGY KANSAS CENTRAL

DOCKET NO. 23-EKCE-XXX-ACA

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Jessica L. Tucker. My business address is 1200 Main, Kansas City, Missouri 64105-2122.

Q. BY WHOM AND IN WHAT CAPACITY ARE YOU EMPLOYED?

A. I am employed by Evergy Metro, Inc. and serve as Senior Manager, Fuels and Emissions for Evergy Metro, Inc. d/b/a Evergy Kansas Metro ("Evergy Kansas Metro"), Evergy Kansas Central, Inc. and Evergy South, Inc., collectively d/b/a as Evergy Kansas Central ("Evergy Kansas Central"), Evergy Metro, Inc. d/b/a as Evergy Missouri Metro ("Evergy Missouri Metro"), and Evergy Missouri West, Inc. d/b/a Evergy Missouri West ("Evergy Missouri West"). They are the operating utilities of Evergy, Inc. ("Evergy").

Q: WHAT ARE YOUR RESPONSIBILITIES?

A: My primary responsibilities include management and oversight of fuel procurement and logistics (apart from natural gas) and coal combustion residual product management and marketing for Evergy operated generating stations.

Q: PLEASE DESCRIBE YOUR EDUCATION, EXPERIENCE, AND EMPLOYMENT HISTORY.

A. I graduated Summa Cum Laude from Kansas State University in December 1999 with a Bachelor of Science degree in Agriculture. I began my career in the energy industry in January 2001 with Aquila as an Associate Hourly Trader. In this role, my efforts were focused on executing short term physical power transactions in the real time market across various North American Electric Reliability Corporation ("NERC") regions. My employment with Evergy Metro (f/k/a KCP&L) began in August of 2002 as an Hourly Trader on the real time desk. From August 2002 to May 2006, my role focused on buying and selling power in the real time market. In June 2006, I was promoted to Interchange Marketer, which focused my trading activity on day ahead and monthly power transactions. I was also a part of the Company's RTO integration team that prepared the generation dispatching and trading area for participation in the Southwest Power Pool ("SPP") Energy Imbalance Service ("EIS") market, which launched on February 1, 2007. In November 2010, I was promoted to Manager, System Operations (Power). My primary

responsibility was to oversee 24x7 Power Control Center functions, which consisted of real time and day ahead power trading, power scheduling, and generation dispatching operations. This not only included overseeing our participation in the SPP market, but compliance with applicable NERC Reliability Standards. I was also responsible for preparing the dispatching and trading group for participation in the SPP Integrated Marketplace ("IM"), which launched on March 1, 2014. In April 2015, I was promoted to Senior Manager, Power System Operations. In July 2017, I moved into the role of Senior Manager, Fuels & Emissions within the Fuels group.

Q: HAVE YOU PREVIOUSLY TESTIFIED IN A PROCEEDING AT THE KANSAS CORPORATION COMMISSION ("KCC" OR "COMMISSION") OR BEFORE ANY OTHER UTILITY REGULATORY AGENCY?

A: Yes. Beginning in early 2017, I have testified in several dockets before the Missouri Public Service Commission and/or KCC regarding certain topics associated with the Southwest Power Pool Integrated Marketplace or fuel-related subject matter.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. I will address five topics:

- A summary of the information provided in the Company's quarterly RECA submittals made on December 20, 2021, March 18, 2022, June 20, 2022, and September 20, 2022,
- A comparison of 2022 fuel and purchased power costs to 2021 fuel and purchased power costs,

- A comparison of the projected 2022 RECA to its 2022 ACA,
- Fuel procurement planning and practices, and
- A discussion of how the Southwest Power Pool ("SPP") Integrated Marketplace ("IM") provides value to Evergy Kansas Central ("EKC") and the impact it has on planning and operations.

INFORMATION PROVIDED IN QUARTERLY RECA SUBMITTALS

Q. WHAT INFORMATION DOES THE COMPANY SUBMIT WHEN IT SUBMITS ITS RECA FACTORS EACH QUARTER?

A. Evergy Kansas Central's RECA tariff identifies several items that go into the calculation of the RECA factors. Items included in the quarterly projections are fuel and purchased power costs, transmission costs not recovered through the Transmission Delivery Charge ("TDC"), emission allowances and costs to achieve sales to non-requirements customers. On or before the 20th day of the month preceding each calendar quarter, the Company submits to the Commission a report containing projected quarterly RECA factor on a dollars per kWh basis. In this report, the Company shows the total costs, revenues, and kWh used to calculate the dollars per kWh factor.

Q. WERE THERE ANY CHANGES TO THIS QUARTERLY PROCESS IN 2022?

A: Yes. Beginning with the Q1 2022 RECA forecast, EKC transitioned to utilizing the PROMOD model, which is discussed in more detail below. Prior to that time, EKC utilized the PLEXOS model.

COMPARISON OF COSTS FOR 2022 and 2021

Q. HOW DID REALIZED FUEL AND PURCHASED POWER COSTS FOR 2022 COMPARE WITH THOSE REALIZED DURING 2021?

A. As described in the exhibits provided with Ms. Herrington's testimony, for 2022, total fuel and purchased power costs less certain offsets to provide electric service to non-requirements customers, excluding the impacts of Winter Storm Uri, which are used to calculate the ACA factor were **[redacted]**. In 2021, total fuel and purchased power costs less certain offsets to provide electric service to non-requirements customers, excluding the impacts of Winter Storm Uri, were **[redacted]**.

Q. WHY DID FUEL AND PURCHASED POWER COSTS INCREASE FROM 2021 TO 2022?

A. The key drivers for the increase in Evergy Kansas Central's actual fuel and purchased power costs in 2022 as compared to the costs in 2021 were changes in market commodity prices, decreased generation availability, and SPP Revenue Neutrality Uplift ("RNU") charges. Coupled with volatility in market commodity pricing, Evergy Kansas Central experienced significant forced outage issues at our Jeffrey and La Cygne generating facilities and saw a substantial increase in the amount of SPP RNU charge activity throughout 2022.

PROJECTED 2022 RECA VERSUS ACTUAL 2022 ACA

Q. WHAT TYPE OF MODELING IS USED TO DEVELOP THE QUARTERLY RECA FORECAST?

A. In 2022, EKC RECA forecasts were generated using the PROMOD® IV ("PROMOD") software, which is similar to other fundamental price forecasting models that are commonly used in the industry. PROMOD is provided by Hitachi Energy (formerly ABB). PROMOD incorporates details in generating unit characteristics, transmission grid topology and constraints, and market system operations to simulate power flows within and between various energy markets, including but not limited to, Independent System Operators ("ISO"), Regional Transmission Organizations ("RTO"), and other North American Electric Reliability Corporation ("NERC") regions. PROMOD performs a security constrained unit commitment and co-optimized economic dispatch to generate Locational Marginal Prices ("LMP") at the nodal level, similar to how ISOs and RTOs set schedules and determine prices. PROMOD incorporates the latest forecasts or assumptions for commodity and market pricing, generating unit operations and load requirements to generate expected plant dispatch and resulting fuel and purchased power costs.

Q. HOW DID ACTUAL COSTS REFLECTED IN THIS ACA FILING COMPARE TO PROJECTED RECA COSTS INCLUDED IN QUARTERLY FILINGS FOR 2022?

A. As described in the exhibits provided with Ms. Herrington's testimony, actual incurred costs, excluding the impacts of Winter Storm Uri and MKEC, in 2022 were ** ** and revenues collected based on EKC's quarterly RECA forecasts were ** **, with a total under-collection of ** **.

Q. WHAT WERE THE DRIVERS OF THE VARIANCE BETWEEN ACTUAL FUEL AND PURCHASED POWER COSTS IN 2022 AS COMPARED TO THE RECA FORECAST?

A. Although various components of EKC's actual fuel and purchased power costs in 2022 deviated on a month-to-month basis from the RECA quarterly forecasts, the overall result for the year was very close to the 2022 RECA forecast with a total under-collection of only ** **.

FUEL PROCUREMENT PLANNING AND PROCESSES

Q: PLEASE DESCRIBE HOW THE COMPANY BUYS NUCLEAR FUEL

A: Wolf Creek Nuclear Operating Corporation ("Wolf Creek") purchases uranium and has it processed for use as fuel in its reactor. This process involves conversion of uranium concentrates to uranium hexafluoride, enrichment of uranium hexafluoride and fabrication of nuclear fuel assemblies. As of December 31, 2022, Wolf Creek has on hand or under contract all of the uranium concentrates required for operation ** **, and ** ** of the uranium enrichment and conversion services required for operation through ** **. The station also has under contract all of the uranium fuel rod fabrication services required to operate Wolf Creek ** **.

Q. PLEASE DESCRIBE HOW EVERGY KANSAS CENTRAL ACQUIRES ITS NATURAL GAS REQUIREMENTS.

A. Evergy Kansas Central's natural gas-fired generation resources are located on the Southern Star Central Gas Pipeline ("SSCGP"), Kansas Gas Service intra-state pipeline ("KGS"), and ONEOK Gas Transportation, L.L.C., pipeline ("OGT"). Evergy Kansas Central's firm capacity was renewed on April 1, 2020 to 121,425 MMBtu/day firm production zone capacity and 85,580 MMBtu/day market zone capacity on SSCGP. Evergy Kansas Central currently has about 40,000 MMBtu/day capacity on OGT Interruptible Transport Storage. Evergy Kansas Central does not have firm transport on KGS or OGT. If Evergy Kansas Central had to run all its natural gas-fired capacity at once, its Maximum Daily Quantity ("MDQ") would be about 397,000 MMBtu/Day. In the event of a natural gas shortage or other emergency event, some of Evergy Kansas Central's simple cycle gas turbines can operate on #2 diesel. Evergy Kansas Central typically procures physical natural gas on a short-term basis (daily). These physical purchases are from suppliers such as ETC Gas Marketing, Enlink Gas Marketing, Southwest Energy, KOCH Energy Services, Williams Gas Marketing or Spire Marketing.

Q. HOW ARE COAL REQUIREMENTS DETERMINED?

A. As discussed above, Evergy Kansas Central utilizes PROMOD modeling software. It is from PROMOD's generation and fuel burn forecast that Evergy Kansas Central determines the anticipated fuel requirements for its

generating units. This forecast is most relevant to determining coal procurement needs as natural gas purchases are typically made on a shorter-term basis based on more operational dispatch forecasts. Pertaining to fuel oil, usage for a given day or hour is typically unpredictable and as such, fuel oil is generally purchased on an as-required basis to replenish onsite oil inventory or to stock up in anticipation of an event such as extreme weather.

Q. PLEASE DESCRIBE HOW EVERGY KANSAS CENTRAL BUYS COAL.

A. Generally, Evergy Kansas Central follows a strategy of laddering into a portfolio of contracts for Powder River Basin ("PRB") coal. Evergy Kansas Central's "laddered" portfolio consists of coal supply contracts which were entered into at different times leading up to the operating year. The closer EKC is to a given operating year, the higher the coal commitment percentage will be as compared to expected requirements. When burn projections increase, actual burns prove to be higher than anticipated, or as otherwise needed, supplemental purchases of coal are made on the spot market.

Q: WHAT DID EKC'S LADDERED PORTFOLIO LOOK LIKE FOR 2022?

A: In January 2022, Evergy Kansas Central had contractual commitments for about **[redacted]** percent of its share of expected coal burn requirements at that time for 2022. It also had commitments for about **[redacted]** percent for 2023 and **[redacted]** percent for 2024.

Q. PLEASE DESCRIBE THE ARRANGEMENTS THAT PROVIDE COAL AND ITS TRANSPORTATION TO YOUR FACILITIES.

A. For operating year 2022, Jeffrey Energy Center, Lawrence Energy Center, and La Cygne Generating Station coal was purchased in the manner discussed above. Each of the three stations received coal under multiple contracts and from multiple mine sources. All Evergy Kansas Central coal facilities burn low sulfur PRB coal that is produced in Wyoming. On occasion La Cygne Unit 1 may utilize bituminous coal to assist with various operational issues or coal pile management, but that bituminous coal is already onsite and in inventory from previous years prior to its transition to 100% PRB coal. There are no plans at this time to purchase any bituminous coal for La Cygne in the future.

In 2022, coal for Jeffrey Energy Center originated at the Black/West Thunder, Cordero, North Antelope Rochelle Mine ("NARM"), and NARM North mines in the Southern PRB ("SPRB") region of Wyoming. From the mines, the coal was transported to Jeffrey Energy Center by the Union Pacific Railroad ("UP") under a contract. Coal for Lawrence Energy Center originated at the Black/West Thunder and NARM mines in the SPRB region of Wyoming and was transported to the station by BNSF Railway Company ("BNSF") under tariff service. Finally, 2022 coal for La Cygne Generating Station originated at the Antelope, Black/West Thunder, Cordero, Caballo, Belle Ayr and NARM and NARM North mines in the SPRB region of Wyoming. From the mines, the coal was transported to Kansas City by UP,

where the trains were then interchanged to the Kansas City Southern Railway Company ("KCS") for delivery from Kansas City to the station. Both the originating and delivery movements to La Cygne were in contract service.

Q. DO EVERGY KANSAS CENTRAL'S COAL FIRED FACILITIES HAVE COMPETITIVE OPTIONS FOR COAL DELIVERY?

A. Competition for coal transportation service to Jeffrey is very limited. Prior to 2021, the principal coal source for Jeffrey Energy Center was the Eagle Butte mine, which is captive to the BNSF. As a result, transportation to Jeffrey previously required both BNSF and UP movements. Beginning in 2021, coal for Jeffrey Energy Center could be sourced at mines located on the BNSF-UP joint line, such that the coal could be transported via more efficient single line service on UP. Jeffrey Energy Center is served only by UP, however, so at this juncture, there are no further competitive options for the station. Lawrence Energy Center is served only by the BNSF. The rail infrastructure that would have to be installed for either generating facility to provide competitive access to both railroads would be complex to complete and very expensive, with uncertain results.

For La Cygne Generating Station, as explained above, there are two separate rail movements involved in the transportation of coal from Wyoming to the station. The origination portion of the movement (Wyoming to Kansas City) is competitive, as it can be served by either BNSF or UP. The delivery portion of the movement, however, can only be handled by

KCS. Therefore, a portion of La Cygne coal transportation service is competitive, and a portion is not.

Q. PLEASE DESCRIBE EVERGY KANSAS CENTRAL'S FLEET OF RAILCARS USED TO DELIVER COAL.

A. Currently, Evergy Kansas Central has enough equipment to operate as many as eleven train sets to serve Jeffrey and Lawrence, plus spare railcars. As many as eight train sets are available to serve Jeffrey Energy Center and three sets for Lawrence Energy Center.

Q. DOES EVERGY KANSAS CENTRAL LEASE ALL OF ITS TRAIN SETS?

A. No. Evergy Kansas Central both owns and leases railcars. For those leased railcars, the next lease expiration dates are in 2023. EKC owns a total of 263 railcars or roughly two train sets.

Q. DOES THE COMPANY UPDATE ITS FUEL PROCUREMENT AND PLANNING PROCESS TO ADJUST FOR CHANGES IN THE MARKETPLACE?

A. Yes. EKC routinely reviews fuel market conditions and market drivers. We monitor market data, industry publications and consultant reports in an effort to avoid high prices and to take advantage of lower prices.

Q. DID THE COMPANY MAKE ANY CHANGES TO ITS COAL AND NATURAL GAS PROCUREMENT AND PLANNING PROCESS FOR 2022?

A. Up through December 31, 2020, coal for Jeffrey Energy Center was purchased under a long-term requirements contract from a principal source

that was captive to BNSF. Beginning in 2021, coal procurement for Jeffrey transitioned to the ladder approach previously discussed and was sourced at mines accessible by UP as well as BNSF. The station also moved from using a single-source coal under a long-term contract to utilizing multiple coals procured on a shorter-term basis. This shift in approach resulted in a change to the coal being utilized at the station, and also transitioned the rail transportation to a single-line haul on UP as opposed to a dual-line movement on BNSF and UP. No further changes were made for coal procured for 2022 operations.

While there was significant volatility in the natural gas market, no change was made to Evergy's gas procurement and planning process as a result. Natural gas is purchased on a short-term (daily) basis and thus the process already enables ongoing adjustments to market conditions each day and no adjustment was required.

SPP INTEGRATED MARKETPLACE VALUE AND IMPLICATIONS

Q. HAS THE SPP IM CHANGED HOW YOU DETERMINE YOUR GENERATION AND FUEL REQUIREMENTS?

A. Yes, as previously discussed, our short-term modeling processes attempt to simulate SPP IM operations and thereby produce a generation and fuel burn forecast for our generating facilities. This allows Evergy Kansas Central to estimate our fuel requirements to meet expected SPP generation dispatch.

Q. HAS THE SPP IM CHANGED HOW EVERGY KANSAS CENTRAL OPERATES AND MANAGES ITS GENERATION FLEET ON A DAY TO DAY BASIS?

A. Yes, the SPP IM requires Evergy Kansas Central to offer generating units into the daily market to be available to help meet total RTO demand and in turn, Evergy Kansas Central purchases energy from the RTO necessary to meet our customers' load requirements. Based on regional generation needs, the SPP IM may require Evergy Kansas Central to operate facilities we might not run on our own accord to meet our customers' load obligation or require EKC to reduce generation at facilities we might otherwise operate at higher capacities had they been dispatched by Evergy Kansas Central alone. These SPP operating and dispatching requirements are derived from a least cost generation modeling solution based on loads by area, available generation, transmission constraints, fuel prices, environmental constraints, wind generation availability and other power plant operating criteria.

Q. HOW DOES THE SPP IM IMPACT FUEL & PURCHASE POWER COSTS?

A. As the Consolidated Balancing Authority ("CBA"), SPP determines the generation that will be committed and dispatched for an operating day to serve the load of the market. Those commitments and dispatches for Evergy Kansas Central resources drive fuel costs. However, the revenue received from the market for that generation goes to offset the purchase power costs associated with serving the Evergy Kansas Central load.

Q. HOW DOES THE SPP IM DETERMINE HOW UNITS WILL BE COMMITTED AND DISPATCHED?

A. The SPP IM uses a sophisticated algorithm to determine the most economical mix of generation required to meet the combined SPP load requirement. This algorithm considers many factors beyond the fuel cost of individual generation units. The algorithm calculates the all-in unit costs that include start-up costs, minimum runtime, unit heat rates at various output levels, environmental constraints, transmission constraints, and many other factors. This calculation allows SPP to determine the optimal blend of generation resources to meet SPP members' load, regardless of the unit owner, and to best utilize the transmission system to meet the load requirements of all member utilities. The results achieved by the SPP's modeling and dispatching capabilities utilizing all the region's generating resources would not have been possible prior to the SPP IM.

Q: PLEASE DESCRIBE HOW THE SPP IM PROVIDES VALUE TO YOUR CUSTOMERS.

A. The SPP IM provides Evergy Kansas Central and other SPP member companies opportunities for either enhanced revenues or economic purchases such as energy and ancillary services. A benefit of the SPP IM is the enhanced ability of the SPP to dispatch energy and ancillary services from the most economical resources of all SPP members on a sub-hourly basis.

Q. ARE THESE REVENUE STREAMS AND COST SAVINGS PASSED ON TO EVERGY KANSAS CENTRAL'S CUSTOMERS?

A. Yes. Our customers receive the benefits of the SPP dispatch savings and generating revenue offsets through the RECA.

Q. DO YOU HAVE ANY OTHER COMMENTS RELATED TO THE EFFICIENCY OF THE SPP MARKET?

A. Yes. An important point to consider is all SPP member utilities and generating companies are required to fully participate in the sale of generation and the purchase of load. Prior to the SPP IM, generation resources and utilities were not required to buy from or sell electricity to other SPP members. Under the SPP IM, all SPP member companies are now required to offer and sell electricity from their generating units into the SPP IM, ensuring the most economical blend of resources are available to the SPP member utilities. Again, this would not be possible without the SPP IM.

Q: HAS THE COMPANY PERFORMED ANY ANALYSIS OF THE SPP IM'S BENEFIT FOR EVERGY KANSAS CENTRAL CUSTOMERS?

A: Yes. A full, in-depth cost-benefit analysis is beyond the scope of the Company's resources to produce. However, consistent with the approach utilized for the Evergy Kansas Metro analysis, a study that focuses on the single market benefit associated with the CBA in the SPP IM structure was conducted to provide a sense of the benefit that the SPP IM has provided. It should be noted that this study is not able to quantify the many other

benefits of the SPP IM such as increased transmission construction, improved settlements, and wind generation improvements etc. However, the study looked at the resulting Locational Marginal Pricing ("LMP") for Evergy Kansas Central's native load improvement as a proxy for the cost/benefit to serve native load by participating in the SPP IM.

Q: PLEASE DESCRIBE HOW THE ANALYSIS WAS CONDUCTED.

A: The analysis attempts to compare and quantify the effect of Evergy Kansas Central's load and generation being balanced by the CBA as a member of the SPP IM as compared to existing outside of SPP as a stand-alone BA. The Company performed two PROMOD based simulations for calendar year 2022:

- Simulation 1: Assumes the SPP IM market with CBA for all of SPP for the entire year.
- Simulation 2: Assumes Evergy utilities operate as stand-alone BAs outside of the SPP IM for the full year.

To calculate the benefit, the Evergy Kansas Central LMP in each simulation was compared and the change in the cost to serve native load for Evergy Kansas Central was valued.

The final results estimate a benefit of ** [redacted] ** for customers as shown in the Confidential Schedule JLT-1; however as discussed above, this is not inclusive of the many other benefits that the SPP IM provides.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does. Thank you.

CONFIDENTIAL

[redacted]

[redacted]

STATE OF KANSAS)
) ss:
COUNTY OF SHAWNEE)

VERIFICATION

Jessica Tucker, being duly sworn upon his oath deposes and states that she is the Sr Mgr Fuels and Emissions, for Evergy, Inc. that she 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 her knowledge, information and belief.

Jessica Tucker

Subscribed and sworn to before me this 20th day of March, 2023.

NOTARY PUBLIC - State of Kansas
LESLIE R. WINES
MY APPT. EXPIRES 5/20/2026

Notary Public

My Appointment Expires: May 30, 2026