Exhibit No.:
Issue(s): *Variable Fuel*
Witness: *Brodrick Niemeier*
Sponsoring Party: *MoPSC Staff*
Type of Exhibit: *Direct Testimony*
Case No.: *ER-2024-0189*
Date Testimony Prepared: *June 27, 2024*

MISSOURI PUBLIC SERVICE COMMISSION

INDUSTRY ANALYSIS DIVISION

ENGINEERING ANALYSIS DEPARTMENT

DIRECT TESTIMONY

OF

BRODRICK NIEMEIER

EVERGY MISSOURI WEST, INC.,

d/b/a Evergy Missouri West

CASE NO. ER-2024-0189

Jefferson City, Missouri
June 2024

** Denotes Confidential Information **

DIRECT TESTIMONY

OF

BRODRICK NIEMEIER

EVERGY MISSOURI WEST, INC.,
d/b/a Evergy Missouri West

CASE NO. ER-2024-189

Q. Please state your name and business address.

A. My name is Brodrick Niemeier and my business address is Public Service Commission, P.O. Box 360, Jefferson City, MO 65102.

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

A. I am employed by the Missouri Public Service Commission ("Commission") as an Associate Engineer in the Engineering Analysis Department of the Industry Analysis Division.

Q. Please describe your educational background and work experience.

A. In 2021, I graduated from the Missouri University of Science and Technology with a Bachelor of Science degree in Chemical Engineering. Following my graduation, I began working for the Commission in Staff's Engineering Analysis Department, where I currently remain.

Q. Have you previously filed testimony before the Commission?

A. Yes. Please refer to Schedule BN-d1, attached to this Direct Testimony for a list of cases in which I have filed testimony before the Commission.

EXECUTIVE SUMMARY

Q. What is the purpose of your testimony?

A. My testimony addresses Staff's calculation of the variable fuel and purchased power expense.

Q. Do you provide any recommendations for expense levels to be reflected in the revenue requirement ordered in this case?

A. Yes. It is my recommendation that the revenue requirement determined by the Commission in this case should reflect Staff's calculation of variable fuel and purchased power expense, equal to $250,773,215.

Q. Do you describe the development of a work product you provided to another Staff witness for the development of an issue?

A. Yes. I provided the production cost model results to Staff witness Teresa Denney for use in determining the appropriate percentage of transmission expense for Evergy Missouri West ("EMW") to recover and to develop Staff's recommended Fuel Adjustment Clause Base Factor. I provided the production cost model results to Staff witness Jared Giacone to include in the calculation of Staff's revenue requirement.

VARIABLE FUEL AND PURCHASED POWER EXPENSE

Q. What is the purpose of your direct testimony regarding variable fuel and purchased power expense?

A. The purpose of this section of my direct testimony is to describe how Staff calculated its recommended variable fuel and purchased power expense for EMW through the use of a production cost model.

Q. What does Staff recommend concerning the variable fuel and purchased power expense for EMW?

A. Staff recommends that the revenue requirement chosen by the Commission include a variable fuel and purchased power expense of $250,773,215. Staff's variable fuel and purchased power expense is consistent with Staff's level of load and rate revenues.

Q. What are the uses of production cost modeling in the electric power industry?

A. Production cost modeling software is widely used by the electric power industry in the United States and throughout the world for the calculation of variable fuel and purchased power expenses. Similar software is used by electric utilities, regional transmission operators, regulatory agencies, universities, and research laboratories for evaluating the costs related to the generation, transmission, and consumption of electricity. The use of modeling software allows for the calculation of the lowest cost method by which customer needs can be satisfied while considering a given utility's generating resources, load requirements, and other constraints.

Q. What is the purpose of a production cost model?

A. Staff uses a production cost model to perform a simulation of a utility's energy generation, energy sales, and energy purchases. The simulation results are used to calculate revenues and expenses. Specifically, the revenues and expenses calculated from the results of Staff's production cost modeling are:

- The cost of the fuel necessary to support the generation of electricity at power plants;
- The costs and revenues from the purchases and sales of energy within the Southwest Power Pool marketplace; and
- The cost of energy obtained from purchased power agreements.

Fixed expenses such as those related to the recovery of capital are not included in the results of Staff's production cost model.

Q. What production cost modeling software does Staff use?

A. Staff uses the PLEXOS® software for production cost modeling.

Q. What inputs are necessary for Staff's production cost model?

A. Staff's production cost model includes input data developed by multiple Staff witnesses. These include: market prices from Staff witness Justin Tevie, fuel prices from Staff witness Jared Giacone, and system load from Staff witness Michael Stahlman. I developed the remaining inputs: generation from wind farms, planned and forced outages, and power plant characteristics.

Q. How did you adapt the output from wind and solar farms for use in Staff's production cost model?

A. Historic hourly generation data for each of the wind and solar farms that EMW purchases energy from was used to create representative average output profiles unique to each site. The prices paid for the energy from the wind farm purchased power agreements ("PPAs") were taken from the contracts that EMW entered into with the wind farm owners.

Q. Have there been any major changes to any wind farms that would affect Staff's production cost model?

A. Yes. ** [redacted]

[redacted] ** Staff normally uses all available data from representative months to model units, but for these units, several years' worth of data is no longer representative.

Q. How were planned and forced outages accounted for in Staff's production cost model?

A. Planned and forced outages occur infrequently and vary in duration. In order to capture that variability, the outages experienced at each power plant were normalized by averaging seven years of historic data. For outages that are seen as extreme outliers, such as ** [redacted] **, Staff removes those outages and calculates the outage rates based off the remaining data.

Q. How were the power plant characteristics for Staff's production cost model derived?

A. Staff relied on EMW for responses to data requests and data supplied to comply with 20 CSR 4240-3.190 for inputs relating to each generating unit such as:

- Unit capacity;
- Unit heat rate curve;
- Primary and startup fuels;
- Ramp rates;
- Startup costs; and,
- Variable operating and maintenance expense.

Definitions of the bulleted terms above are included in Schedule BN-d2.

Q. What was the Commission's decision regarding variable fuel and purchased power in EMW's previous general rate case, Case No. ER-2022-0130?

A. The Commission made no specific decision regarding variable fuel and purchased power in EWM's previous general rate case. The concurrent general rate cases for Evergy Missouri West and Evergy Missouri Metro, Cases Nos. ER-2022-0129 and ER-2023-0130, were settled through a series of non-unanimous stipulations and agreements approved by the Commission. These stipulations set a fuel and purchased power base level for the FAC (Fuel Adjustment Clause).

Q. What is the recommended variable fuel and purchased power expense that resulted from Staff's production cost modeling?

A. Staff calculated that the variable fuel and purchased power expense for EMW for test year as updated for the 12-month period ending December 31, 2023, to be $250,773,215. The revenue requirement determined by the Commission should reflect Staff's calculation of variable fuel and purchased power expense.

Q. Does this conclude your direct testimony?

A. Yes.

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of Evergy Missouri West, Inc. d/b/a Evergy Missouri West's Request for Authority to Implement A General Rate Increase for Electric Service	))))	Case No. ER-2024-0189

AFFIDAVIT OF BRODRICK NIEMEIER

STATE OF MISSOURI)
) ss.
COUNTY OF COLE)

COMES NOW BRODRICK NIEMEIER and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing *Direct Testimony of Brodrick Niemeier*; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

Brodrick Niemeier
BRODRICK NIEMEIER

JURAT

Subscribed and sworn before me, a duly constituted and authorized Notary Public, in and for the County of Cole, State of Missouri, at my office in Jefferson City, on this 21st day of June 2024.

D. SUZIE MANKIN
Notary Public - Notary Seal
State of Missouri
Commissioned for Cole County
My Commission Expires: April 04, 2025
Commission Number: 12412070

D Suzie Mankin
Notary Public

CREDENTIALS AND CASE PARTICIPATION OF BRODRICK NIEMEIER

Present Position:

I am an Assistant Engineer in the Engineering Analysis Department, Industry Analysis Division, of the Missouri Public Service Commission.

Educational Background and Work Experience:

In December 2021, I received a Bachelor of Science Degree in Chemical Engineering from Missouri University of Science and Technology (UMR). I joined the Commission Staff in March 2022.

Testimony Filed:

Case Number	Utility	Testimony	Issue
GE-2018-0193	Summit Natural Gas of Missouri	Staff Report	Meter Inspections
EA-2022-0244	Ameren Missouri	Rebuttal	Qualifications and Report Requirements
EO-2022-0320	Evergy Missouri West	Staff Report	Change of Provider
WA-2022-0361	Missouri-American Water Company	Staff Report	Depreciation
WA-2023-0026	Confluence Rivers	Staff Report	Depreciation
WA-2023-0071	Missouri-American Water Company	Staff Report	Depreciation
EO-2023-0105	Evergy Missouri West	Staff Report	Change of Provider
EA-2023-0131	Liberty (Empire) Electric	Staff Report	Application Requirements, Qualification, Maintenance and Forced Outages, and Operating Plans
GE-2023-0196	Liberty (Empire) Gas	Staff Report	Meter Inspections
GE-2023-0354	Spire Missouri	Staff Report	Meter Inspections
EO-2024-0035	Evergy Missouri West	Staff Report	Change of Provider
EO-2024-0142	Evergy Missouri West	Staff Report	Change of Provider
EO-2024-0161	Evergy Missouri West	Staff Report	Change of Provider

Definitions

Unit capacity:

The maximum capacity of a power plant is equal to its maximum level of energy output in megawatts (MW).

Unit heat rate curve:

The heat rate of a power plant, typically measured in BTU/kWh, is a measure of efficiency. It shows how much energy from the fuel consumed by the power plant is required to generate one kWh of electricity. The larger the magnitude of the heat rate, the less efficient a power plant is.

Primary and startup fuels:

A power plant's primary fuel is the main source of energy that it uses to generate electricity. For example, a coal-fired power plant will have coal as its primary fuel. This is distinct from startup fuel which may be used sparingly during limited periods of time while the power plant is being started. Fuel oil might be used as a startup fuel while a coal plant is being started. Once a certain power level is achieved, the startup fuel will stop being used, and the power plant will operate solely on it primary fuel.

Ramp rates:

Ramp rates describe how quickly a power plant can change its output power level and are typically given in units of megawatts per hour or megawatts per minute. Large coal or nuclear power plants have lower ramp rates than smaller natural gas-fired combustion turbines.

Startup costs:

Startup costs are the operations and maintenance costs associated with the startup of a power plant. The magnitude of startup costs can influence how a power plant is dispatched within a market. All other factors being equal, high startup costs would tend to make a power plant less likely to be dispatched in a given situation.

Variable operating and maintenance expense:

Variable operations and maintenance expenses ("VOM") are a part of the incremental cost of running a power plant. They represent the costs related to the equipment replacement and servicing that are necessarily incurred by the wear and tear that occurs when a power plant operates. These costs are measured in dollars per megawatt-hour ($/MWh) and will affect the price at which energy from a power plant is offered into the market. All other factors being equal, high VOM costs would tend to make a power plant less likely to be dispatched in a given situation.