Public Version

Exhibit No.:	
Issue:	Fuel, Purchased Power, Wholesale Sales, FAC Support
Witness:	Eric T. Peterson
Type of Exhibit:	Direct Testimony
Sponsoring Party:	Evergy Missouri Metro
Case No.:	ER-2022-0129
Date Testimony Prepared:	January 7, 2022

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO.: ER-2022-0129

DIRECT TESTIMONY

OF

ERIC T. PETERSON

ON BEHALF OF

EVERGY MISSOURI METRO

Kansas City, Missouri
January 2022

DIRECT TESTIMONY

OF

ERIC T. PETERSON

Case No. ER-2022-0129

Q: Please state your name and business address.

A: My name is Eric T. Peterson. My business address is 1200 Main, Kansas City, Missouri 64105.

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

A: I am employed by Evergy Metro, Inc. and serve as Director, Analytics & Shared Services for Evergy Metro, Inc. d/b/a as Evergy Missouri Metro ("Evergy Missouri Metro"), Evergy Missouri West, Inc. d/b/a Evergy Missouri West ("Evergy Missouri West"), Evergy Metro, Inc. d/b/a Evergy Kansas Metro ("Evergy Kansas Metro"), and Evergy Kansas Central, Inc. and Evergy South, Inc., collectively d/b/a as Evergy Kansas Central ("Evergy Kansas Central") the operating utilities of Evergy, Inc.

Q: On whose behalf are you testifying?

A: I am testifying on behalf of Evergy Missouri Metro.

Q: What are your responsibilities?

A: My primary responsibilities include oversight of power marketing analytics, energy fundamentals, market modeling and fuel management (excluding natural gas).

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

A: I graduated the University of Tulsa in May 1996 with a Bachelor of Science degree in Business Administration & Finance. Next, I graduated from Oklahoma City University in October 1999 with a Master's in Business Administration Finance & Marketing.

I began my career with WorldCom in 1996 as a Specialist in network planning and facility cost management. In 1997, I started my energy industry career at American Electric Power (formerly Central & South West Services) in Strategic Research & Modeling as Analyst supporting Integrated Resource Planning. In 1999, I joined the Williams Companies in the Energy Marketing & Trading area as an Analyst focused on cross commodity analysis, market analysis, and development of forward curve modeling.

My career began with KCP&L in 2002 as an Analyst in Energy Resource Management focusing on Integrated Resource Planning, budget, and various energy analyses. In 2006, I was promoted to Manager, Portfolio & Risk Management, which focused on structured deal analysis, budgeting, and energy risk exposure. In 2009, I was promoted Senior Manager, Supply Resources, which focused on all fuel procurement and transportation. In 2010, I was promoted to Director, Supply Resources, which included all fuel, power dispatch operations, trading, and origination activities. In 2016, I was promoted to Senior Director, Generation Sales & Services, which included same responsibilities as Director with additional roles of benchmarking, scorecards, and O&M management. In 2018, job title changed to Director, Analytics & Shared Services, with duties consisting of all energy marketing and budgeting analytics and fuel procurement and transportation activities.

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

A: No

Q: What is the purpose of your testimony?

A: The purpose of my testimony is to describe the level of fuel expense, purchased power expense and the wholesale sales revenues filed in the revenue requirement schedules included in the Direct Testimony of Company witness Ronald A. Klote. In addition, I will provide information regarding the requirements necessary to support an Electric Utility Fuel and Purchased Power Cost Recovery Mechanism related to the Company's request to continue use of the Fuel Adjustment Clause ("FAC"). I specifically address all or a portion of the requirements of 20 CSR 4240-20.090(2)(A) 15., 16., and 17.

I. ENERGY PRICE FORECASTS

Q: Please describe how Evergy Missouri Metro forecasts electricity prices?

A: Evergy Missouri Metro utilizes the PROMOD® IV ("PROMOD") software, 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 operating 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.

Q: What are the primary inputs to the model?

A: The model utilizes a sizeable input dataset that is populated with assumptions about market supply, demand, and transmission. The bulk of the input assumptions use NERC reports, Federal Energy Regulatory Commission ("FERC") Form 1 data, Energy Information Administration ("EIA") 411 reports, Continuous Emissions Monitoring System ("CEMS") data compiled by the Environmental Protection Agency ("EPA"), and publicly available data reported by the various ISOs and RTOs as sources. The demand data includes projected hourly demand for virtually every electric power entity in the Eastern Interconnect. The supply data contains a representation of generating units within those entities and their operating characteristics, including, capacity, heat rate, fuel type, variable operations and maintenance costs, outage rates, emissions rates, and start-up costs. Other primary inputs are fuel (e.g., coal, natural gas, fuel oil) prices, emission allowance prices, renewable energy generation, reserve requirements, hurdle rates, and imports/exports to external areas. The dataset also includes detailed transmission grid topology, transmission constraints and contingency events within and between regions.

Q: How does the model use this data to forecast power prices?

A: PROMOD performs an hourly chronological commitment and dispatch of all generation resources to meet projected hourly demand in each region, as defined in the model's geographic topology. For each hour, the model calculates the cost of generation, comprised of the production cost of the least-cost generating unit needed to meet demand. The model also determines the hourly cost of congestion, which is the added cost of needing higher-cost generators due to transmission constraints. Both the cost of generation and the cost of congestion make up the hourly power price, or LMP. Hourly LMPs are generated across

the model footprint at the nodal level; this means generators at different locations may have different LMPs in each hour. The model aims to minimize these system costs while simultaneously adhering to operating constraints and transmission grid limitations to meet load reliably. This is similar to how Southwest Power Pool ("SPP"), the RTO in which the Company resides, calculates its power prices.

Q: Is this done for only one region?

A: No. The model footprint includes SPP, Midcontinent Independent System Operator ("MISO"), Pennsylvania, New Jersey and Maryland ("PJM"), Associated Electric Cooperative Inc ("AECI"), Southwestern Power Administration ("SPA"), Tennessee Valley Authority ("TVA"), and Louisville Gas and Electric Company and Kentucky Utilities Company ("LGE/KU"). The model also includes imports and exports across the high voltage direct current ("HVDC") ties which connect SPP to the Western Interconnect and the ERCOT Texas Interconnect, as well as other external areas that are not dynamically modeled (e.g., Florida, NYISO, etc.). Units may be economically dispatched to serve load in a neighboring region if transmission capacity exists.

Q: What is your opinion of the resulting forecasts?

A: The fundamental supply and demand data are relatively good. The demand forecast from utilities and the existing public data on installed generation capacity are sufficiently reliable, so that identifying a reasonable unit to base an hourly price on is something that can be done with a reasonable degree of confidence. The input assumptions that create a larger challenge are fuel price and wind as discussed below. In SPP, Evergy Missouri Metro's market area, the market price is usually set by one of three fuels: wind, coal, or

natural gas. Wind generation is typically the marginal resource during off-peak hours, while coal or gas is largely the marginal resource during on-peak hours in SPP.

Q: How difficult is it to predict the price of coal and natural gas?

A: Coal prices are relatively less volatile and the model inputs are based on actual reported fuel costs, so the impact of coal on power prices can be forecasted with relative accuracy when coal is the marginal fuel. Natural gas prices are more volatile and difficult to predict.

Q: How difficult is it to predict wind generation?

A: Wind production, and therefore generation from wind farms, can be erratic and unpredictable. On average, wind makes up 29.5% of the total energy production in SPP (as of January 2021), but can be significantly higher during the Spring and Fall seasons. Schedule ETP-1 shows the volatility of wind generation in SPP from December 2020 through November 2021. The natural variability of wind makes it difficult to predict power prices when wind is the marginal fuel.

Q: How accurate are the power price forecasts?

A: The power price forecasts are relatively accurate when the fuel price forecasts and wind forecasts are accurate. Deviations from the observed market price are typically congestion costs that are not captured due to unexpected generation or transmission outages, or power flows from neighboring regions (e.g., MISO, AECI, etc.).

II. FUEL, PURCHASED POWER AND OFF-SYSTEM SALES NORMALIZATION

Q: What method for normalizing the test year fuel cost, purchased power cost and off-system sales did you use in this case?

A: The method we used to normalize the test year fuel, purchased power and off-system sales is one where we normalized and annualized the system peak load and energy, the prices

paid for fuel, generating system maintenance, and available generating resources. After determining the appropriate normalized and annualized values, a production cost computer modeling tool was used to develop the appropriate generation and purchased power levels, and resulting fuel cost, purchased power cost and off-system sales revenues. Evergy Missouri Metro used the PROMOD software as its production cost model.

Q: Please describe the PROMOD® IV software used in this normalization.

A: This is the same modeling software as described previously. PROMOD simultaneously performs a security constrained and economic dispatch of generating units in the modeled footprint, which includes Evergy Missouri Metro, and produces hourly LMPs at each price node. The Company uses this model for various purposes, such as generating market price forecasts, resource planning decisions, fuel and interchange budgeting, purchase and sales analysis, etc.

Q: Please describe the normalization of the system requirements for this rate case.

A: Evergy Missouri Metro's native load was adjusted to reflect weather normalized and annualized customer growth by the Company's load forecasting personnel. This process is described in more detail in the Direct Testimony of Company witness Albert R. Bass. These normalized monthly peak demands and energy requirements were used as inputs into the PROMOD model. The software distributes these monthly energy requirements on an hourly basis, then utilizes the actual historical hourly system loads to shape the normalized loads. The resulting load shape was then used in the normalized production cost modeling.

The Company's wholesale contract customers that contain an energy component have been added to the native load to arrive at the total system requirements.

Q: Please describe these wholesale contract customers.

A: These are energy sales to the city of Eudora. The revenue for this transaction and the associated fuel expense is included in Schedule ETP-3 **(Confidential).**

Q: Please describe the fuel price normalization.

A: The normalized fuel prices used in the modeling are described in the Direct Testimony of Company witness Jessica Tucker. These fuel prices were input into the model on a plant-specific basis and were then used in the normalized production cost modeling.

Q: Please describe the maintenance outages normalization.

A: Evergy Missouri Metro performs scheduled maintenance on the base load generating units on a cyclical basis over a set number of years i.e., a specific unit in any given year may have an extended turbine generator outage, an extended boiler outage, a shorter boiler outage, a short inspection outage or no outage at all. In addition, refueling and maintenance outages at the Wolf Creek nuclear plant occur every 18 months, either in the spring or the fall. Thus, in every third year Wolf Creek is available for generation for the entire year. Consequently, in any specific year, there may be higher or lower scheduled maintenance outages than the long-term average maintenance outages. To normalize the availability of the generating resources, the total number of weeks that a unit would be scheduled for maintenance over the cycle was averaged over the number of years in the maintenance cycle. These normalized maintenance outage assumptions were then spread over a 12-month period to develop a normalized maintenance schedule. These outages were scheduled so that no two base load units would be out at the same time, and that all base load generating resources would be available during the peak load periods of June through

mid-September, and December through February. Schedule ETP-2 **(Confidential)** contains the maintenance schedule that was used for the normalization.

Q: Please describe the generating resources available capacity normalization.

A: The generating resources available in the rate case modeling are the same as Evergy Missouri Metro's existing resources with capacity levels that are expected to be in place and operational as of the true-up date in this case.

Q: How was the generation from renewable resources modeled in this rate case?

A: The wind generation from the Spearville Wind Energy Facility, owned by Evergy Missouri Metro, was modeled based upon the actual 12-month ending June 2021 historical generation. Other renewable generation resources that were included in the model were Power Purchase Agreements ("PPA") from resources that are operating and under contract. They are the Cimarron, Osborn, Ponderosa, Prairie Queen, Pratt, Rock Creek, Slate Creek, Spearville 3, Waverly wind farms, and the Central Nebraska Public Power and Irrigation District ("CNPPID") hydro units. The generation levels and energy prices are based upon signed contracts and actual 12-month ending June 2021 historical generation.

Q: What is the SPP Integrated Marketplace ("IM")?

A: The SPP IM consists of a day-ahead energy market with transmission congestion rights, a real-time energy balancing market, and an operating reserve market. The IM allows SPP to decide which generators should operate one day ahead of time. By allowing SPP to monitor energy costs from multiple sources, the SPP IM is intended to improve grid reliability, the regional balancing of supply and demand, and cost-effectiveness. In March 2014, the SPP IM replaced SPP's Energy Imbalance Service Market, which was in operation since 2007.

Q: How does the SPP IM impact Evergy Missouri Metro's fuel and purchased power modeling?

A: Prior to the SPP IM, Evergy Missouri Metro generation was first dispatched to meet the Company's native load obligations, with any excess economic generation being sold off-system. When wholesale market prices were such that it was economic to purchase power to meet a portion of Evergy Missouri Metro's native load obligations instead of using the Company's generating resources, wholesale purchases were made.

Evergy Missouri Metro now sells all of the energy it generates to the SPP IM, and purchases all native load energy requirements from the SPP IM. This significantly increases the amount of both wholesale sales and purchases. The production cost modeling performed with PROMOD emulates the operations of the SPP IM.

Q: For the test period, what revenue and expense items, if any, were adjusted as a result of normalizing fuel cost, purchased power costs and off-system sales?

A: Adjustments were made to fuel costs to reflect both a normalized fuel market and normalized generation levels. Purchased power expenses and bulk power sales were also adjusted to reflect the changes in the quantity of energy purchased or sold, and the prices of such purchases or sales. Schedule ETP-3 **(Confidential)** shows the generation levels by resource type, purchased power levels, the costs of each, and the revenues from generation sales and wholesale contract customers. The adjustments are reflected in Schedule RAK-4, attached to the Direct Testimony of Company witness Ronald A. Klote (adjustments CS-24, CS-25, and R-35).

III. ADJUSTMENTS TO THE NORMALIZED FUEL, PURCHASED POWER and WHOLESALE SALES RESULTS

Q: Does Evergy Missouri Metro propose any adjustments to the PROMOD® IV model results?

A: Yes. Adjustments are made for SPP Purchased Power Administrative Fees and the Renewable Energy Rider ("RER") program. Adjustments are also made for ancillary services purchases and sales, line loss payments related to the Missouri Iowa Nebraska Transmission ("MINT") line, SPP Revenue Neutrality Uplift ("RNU") charges, and Transmission Congestion Right ("TCR") margins.

Q: What are SPP Purchased Power Administrative Fees?

A: As a participant in the SPP IM, SPP charges Evergy Missouri Metro administrative fees related to costs of running and operating the SPP market. These charges include fees to recover costs of operating the Day-Ahead and Real-Time Balancing markets, market settlements, credit services, market monitoring, and Transmission Congestion Right ("TCR") operations. These charges were previously recorded to a 575 subaccount but were switched over to a 555 subaccount by SPP beginning in September 2021. These charges are not included in the model used by the Company to calculate fuel and purchased power costs. As such, the SPP Purchased Power Administrative Fees have been included as an adjustment to Evergy Missouri Metro's model results. Absent this adjustment, these charges would not otherwise be reflected in the Company's retail cost of service.

Q: What amount of SPP Purchased Power Administrative Fees has Evergy Missouri Metro included in this case?

A: The amount of SPP Purchased Power Administrative Fees included in this case is an annualized forecast of charges, for a period beginning after the change in accounts was

made, through May 2022. This adjustment is shown in Schedule ETP-3 **(Confidential)**. These values will be updated to the actual amounts for the most recent 12 months at true-up.

Q: What is the RER program?

A: The RER program allows non-residential Evergy Missouri Metro customers to purchase renewable energy from renewable resources that the Company contracts. Revenues and costs associated with this program should be not be included as part of the FAC but are included in the model used by the Company to calculate fuel and purchased power costs. As such, the revenues and costs associated with the RER program have been removed as an adjustment to Evergy Missouri Metro's model results.

Q: What amount of the RER adjustments has Evergy Missouri Metro included in this case?

A: The amount of RER adjustments is based on the adjusted and annualized values from the Company's model results. These values will be updated to actual amounts for the most recent 12 months at true-up.

Q: What are ancillary services purchases and sales?

A: As a participant in the SPP IM, Evergy Missouri Metro is obligated to provide or procure certain ancillary services. These services include spinning, supplemental and regulating reserves. The Company purchases its SPP-specified ancillary services from the SPP-operated ancillary services market. In addition, Evergy Missouri Metro has the opportunity to sell these ancillary services in the SPP-operated market.

Q: What amount of ancillary services purchases and sales has Evergy Missouri Metro included in this case?

A: The amount of ancillary service purchases and sales included in this case is based on the average annual actual costs and revenues incurred by Evergy Missouri Metro for the 3 years ending June 2021. This adjustment is shown in Schedule ETP-3 **(Confidential)**. These values will be updated to actual amounts for the most recent 12 months at true-up.

Q: What are the MINT line loss payments?

A: These are payments made to AECI for transmission losses on the MINT line. AECI provides coverage of the losses in-kind and the Company reimburses them for its share.

Q: What amount of MINT line loss payments has Evergy Missouri Metro included in this case?

A: The line loss payments included are based on the actual payments for the twelve months ending June 2021. This adjustment is shown in Schedule ETP-3 **(Confidential)**. These values will be updated to the actual amounts for the most recent 12 months at true-up.

Q: What are SPP's RNU charges?

A: As a participant in the SPP IM, there are a number of miscellaneous charges and credits incurred in order for SPP to remain revenue neutral. These charges and credits that make up the RNU charges include items such as rounding errors and inadvertent interchange costs or revenue. RNU is distributed among the market participants as either a debit (if SPP is short of funds to balance payments between participants) or a credit (if SPP has collected more than needed to balance payments between participants).

Q: Why is it appropriate that Evergy Missouri Metro include net RNU charges in its calculation of revenue requirements?

A: As a participant in the SPP IM, Evergy Missouri Metro is exposed to RNU charges and credits. These charges and credits are not included in the model used by the Company to calculate fuel and purchased power costs. As such, the net SPP RNU charges have been included as an adjustment to Evergy Missouri Metro's model results. Absent this adjustment, RNU-related charges and credits would not otherwise be reflected in the Company's retail cost of service.

Q: What is the basis of the net SPP RNU charge amount included in this case?

A: The RNU charges included in this case are based on the average annual charges for the 3 years ending June 2021. This adjustment is shown in Schedule ETP-3 **(Confidential)**. This RNU amount will be updated to the actual amount for the most recent 12 months at true-up.

Q: What is TCR margin?

A: Under the SPP IM, there are congestion charges for moving energy from generation to load when the transmission system becomes congested. As the SPP IM was developed, financial instruments were created to hedge these transmission congestion charges. These hedges are called TCRs. In theory, transmission customers such as Evergy Missouri Metro are allocated TCRs in sufficient quantity to hedge the actual transmission congestion charges incurred to serve their native load obligations. However, during the period twelve months ending June 2021, the revenue received from Evergy Missouri Metro's TCR portfolio has exceeded the estimated congestion costs. The estimated annualized net gain on Evergy Missouri Metro's TCR portfolio has been included as a credit to the retail cost

of service. This amount can be found in Schedule ETP-3 **(Confidential)**. This amount will be updated to the actual amount for the most recent 12 months at true-up.

IV. ELECTRIC UTILITY FUEL AND PURCHASED POWER COST RECOVERY MECHANISM

Q: In regard to Evergy Missouri Metro's request for continued use of an FAC, which portions of the Electric Utility Fuel and Purchased Power Cost Recovery Mechanism filing requirements are you addressing in your testimony?

A: I will address all or portions of 20 CSR 4240-20.090(2)(A)15.), 16., and 17. Requirement 15. addresses heat rate test results, requirement 16. addresses the long-term resource planning process, and requirement 17. addresses forecasted environmental investments.

Q: Has Evergy Missouri Metro supplied the heat rate test results and documentation of the actual test/monitoring procedures for its generating units required per 20 CSR 4240-20.090(2)(A)15.?

A: Yes. Heat rate test results conducted within the previous 24 months are provided in Schedule ETP-4 (Confidential) and Schedule ETP-5 (Confidential). The documentation of the actual test/monitoring procedures is provided in Schedule ETP-6 **(Confidential)**.

Q: Please provide your support for 20 CSR 4240-20.090(2)(A)16.

A: 20 CSR 4240-20.090(2)(A)16. requires the Company to provide:

> Information that shows that the electric utility has in place a long-term resource planning process;

Evergy Missouri Metro has a long-term resource planning process in place. The electric utility resource plan produced by the process is also known as an integrated resource plan ("IRP"). An objective of this planning process is to identify the least cost and preferred resource plans while maintaining adequate capacity reserves for reliability.

Q: When was Evergy Missouri Metro's last IRP prepared?

A: Evergy Missouri Metro prepared and filed its latest IRP update report in April 2021 in Case No. EO-2021-0035.

Q: When will the next Evergy Missouri Metro IRP be prepared?

A: Under the current IRP rule, the next Evergy Missouri Metro IRP update is to be filed in March 2022. This filing will be an annual update filing.

Q: Please provide your support for 20 CS 4240-20.090(2)(A)17.

A: 20 CSR 4240-20.090(2)(A)17. states:

> If the electric utility proposes to include emissions allowances costs or sales revenue in the proposed FAC and not in an environmental cost recovery mechanism, a detailed explanation of its emissions management policy, and its forecasted environmental investments, emissions allowances purchases, and emissions allowances sales;

At this time, Evergy Missouri Metro has no forecasted environmental investments that would impact emission allowances costs or sales revenues.

The forecasted emissions allowances purchases and sales and an explanation of Evergy Missouri Metro's emissions management policy required by 20 CSR-4240-20.090(2)(A) 17. can be found in the Direct Testimony of Company witness Jessica Tucker.

Q: Does that conclude your testimony?

A: Yes, it does.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

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

AFFIDAVIT OF ERIC T. PETERSON

STATE OF MISSOURI)
) ss
COUNTY OF JACKSON)

Eric T. Peterson, being first duly sworn on his oath, states:

1. My name is Eric T. Peterson. I work in Kansas City, Missouri, and I am employed by Evergy Metro, Inc. as Director, Analytics & Shared Services.

2. Attached hereto and made a part hereof for all purposes is my Direct Testimony on behalf of Evergy Missouri Metro consisting of sixteen (16) pages, having been prepared in written form for introduction into evidence in the above-captioned docket.

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

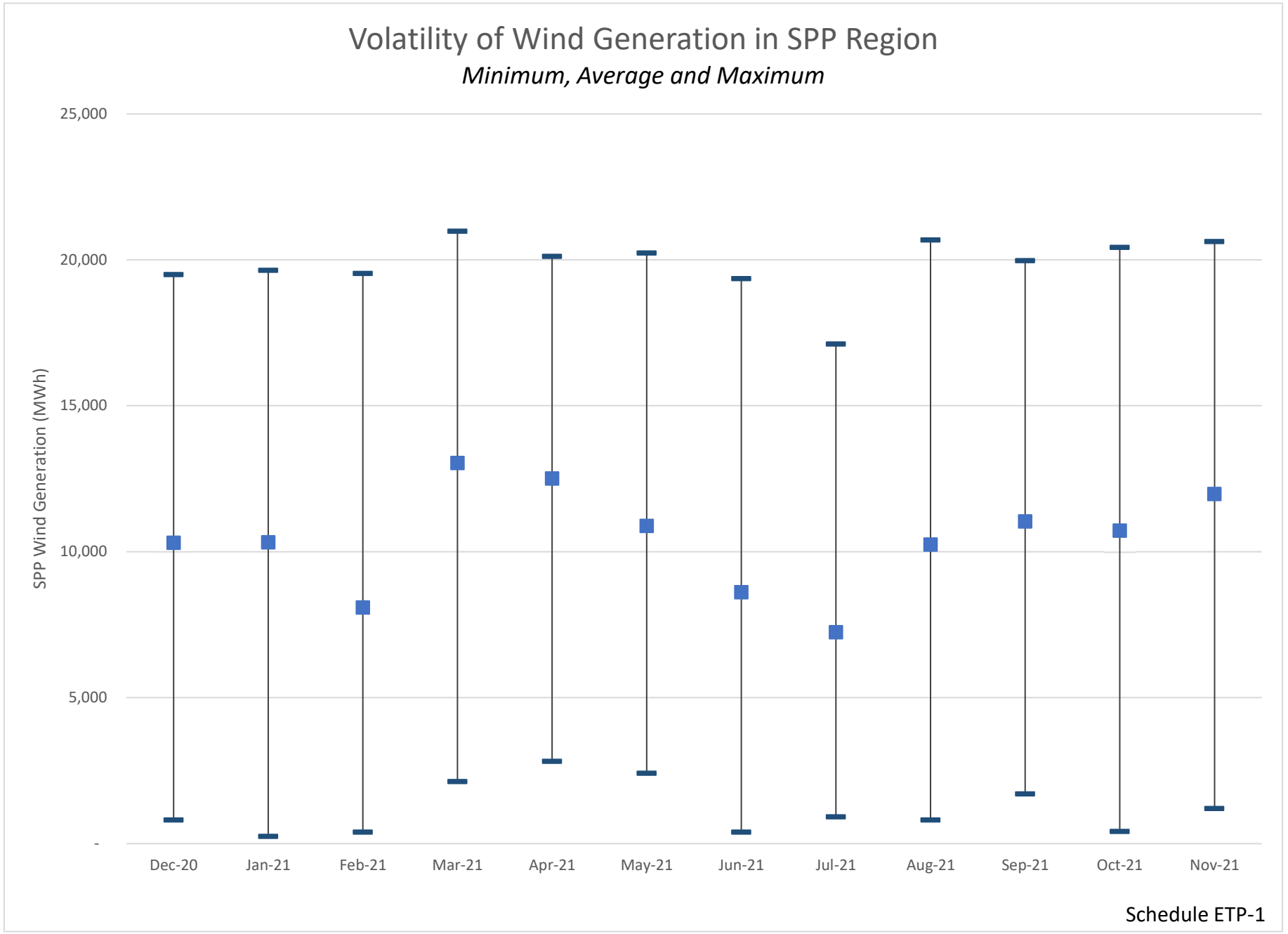
Eric T. Peterson

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

Notary Public

My commission expires: 4/26/2025

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


Volatility of Wind Generation in SPP Region
Minimum, Average and Maximum
SPP Wind Generation (MWh)
25,000
20,000
15,000
10,000
5,000
-
Dec-20
Jan-21
Feb-21
Mar-21
Apr-21
May-21
Jun-21
Jul-21
Aug-21
Sep-21
Oct-21
Nov-21
Schedule ETP-1

SCHEDULES ETP-2 THROUGH ETP-6 CONTAIN CONFIDENTIAL INFORMATION NOT AVAILABLE TO THE PUBLIC.

ORIGINALS FILED UNDER SEAL.