

Public Version

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Witness: Hsin Foo

Type of Exhibit: Surrebuttal Testimony

Sponsoring Party: Evergy Missouri West

Case No.: ER-2024-0189

Date Testimony Prepared: September 10, 2024

MISSOURI PUBLIC SERVICE COMMISSION

CASE NOS.: ER-2024-0189

SURREBUTTAL & TRUE-UP DIRECT TESTIMONY

OF

HSIN FOO

ON BEHALF OF

EVERGY MISSOURI WEST

Kansas City, Missouri

September 2024

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SURREBUTTAL TESTIMONY

OF

HSIN FOO

Case No. ER-2024-0189

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

2 A: My name is Hsin Foo. My business address is 1200 Main Street, Kansas City, Missouri
3 64105.

4 **Q: Are you the same Hsin Foo who submitted direct testimony on February 2, 2024 and**
5 **rebuttal on August 6, 2024?**

6 A: Yes.

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

8 A: I am testifying on behalf of Evergy Missouri West, Inc. d/b/a Evergy Missouri West
9 (“EMW” or the “Company”).

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

11 A: The purpose of my testimony is to address the market prices used in Staff’s production cost
12 model, Staff witness Shawn Lange’s concerns regarding the modeling of the Crossroads
13 generating station (“Crossroads”), and the concerns of the Office of Public Counsel
14 (“OPC”) on the level of Auction Revenue Rights (“ARR”) and Transmission Congestion
15 Right (“TCR”) revenues.

16 **I. MARKET PRICE MODEL INPUTS**

17 **Q: What market prices did Staff use in their production cost model?**

18 A: Staff used a normalized set of Locational Marginal Prices (“LMPs”) based on three years
19 of data ending December 2023.

1 **Q: What prices did Staff use for natural gas in their production cost model?**

2 A: Staff used the actual monthly gas prices experienced by each of the Company's generation
3 stations in 2023.

4 **Q: Do you agree with the LMPs and natural gas prices that Staff used in their production
5 cost model? Why?**

6 A: No, I do not agree with the LMPs and natural gas prices that Staff used. LMPs for 2022
7 were abnormally high due to high natural gas prices in that same period. Including such
8 high LMPs from 2022 in the normalization will unreasonably distort the resulting outputs
9 and overstate the purchase price in the production cost model. Moreover, natural gas prices
10 in 2023 were low, and since natural gas prices and LMPs are highly correlated, using low
11 natural gas prices with high LMPs is inconsistent and erroneous. This discrepancy in
12 fundamental drivers in production cost modeling is incompatible and inappropriate to
13 calculate the fuel and purchase power expense as the mismatch between the two sets of
14 assumptions will result in excessive overstated costs. Please note that this matter has been
15 brought to the attention of Staff and they have committed to reviewing their LMP inputs.

16 **II. CROSSROADS MODELING**

17 **Q: Please summarize Staff witness Shawn Lange's rebuttal testimony regarding the
18 Company's modeling of Crossroads.**

19 A: Mr. Lange's rebuttal testimony discusses several aspects regarding the modeling of
20 Crossroads, but the primary concern is that the Company's model demonstrates a net
21 operating loss at Crossroads.

1 **Q: Mr. Lange states in his rebuttal on page 5 that Crossroads Units 1 and 2 in the**
2 **Company’s model show a 45-50% increase in generation over their highest levels**
3 **since 2015 despite the Henry Hub gas prices being 51% higher than actual Henry**
4 **Hub prices in 2023. Is this a concern?**

5 A: No. While Crossroads Units 1 and 2 generate more in the Company’s model, the total
6 generation at the Crossroads station in the model is ****[REDACTED]**** MWh compared to the
7 2023 actual total of ****[REDACTED]**** MWh, or only approximately 17% higher. Moreover,
8 while the Henry Hub gas prices in the Company’s model is higher than the actual Henry
9 Hub gas prices in 2023, the gas price at the Crossroads station is only, on average,
10 approximately 2.6% higher than the station’s actual 2023 gas price.

11 **Q: Why is the gas price used for Crossroads only 2.6% higher while the Henry Hub gas**
12 **price is 51% higher when compared to gas prices in 2023?**

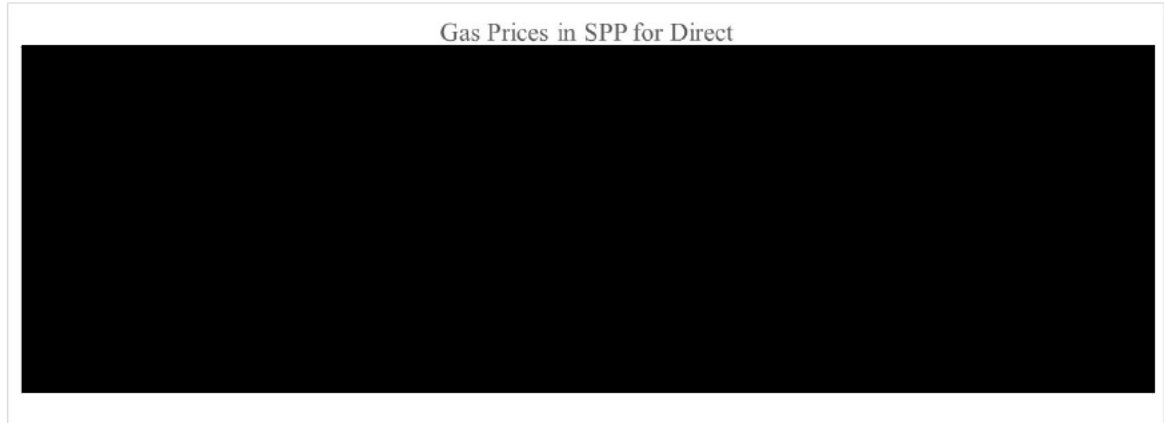
13 A: The Crossroads station is located in Mississippi and its gas price is based on the Texas Gas
14 Transmission’s (“TXT”) Zone 1 pricing point. In the Company’s Direct model, the basis
15 differential between Henry Hub and TXT Zone 1 is negative, meaning the gas price at
16 Crossroads is lower than the Henry Hub gas price. The price differential between Henry
17 Hub and TXT Zone 1 can fluctuate depending on regional supply and demand, but it is not
18 unusual for the gas price at TXT Zone 1 to be lower than the gas price at Henry Hub.

19 **Q: How does this impact the modeled generation at Crossroads in the model?**

20 A: The average gas price used for other gas burning generating stations in the model footprint,
21 which includes all of Southwest Power Pool (“SPP”), are shown in the chart below.
22 Crossroads station is deemed more cost-effective in the model when compared to other
23 similar fuel type generating units, and thus the facility will be dispatched more.

1

**



2

3

**

4 **Q: Does this occur in the Company's production cost model for True-Up?**

5 A: No. The TXT Zone 1 basis differential to Henry Hub is positive and the total generation at
6 the Crossroads station for True-Up is ** [REDACTED] ** MWh.

7 **Q: Why does the Company's model sometimes show a negative net margin for**
8 **Crossroads?**

9 A: The production cost model that the Company uses, PROMOD® IV ("PROMOD"),
10 optimizes the commitment and dispatch of generating units to meet load at the lowest
11 possible cost while maintaining transmission system security limits. The model does not
12 dispatch generating units from an asset ownership perspective of maximizing profitability.
13 The model aims to simulate how an Independent System Operator ("ISO") would operate,
14 by solving an optimization problem with the goal of minimizing total operating costs across
15 the entire operating footprint. As a result, generating units will occasionally operate at a
16 loss if the model determines it is more cost-effective to keep the generating unit on than to
17 replace it with generation from a different unit.

1 **Q: Does this happen in the SPP market?**

2 A: Yes. SPP may operate units at a loss for several reasons, primarily related to maintaining
3 grid reliability. There are times when generating units must be kept online to maintain grid
4 stability and meet demand even when not economically optimal. Generating units that are
5 not cost-effective will also sometimes be dispatched to manage transmission congestion
6 and prevent the overloading of transmission lines.

7 **Q: Mr. Lange states on page 6 of his rebuttal that Staff's model is more consistent with
8 actual SPP market pricing and dispatch of Crossroads. Do you agree?**

9 A: No. Staff's model dispatch of Crossroads is "consistent" only because it relies on historical
10 market prices and historical fuel prices to drive dispatch decisions, which will result in
11 energy production similar to historical generation. However, historical data will not
12 necessarily provide accurate market signals or account for future changes to fundamental
13 drivers that may alter the energy production patterns of generating stations. Staff's model
14 may be "consistent" but that is only because it is based on backward-looking variables.
15 Staff's model also does not consider the impact of market dynamics outside of the
16 Company's operating footprint and how it may change the dispatch behavior of generating
17 units.

18 **III. ARRs AND TCRs**

19 **Q: What is an ARR and what is a TCR?**

20 A: An ARR is a financial instrument that entitles the holder to a share of the revenue generated
21 from the auction of TCRs. A TCR is a financial instrument that entitles the holder to a
22 share of congestion revenue or costs. Both ARRs and TCRs are used to manage and hedge
23 against the financial impact of transmission congestion in the SPP Day-Ahead market.

1 **Q: How is ARR revenue calculated in SPP?**

2 A: Revenue from holding an ARR is largely based on the clearing prices and revenues
3 generated from TCR auctions. The value of a TCR of a path plays a significant role in the
4 revenue received from holding an ARR.

5 **Q: How is TCR revenue calculated in SPP?**

6 A: TCRs provide the holder the right to receive payments or charges based on the congestion
7 price difference between a Source Settlement Location (“SL”) and Sink SL. For example,
8 if the congestion cost between Source A and Sink B is \$10/MW, then the holder of a TCR
9 along the Source A and Sink B path will receive \$10/MW in payments. If the congestion
10 cost between Source A and Sink B is -\$6/MW, then the holder of a TCR along that same
11 path receive \$6/MW in charges. The revenue from holding a TCR on a path is directly
12 related to the congestion cost experienced along that same path. Higher congestion leads
13 to higher TCR revenues, and conversely, lower congestion leads to reduced TCR revenues.

14 **Q: What does Staff recommend regarding ARR/TCRs to be included in the Company’s
15 revenue requirement?**

16 A: Staff recommends an annualized level of ARR/TCR net margin based on the period of 12
17 months ending December 2023 in Direct. That amount is \$18,110.68.

18 **Q: What does OPC recommend regarding ARR/TCRs to be included in the Company’s
19 revenue requirement?**

20 A: OPC states in their rebuttal that since ARR/TCRs are utilized to hedge against transmission
21 congestion, and that congestion costs are realized as part of the revenues and losses in the
22 market process, an amount of ARR/TCR revenues instead of ARR/TCR net margin should

1 be used. OPC recommends in their rebuttal an annualized amount based on actual revenues
2 received between January 2023 through June 2024.

3 **Q: Do you agree with either Staff or OPC's recommendation?**

4 A: Yes, and no. The Company agrees with OPC that ARR/TCR revenues instead of ARR/TCR
5 net margin should be included but does not agree with the amounts recommended by Staff
6 or OPC. ARR/TCR revenue is highly dependent on congestion costs, as described in the
7 examples above. Schedule HYF-1 (**Confidential**) shows the Company's past ARR/TCR
8 revenues and congestion costs. The graph illustrates the strong relationship between these
9 two variables; when congestion costs increase, TCR revenues will also increase. Likewise,
10 when congestion costs decrease, TCR revenues decline. Applying actual TCR revenues as
11 OPC recommends, without the corresponding level of congestion costs is unreasonable.

12 **Q: What does the Company recommend?**

13 A: The Company recommends using a TCR revenue based on the congestion costs that are
14 inherent in the amounts used to calculate purchased power expense and wholesale sales
15 revenue and applying an annualized cost recovery ratio by taking an average of the actual
16 congestion costs recovered through TCR activity between January 2022 and June 2024.
17 This method will eliminate the mismatch between the revenues and costs while also
18 considering actual past ARR/TCR activity in the level of ARR/TCR revenues to include.

19 **Q: Does that conclude your surrebuttal testimony?**

20 A: Yes, it does.

TRUE-UP DIRECT TESTIMONY

OF

HSIN FOO

Case No. ER-2024-0189

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

2 A: My name is Hsin Foo. My business address is 1200 Main Street, Kansas City,
3 Missouri 64105.

4 **Q: Are you the same Hsin Foo who submitted direct testimony on February 2,**
5 **2024 and rebuttal on August 6, 2024?**

6 A: Yes.

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

8 A: I am testifying on behalf of Evergy Missouri West, Inc. d/b/a Evergy Missouri West
9 (“EMW” or the “Company”).

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

11 A: The purpose of my testimony is to address revisions made to the Company’s
12 production cost model that is used to estimate fuel expense, purchased power
13 expense and wholesale sales revenues. I will also describe the level of TCR
14 revenues to be included for True Up.

15 **I. PRODUCTION COST MODELING**

16 **Q: Has the Company’s production cost model been revised for True-Up?**

17 A: Yes, the period considered for the model’s load and generation assumptions have
18 been updated to reflect the True-Up date of June 30, 2024. Select operating
19 characteristics of the Company’s owned generating units were also updated to
20 reflect the latest plant operating parameters as of June 30, 2024. The Purchase

1 Power Agreement (“PPA”) cost for the Gray County wind farm and Ensign wind
2 farm have been updated, as discussed in my rebuttal testimony. The costs and
3 revenues associated with the Black Hills Power agreement have also been removed,
4 as discussed in my rebuttal testimony. Updates to fuel pricing in the production cost
5 model is discussed in the True-Up Direct testimony of Company witness Jessica L.
6 Tucker.

7 **II. TRANSMISSION CONGESTION RIGHTS**

8 **Q: What does OPC recommend regarding TCR revenues that should be included**
9 **in the Company’s revenue requirement?**

10 A: OPC recommends including a revenue amount for TCRs instead of a TCR net
11 margin amount.

12 **Q: Do you agree with this recommendation?**

13 A: Yes. The Company has included an appropriate TCR revenue amount as described
14 below for True-Up.

15 **Q: How does the Company account for congestion costs in its revenue**
16 **requirement?**

17 A: The production cost model that the Company uses to calculate fuel and purchased
18 power expense, and wholesale sales revenues, produces Locational Marginal Prices
19 (“LMP”) at the nodal level; this means the model produces price differentials across
20 the different generator nodes and load nodes. These different prices at different
21 locations are used to calculate purchased power costs and wholesale sales revenue.
22 Therefore, congestion costs are accounted for in those amounts. The 12-month
23 congestion cost for True-Up is ** [REDACTED] **.

1 **Q: How does the Company account for TCR revenue in its revenue requirement?**

2 A: The Company used an annualized cost recovery ratio by taking an average of the
3 actual congestion costs recovered through TCR activity between January 2022 and
4 June 2024. The average cost recovery ratio for that period was ** [REDACTED] ** and was
5 applied to the congestion cost from the production cost model to normalize an
6 amount for TCR revenue. The annual TCR revenue for True-Up based on this
7 method is ** [REDACTED] **.

8 **Q: Does that conclude your True-Up Direct testimony?**

9 A: Yes, it does.

**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) Case No. ER-2024-0189
Implement A General Rate Increase for Electric)
Service)

AFFIDAVIT OF HSIN FOO

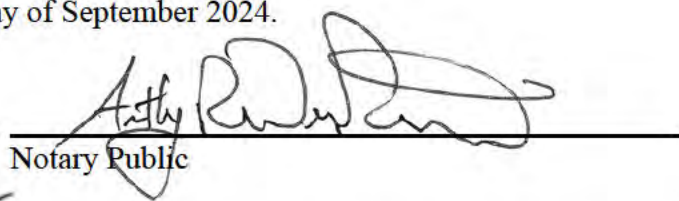
STATE OF MISSOURI)
) ss
COUNTY OF JACKSON)

Hsin Foo, being first duly sworn on his oath, states:

1. My name is Hsin Foo I work in Kansas City, Missouri, and I am employed by Evergy Metro, Inc. as Lead Quantitative Analyst-Generation Resources.
2. Attached hereto and made a part hereof for all purposes is my Surrebuttal Testimony on behalf of Evergy Missouri West consisting of ten (10) 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.


Hsin Foo

Subscribed and sworn before me this 10th day of September 2024.


Notary Public

My commission expires: 4/26/2025



**SCHEDULE HYF-1
CONTAINS CONFIDENTIAL
INFORMATION
NOT AVAILABLE TO THE PUBLIC.**

ORIGINAL FILED UNDER SEAL.

**Evergy Metro, Inc. d/b/a Evergy Missouri Metro and
Evergy Missouri West, Inc. d/b/a Evergy Missouri West**

Docket No.: ER-2024-0189

Date: September 10, 2024

CONFIDENTIAL INFORMATION

The following information is provided to the Missouri Public Service Commission under CONFIDENTIAL SEAL:

Document/Page	Reason for Confidentiality from List Below
Surrebuttal, p. 3, lns. 6-7	3 and 4
Surrebuttal, p. 4, lns. 1 and 6	3 and 4
True-Up Direct, p. 9, ln. 23	3 and 4
True-Up Direct, p. 10, lns. 4 and 7	3 and 4

Rationale for the “confidential” designation pursuant to 20 CSR 4240-2.135 is documented below:

1. Customer-specific information;
2. Employee-sensitive personnel information;
3. Marketing analysis or other market-specific information relating to services offered in competition with others;
4. Marketing analysis or other market-specific information relating to goods or services purchased or acquired for use by a company in providing services to customers;
5. Reports, work papers, or other documentation related to work produced by internal or external auditors, consultants, or attorneys, except that total amounts billed by each external auditor, consultant, or attorney for services related to general rate proceedings shall always be public;
6. Strategies employed, to be employed, or under consideration in contract negotiations;
7. Relating to the security of a company's facilities; or
8. Concerning trade secrets, as defined in section 417.453, RSMo.
9. Other (specify) _____.

Should any party challenge the Company’s assertion of confidentiality with respect to the above information, the Company reserves the right to supplement the rationale contained herein with additional factual or legal information.