Exhibit No.: _____
Issue(s): Evergy Missouri West Solar Farms
Witness/Type of Exhibit: Marke/Rebuttal
Sponsoring Party: Public Counsel
Case No.: EA-2024-0292

REBUTTAL TESTIMONY

OF

GEOFF MARKE

Submitted on Behalf of the Office of the Public Counsel

EVERGY MISSOURI WEST, INC. D/B/A EVERGY MISSOURI WEST

FILE NO. EA-2024-0292

** _____ **
Denotes Confidential Information that has been redacted

May 7, 2025

PUBLIC

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OF

GEOFF MARKE

EVERGY MISSOURI WEST
d/b/a
EVERGY
CASE NOS.: EA-2024-0292

I. INTRODUCTION

Q. Please state your name, title and business address.

A. Geoff Marke, PhD, Chief Economist, Office of the Public Counsel (OPC or Public Counsel), P.O. Box 2230, Jefferson City, Missouri 65102.

Q. What are your qualifications and experience?

A. I have been in my present position with OPC since 2014 where I am responsible for economic analysis and policy research in electric, gas, water, and sewer utility operations.

Q. Have you testified previously before the Missouri Public Service Commission?

A. Yes. A listing of the Commission cases in which I have previously filed testimony and/or comments is attached in Schedule GM-1.

Q. What is the purpose of your Rebuttal testimony?

A. The purpose of this testimony is three-fold:

- Provide an overview of Evergy Missouri West ("Evergy") managerial decisions that have exacerbated both the need for generation and increased cost uncertainty.
- To echo support for the Missouri Public Service Commission Staff's ("Staff") recommendations filed April 4, 2025; and to
- Recommend additional conditions surrounding the Sunflower and Foxtrot Solar Farms related to siting and continued conservation and vegetation management.

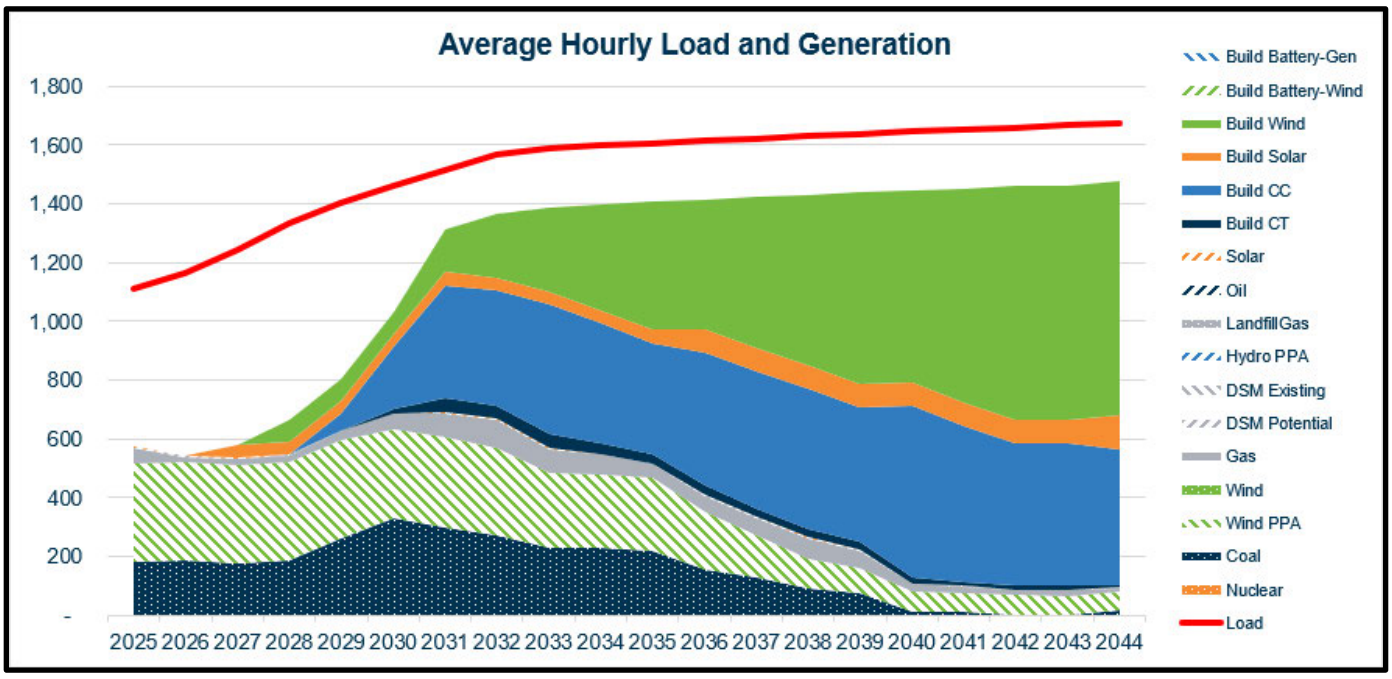
My silence regarding any other issue should not be construed as an endorsement of, agreement with, or consent to any party's filed position.

II. THE NEED FOR GENERATION

Q. Does Evergy West need to build generation?

A. Yes. The Company has been resource-constrained since the premature retirement of the 524-megawatt Sibley Power Plant in 2018. Figure 1 shows that this will continue into the future as Evergy West's current projected shortfall will last until 2030 based on its most recently filed IRP.

Figure 1: Expected Evergy West Generation Shortfall per 2025 IRP Annual Update



OPC has been vocal on this topic for quite some time. Documents filed in front of this Commission over the need to build more generation can be seen in Table 1.

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Table 1: Case history in which OPC raised concerns regarding Evergy's energy shortfalls

Case Nos.	Filing Type
EO-2017-0230	2017 Annual Resource Plan Update
EO-2017-0232	FAC Prudence Review
EO-2018-0045	Contemporary Resource Planning Topics
ER-2018-0146	General Rate Case
ER-2018-0180	FAC Rate Change Case
EO-2018-0269	Evergy West Triennial IRP
EC-2019-0200	Sibley Complaint Case
ER-2021-0312	General Rate Case
ER-2022-0130	FAC Rate Change Case
EF-2023-0155	Securitization of Storm Uri Costs
EO-2023-0213	2023 IRP Update
EO-2023-0277	FAC Prudence Review
ER-2024-0189	General Rate Case
EO-2024-0153 & EO-2024-0154	Evergy Metro and Evergy West Triennial IRP
EO-2025-0251 & EO-2025-0250	2023 IRP Update (Forthcoming)

Q. Why has OPC continued to raise concerns to the Commission on this issue?

A. Because the Company has continued to bleed its customers on fuel-related costs due to an over-reliance on the Southwestern Power Pool's ("SPP") wholesale market. As a result, ratepayers have had to shoulder a net loss of over $1B in fuel-related costs since 2019.

Q. Will these solar farms offset the Company's shortfall?

A. No. Given the expected low-capacity value of solar **_____ ** for the 65MW Sunflower Farm and **_____ ** for the 100MW Foxtrot Farm, both projects will have minimal impact on the Company's capacity balance sheet, especially if the expected load ramps up for hyperscale users before the natural gas units the Company is also seeking approval for can come online.

Q. Is there a value in choosing to move ahead with solar as opposed to a different generation type?

A. I believe so. Today there is little comparative solar in the SPP footprint and even less in Evergy West's control. This suggests that any incremental solar brought online now will be less likely

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to experience negative pricing or diminishing returns in expected value in the near-term. The same cannot be said for new wind generation investments. Utility-scale solar also benefits from generous subsidies from the federal government and can also be designed in such a manner as to have some of its capital costs offset by customers who are willing to pay a premium to have the renewable energy credits retired on their behalf. The construction and permitting process for large modular solar farms should also be quicker than for dispatchable thermal generation or wind farms. Importantly, despite a large upfront capital investment, solar has no fuel costs. Solar farms also do not omit emissions that would be subject to future Clean Air Act violations like thermal units. Additionally, solar farms could be paired with large storage batteries which could increase the value of the solar investment by supplying excess energy during peak hours. Finally, all things being equal, a diversified generation mix is a good hedge against future uncertainty.

Q. Has the market value of solar changed since the Company filed this application?

A. Yes, and in a hurry. Cost uncertainty related to supply chain constraints, increased international trade tariffs and a likely cancellation of solar subsidies are all either being realized or likely to occur in the near future.[1] As a result, the estimated costs of these two projects are almost certainly grossly understated and likely already exceed the excess cost parameters put forward in the Staff recommendation (i.e., more than a 5% cost increase from the Company's direct testimony).

The recently released White House Fiscal year 2026 discretionary budget removes over $20 billion in discretionary funding from the Department of Energy with much of that directed towards the elimination of subsidies for renewable projects.[2] Further roll back or elimination

[1] Gerke, P. (2025) Trump's proposed budget cancels billions of dollars in infrastructure investments, environmental programs, research grants, and renewable energy projects. *Renewable Energy World: Factor This*. https://www.renewableenergyworld.com/energy-business/policy-and-regulation/trumps-proposed-budget-cancels-billions-of-dollars-in-infrastructure-investments-environmental-programs-research-grants-and-renewable-energy-projects/

[2] For example, the Trump administration is proposing to cancel DOE funding from the Infrastructure Investment and Jobs Act (IIJA) stating:

The Budget cancels over $15 billion in Green New Scam funds committed to build unreliable

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of the Investment and Production Tax Credits ("ITC" and "PTC") related to intermittent energy subsidies has a non-zero chance of occurring. Taken together, cost increases from the originally filed application would appear to be a foregone conclusion.

Q. Would you still support the project if costs greatly exceed the filed amount?

A. I don't know. Evergy West picked the worst time to decide to finally commit to building its own generation given the excess demand and lack of supply being experienced across the U.S. all at once. Even if data centers don't populate in Evergy West's service territory in the near future, they most certainly will in other parts of the SPP footprint. This will drive up future reserve margins, and will most certainly result in higher fuel-related costs. A Winter Storm Uri-like scenario of excessive market-related costs due to a hot summer or freezing winter seems almost certain if projected demand moves forward in any manner approaching industry forecasts. To say that reliability is a concern would be an understatement. All things being equal, I would much rather drop hundreds of millions of dollars on generation that will be used to meet future load than the one-time infusion of costs associated with fuel. No doubt Evergy's shareholders would want that as well.

Q. Is there an overall all-in cost estimate that you would consider too much?

A. I am afraid we may already be in that territory or dangerously close to it if the investment tax credits are factored out as a cost offset.

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renewable energy, removing carbon dioxide from the air, and other costly technologies burdensome to ratepayers and consumers. The Budget also ends taxpayer handouts to electric vehicle and battery makers and cancels the Carbon Dioxide Transportation Infrastructure Finance and Innovation Act—a Biden Administration program of so little interest that not a single dollar has been awarded to date. This amount consists of unplanned and unobligated balances, meaning the cancellation would not impact any currently awarded projects.

White House (2025) Major Discretionary Funding Changes (proposal). https://www.whitehouse.gov/wp-content/uploads/2025/05/Fiscal-Year-2026-Discretionary-Budget-Request.pdf

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Q. Do you have any final thoughts on this topic?

A. I am very concerned about the affordability of Evergy West's electric service over the next few years. Consider for a moment the last five years of realized capital expenditures compared to the projected five-year capital investment plan seen in Tables 2 and 3 respectively.

Table 2: Evergy West Actual Annual Capital Expenditures (2020-2024) [3]

2020	2021	2022	2023	2024	2020-2024	5-year average
$334 M	$504 M	$437 M	$402 M	$418 M	$2,095 B	**$419 M**

Table 3: Evergy West Planned Annual Capital Expenditures (2025-2029)[4]

2025	2026	2027	2028	2029	2025-2029	5-year average
$689 M	$876 M	$963 M	$1,299 M	$1,150 B	$4,977 B	**$995.4 M**

Evergy's next five-year annual capital expenditures are set to increase 137% annually compared to the last five-year historic average, but what is even more concerning is that these projected numbers are almost certainly understated given the federal policy changes surrounding international trade, domestic energy, and expected tax code changes. Of course, the situation is exacerbated by fears of a recession and persistent inflationary trends. Simply put, we need to be taking a hard look at every investment and every cost-saving opportunity.

In my opinion, something has to give. If expected costs for these solar farms are grossly understated then that needs to be weighed against other capital expenditures.

[3] Figures based on Evergy Missouri West's Capital Investment Reports 2019-2024 filed in Case No. EO-2019-0045.
[4] Figures based on Evergy Missouri West's Capital Investment Report 2024 filed in Case No. EO-2019-0045.

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The Company is not directly responsible for what is occurring at the macro-level regarding uncertainty in the economy, but the Company's historical inaction has exacerbated the problem it now finds itself in—building generation in a resource and policy-constrained environment.

Finally, it should not be lost on the Commission that a more capital-intensive solar farm will result in a greater rate base for the Company and consequently more earnings. The Commission should be cognizant that Evergy West management alone has created this situation and they should not be rewarded for it.

As it stands, I support the Staff's position for the Company to refile testimony and set up contingency plans if the costs of its filed position exceeds the 5% threshold.

III. SUPPORT FOR STAFF'S POSITION

Q. What is Staff's filed position on this application?

A. Staff supports the application subject to the following conditions:

- EMW [Evergy Missouri West] shall provide the Commission and Staff with justification for moving forward with the Projects if any costs or assumptions change from those estimates included in the workpapers that underly EMW's direct testimony by more than 5%, including any costs that exceed the base amounts included in the underlying assumptions provided in support of EMW's application in this case.
- EMW shall provide Staff quarterly reports for a period of three years on negative prices published at the actual P-node and the impact on revenue.
- Include contingency plans based on key input scenarios such as:
    - Market price changes for key components by resource type;
    - Changes to tax incentives;
    - Load Assumptions; and
    - Ongoing litigation regarding existing resources.
- **_____
  _____

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_____
_____ **

- EMW shall file in this docket a site-specific Emergency Action Plan Operations and Maintenance Plan for the Projects within 60 days of the facility being placed in service.
- EMW shall provide quarterly reporting of the progress of construction of the Projects. This report shall include, but not be limited to, quarterly progress reports on permitting, plans, specifications, and construction progress for the Projects.
- **_____
_____ **

Q. Do you support these conditions?

A. I do and I have additional conditions that I will offer later in this testimony.

Q. Are there additional conditions that Staff recommends?

A. Yes. Staff rejected the Company's proposed Green Solution Connections Program as not being properly valued. Alternatively, Staff provided a list of conditions surrounding the program if the Commission approved the Green Solution Connections Program.

Q. Do you support Staff's position on the Green Solutions Connection Program?

A. I am generally in support of customer off-set programs directed at renewable projects. That being said, Missouri's electric utilities continue to approach these programs incorrectly by building the assets first and then soliciting subscriptions. If this program were to garner real interest they would have done the solicitations first and then the Company could justify building it based on committed interest. This is known as "additionality" and refers to the fact that companies want to demonstrate that their renewable energy investments are not just buying existing energy but are truly driving the growth of renewable energy sources. [5] I consider this

[5] Bieller J. (2022) What you need to know about additionality. Renewable Energy & Cleantech. https://perspectives.se.com/renewable-energy/what-you-need-to-know-about-additionality

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a lost opportunity for the Company to minimize the costs of this project and should be a factor considered in future prudence reviews.

As to the specific conditions articulated by Staff, I will refrain from opining on that issue until after I hear the Company's response.

Q. Did Staff support the Company's request for decisional prudence?

A. No. How could they given the large cost uncertainty surrounding these projects and flaws in their IRP modeling?

Q. What is your position over the Company's request for decisional prudence?

A. I strongly recommend that the Commission reject this request consistent with Staff's Report.

IV. ADDITIONAL CONDITIONS

Q. Do you have any recommendations regarding future operations and management of vegetation?

A. Yes. I recommend that the Company investigate the feasibility of solar grazing with local sheep for both solar sites.

Q. What is solar grazing?

A. Per the 2024 Ameren Missouri Feasibility Analysis Report on Agrivoltaics/Livestock Grazing:

> Solar grazing is a type of agrivoltaics1 that incorporates livestock and solar energy generation and is one of the few agrivoltaics practices that is being successfully employed at the utility-scale (> 5 MW) in the United States (EPRI 2024). When site characteristics allow, solar grazing can be implemented as an alternate vegetation management strategy over traditional options such as mowing and herbicide application and has been reported to reduce operations and maintenance (O&M) costs (Abdullah Al Mamun et al. 2022, Gerke 2024).
>
> In addition to potential O&M savings, use of livestock grazing in place of mowing to manage vegetation at solar sites can provide supportive ecosystem services such as

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habitat for pollinators and other wildlife, increased soil health and carbon sequestration, and improved fire suppression (Kochendoerfer and Thonney 2021, Towner et al. 2022, ASGA 2024b, EPRI 2024).

Grazing is considered more beneficial for pollinators and other wildlife than mowing because plants can "rebound faster than they would following a mowing event," and depending on the mowing regime, rotational management of pastures may allow for more gradual or staggered bloom periods (ASGA 2024b). Employing livestock for vegetation management may be of particular benefit at sites that present challenges for mowing, such as those with rocky terrain or in areas of high rainfall (Gerke 2024, EPRI 2024).

Additionally, use of livestock grazing may reduce or eliminate damage to panels and other site equipment, such as collisions and rocks/debris kicked up during mowing (Grasby et al. 2021, McCall et al. 2023). Beyond these benefits, solar grazing has the potential to improve community support for solar projects, in turn facilitating successful project deployment (EPRI 2023, EPRI 2024, SETO n.d., Guarino and Swanson 2022). For instance, an 800 MW solar project in Ohio that had been met with local opposition received approval partly due to its incorporation of agrivoltaics, including 1,000 sheep (Gilbert 2024).[6]

For all of the reasons referenced above as well as the possibility of goodwill in marketing this asset to future solar subscribers I recommend that the Commission order the Company to investigate the feasibility of introducing solar grazing as an O&M feature of these projects moving forward. This study can be done in-house and should be filed in this docket with the Commission no later than six months after Commission approval.

[6] See also GM-2.

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Q. What other conditions do you have?

A. I recommend that Evergy West commit to sharing land-use and conservation impact data with the non-profit Renewable Energy Wildlife Institute's ("REWI") SolSource Database for the duration of its operations.

Q. What is the SolSource Database?

A. The SolSource Database seeks to answer the question: How can PV solar facilities support healthy ecosystems? That has proven to be a challenging question to answer as most site-specific information regarding these questions are confidential; thus any "lessons learned" are often not shared and mistakes continue to occur.

The SolSource Database intends to function as a one-stop-shop community resource of solar-datasets that will enable its users (developers, utilities, researchers, regulatory agencies, etc…) to learn and build on solutions to that question. Importantly, the process is both confidential where necessary and protects against sharing sensitive information

Q. What are some examples of data that would be shared?

A. Existing data templates include common types of standardized wildlife surveys conducted pre- and post-construction such as:

- Avian point counts
- Transect surveys for vegetation
- Transect surveys for pollinators & insects
- Transect surveys for herpetiles
- Artificial cover searches for herpetiles
- Camera trapping for wildlife detections, both traditional and Adapted-Hunt Drift Fence Technique
- Passive acoustic surveys for birds, bats, frogs, etc

Additional data templates in development include:

- Animal movement or location data, i.e., VHF or GPS collars

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- Preconstruction surveys for presence of sensitive species habitat
- Site preparation data
  - Habitat maps
  - Soil preparation data (grading and vegetation removal)
- Operation and Maintenance data
  - Vegetation establishment plans
- Site Characteristics
  - Prior land use
  - Any mitigation actions taken including but not limited to permeable fences, habitat set-asides, habitat creation, establishment of wildlife movement passages

Q. Why are you advocating for this feature?

A. All forms of electricity generation have an impact on our air, water, and land, but the impacts can vary. Being good stewards of our land and resources should be at the forefront of any planned investment because we have seen what happens when it's not. Ameren Missouri's High Prairie Wind Farm and its excessive "taking" (i.e., killing) of endangered and protected species which resulted in forced curtailments and millions of dollars in lost revenue should serve as an example of what should never occur again in Missouri (or anywhere else).

But the lessons to be gleaned from the High Prairie Wind Farm will largely be lost on the industry as a whole because data is rarely, if ever shared. Admittedly, my example is based on a wind farm, but I believe the same rationale exists for solar farms. According to REWI, the SolSource Database was designed to solve that problem for the Solar Industry. The SolSource Database would help provide:

> A clear understanding of the risks and benefits of solar energy to natural resources is needed to ensure the process of siting and permitting solar energy projects minimizes impacts/maximizes benefits. Collaboration through data-sharing will rapidly increase our understanding of solar-natural resources challenges and opportunities is data-

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sharing and collaboration. Rather than starting the environmental review of each new solar project from a place of complete uncertainty, we can pool information from numerous solar projects across regions for review and synthesis.[7]

The probability of successful siting and continued operations of solar generation projects with large geographic footprints (e.g., a 100MW solar farm requires between 400 to 500 acres to operate) should increase over time based on the lessons learned from past projects. But that will only be true if that information is shared and consolidated. The SolSource Database would serve as a valuable clearinghouse for that data.

Q. Do you have any final conditions/recommendations to make?

A. Yes. I recommend that Evergy West incorporate and solicit feedback on both the solar grazing and SolSource Data sharing from the U.S. Fish and Wildlife Service, the Missouri Department of Conservation, and the Kansas equivalent for feedback and recommendations. Finally, I also recommend that the Company meet with the OPC and Staff annually for the next three years to provide updates on the Company's experience and participation with the SolSource Database, and, if executed, updates on the effectiveness in implementing solar grazing at these sites.

Q. Does this conclude your testimony?

A. Yes.

[7] REWI (2025) SolSource Database. https://rewi.org/about-us/our-work/solsource/

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BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of Evergy Missouri West, Inc. d/b/a Evergy Missouri West for Permission and Approval of Certificates of Public Convenience and Necessity Authorizing It to Construct, Install, Own, Operate, Manage, Maintain and Control Two Solar Generation Facilities	)	Case No. EA-2024-0292

AFFIDAVIT OF GEOFF MARKE

STATE OF MISSOURI)
) **ss**
COUNTY OF COLE)

Geoff Marke, of lawful age and being first duly sworn, deposes and states:

1. My name is Geoff Marke. I am a Chief Economist for the Office of the Public Counsel.

2. Attached hereto and made a part hereof for all purposes is my rebuttal testimony.

3. I hereby swear and affirm that my statements contained in the attached testimony are true and correct to the best of my knowledge and belief.

Geoff Marke
Chief Economist

Subscribed and sworn to me this 5th day of May 2025.

TIFFANY HILDEBRAND
NOTARY PUBLIC - NOTARY SEAL
STATE OF MISSOURI
MY COMMISSION EXPIRES AUGUST 8, 2027
COLE COUNTY
COMMISSION #15637121

Tiffany Hildebrand
Notary Public

My Commission expires August 8, 2027.