BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter Of Evergy Metro, Inc. d/b/a Evergy Missouri Metro's 2022 Integrated Resource Plan Annual Update Filing	)))	**File No. EO-2022-0201**
In the Matter of Evergy Missouri West, Inc. d/b/a Evergy Missouri West's 2022 Integrated Resource Plan Annual Update Filing	)))	**File No. EO-2022-0202**

STAFF REPORT AND RECOMMENDATION

COMES NOW the Staff of the Missouri Public Service Commission ("Staff") and for its Staff Report and Recommendation respectfully states as follows:

1. Staff has reviewed the various filings made to these dockets by Evergy Metro, Inc. d/b/a Evergy Missouri Metro and Evergy Missouri West, Inc. d/b/a Evergy Missouri West (collectively, "the Companies"), and has participated in the workshop discussions held on July 7, 2022, as well as additional discussions with the Companies.

2. On July 15, 2022, the Companies gave notice that no changes would be made to the June 10, 2022 Annual Update Reports filed in the above-captioned dockets as a result of the discussions at the July 7, 2022, workshop.

3. However, the Companies' Annual Update Reports and the discussions at the workshop have given Staff concerns. As explained more specifically in Staff's Memorandum, attached hereto as Appendix A, Staff is concerned that the Company is influencing the inputs in its capacity expansion modeling to get the outputs it wants.

4. Because of the Staff's concerns which are set out in Appendix A, Staff recommends that the Companies should allow the Plexos capacity expansion model to

develop an optimized resource plan by selecting from an inventory of resource options, including both supply-side and demand-side resources. The Company should provide further clarification of how the Plexos capacity expansion model is being used to both develop and test ARPs. If the Company is pre-determining DSM levels, retirements, and renewable additions, it should identify which alternative resource plans[1] use pre-determined inputs and which ARPs were derived either wholly, or in part, through the Plexos capacity expansion optimization process. The Company should also provide this information in future Triennial IRPs and IRP annual updates.

WHEREFORE, Staff respectfully submits its Staff Report and Recommendation regarding the Annual Updates of Evergy Metro, Inc. d/b/a Evergy Missouri Metro and Evergy Missouri West, Inc., d/b/a Evergy Missouri West.

/s/ *Paul T. Graham*

Senior Counsel Missouri Bar No. 30416
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CERTIFICATE OF SERVICE

The undersigned certifies by his signature below that on August 12, 2022, he filed the above document entitled Staff Report and Recommendation in the EFIS file of the Missouri Public Service Commission.

/s/ *Paul T. Graham*

[1] Referred to sometimes as "ARP's" in Staff's Memorandum.

M E M O R A N D U M

TO: Missouri Public Service Commission Official Case File
File Nos. EO-2022-0201 and EO-2022-0202
Evergy Metro, Inc. d/b/a Evergy Missouri Metro
Evergy Missouri West, Inc. d/b/a Evergy Missouri West

FROM: Brad J. Fortson, Regulatory Compliance Manager

DATE: /s/ Brad J. Fortson 8/12/2022 — Energy Resources Department / Date
/s/ Paul Graham 8/12/2022 — Staff Counsel Department / Date

SUBJECT: Staff Comments On the 2022 IRP Annual Updates For
Evergy Metro, Inc. d/b/a Evergy Missouri Metro and
Evergy Missouri West, Inc. d/b/a Evergy Missouri West

DATE: August 12, 2022

STAFF RECOMMENDATION

As further discussed in this memorandum, the Company should allow the capacity expansion model to develop an optimized resource plan by selecting from an inventory of resource options, including both supply-side and demand-side resources. The Company should provide further clarification of how the Plexos capacity expansion model is being used to both develop and test alternative resource plans ("ARPs"). If the Company is pre-determining DSM levels, retirements, and renewable additions it should identify which ARPs use pre-determined inputs and which ARPs were derived either wholly, or in part, through the Plexos capacity expansion optimization process. The Company should also provide this information in future Triennial IRPs and IRP annual updates.

EXECUTIVE SUMMARY

On June 10, 2022, Evergy Metro, Inc. d/b/a Evergy Missouri Metro ("EMM") and Evergy Missouri West, Inc. d/b/a Evergy Missouri West ("EMW") (collectively "Company") filed its *2022 IRP Annual Update* in Case Nos. EO-2022-0201 and EO-2022-0202, respectively. On July 7, 2022, the Company held an annual update workshop with stakeholders as required by 20 CSR 4240-22.080(3). The Company then filed its *IRP Annual Update Summary Report* ("Summary Report") on July 15, 2022, as required by 20 CSR 4240-22.080(3)(C). Commission Staff ("Staff") is filing its comments in this memorandum within thirty days of the Summary Report as allowed in 20 CSR 4240-22.080(3)(D).

APPENDIX A

2021 TRIENNIAL IRP vs. 2022 IRP ANNUAL UPDATE

In its 2022 IRP Annual Update, the Company has changed its preferred plan from its preferred plan in its 2021 Triennial IRP. In its newly selected preferred plan, changes have been made to the timing and scale of renewable investments in 2022 – 2025 based on the response received as part of the Company's 2021 Requests for Proposal, including accelerating wind previously identified in 2025 and 2026 into 2024 and 2025 and delaying solar previously identified in 2024 to 2026. In addition, the retirement of coal generation at Lawrence Energy Center in 2024 has been modified to reflect the continued operation of Lawrence 5 on natural gas. For the implementation period of 2022 – 2025, the changes from the 2021 Triennial IRP to the 2022 IRP Annual Update for EMM, EMW, and the Company jointly are illustrated in the following tables:

Table 4: Evergy Metro Resource Plan Implementation Period 2022-2025

	2021 Triennial IRP	2022 IRP Annual Update
Retirements		
Wind Additions	120 MW in 2025	150 MW in 2024 150 MW in 2025
Solar Additions	230 MW in 2024	
Gas Additions		
DSM	RAP	RAP

Table 4: Evergy Missouri West Resource Plan Implementation Period 2022-2025

	2021 Triennial IRP	2022 IRP Annual Update
Retirements	Lake Road 4/6 in 2024	
Wind Additions	80 MW in 2025	150 MW in 2024
Solar Additions	120 MW in 2024	
Gas Additions		
DSM	RAP	RAP

Table 3: Evergy Joint Resource Plan Implementation Period 2022-2025

	2021 Triennial IRP	2022 IRP Annual Update
Retirements	Lawrence 4 & 5 in 2023 Lake Road 4/6 in 2024	Lawrence 4 & 5 (Coal) in 2024 Lake Road 4/6 in 2024
Wind Additions	500 MW in 2025	300 MW in 2024 500 MW in 2025
Solar Additions	350 MW in 2023 350 MW in 2024	190 MW in 2024
Gas Additions		Lawrence 5 NG (338 MW) in 2024
DSM	RAP (Metro and Missouri West), RAP- (Kansas Central)	RAP (Metro and Missouri West), RAP- (Kansas Central)
Note: Lawrence 5 is expected to cease operating on coal and begin operating on natural gas in 2024.		

In the years of 2026 – 2031, previously identified solar addition in 2024, which was subsequently delayed to 2026 based on RFP responses, has been replaced with wind based on capacity expansion results, although actual resource selection may vary based on continued procurement activities.

Later additions are all reduced slightly to 300 – 450 MW per year (as opposed to 500 MW) based on capacity expansion results. For the years of 2026 – 2031, the changes from the 2021 Triennial IRP to the 2022 IRP Annual Update for EMM, EMW, and the Company jointly are illustrated in the following tables:

Table 6: Evergy Metro Resource Plan Medium Term 2026-2031

	2021 Triennial IRP	2022 IRP Annual Update
Retirements		
Wind Additions	120 MW in 2026	108 MW in 2026
Solar Additions	120 MW in 2028 120 MW in 2029 120 MW in 2030 120 MW in 2031	72 MW in 2028 108 MW in 2029 108 MW in 2030 108 MW in 2031
Gas Additions		
DSM	RAP	RAP

Table 6: Evergy Missouri West Resource Plan Medium Term 2026-2031

	2021 Triennial IRP	2022 IRP Annual Update
Retirements	Jeffrey 3 in 2030	Jeffrey 3 in 2030 Lake Road 4/6 in 2030
Wind Additions	80 MW in 2026	72 MW in 2026
Solar Additions	80 MW in 2028 80 MW in 2029 80 MW in 2030 80 MW in 2031	48 MW in 2028 72 MW in 2029 72 MW in 2030 72 MW in 2031
Gas Additions		
DSM	RAP	RAP

Table 5: Evergy Joint Resource Plan Medium Term 2026-2031

	2021 Triennial IRP	2022 IRP Annual Update
Retirements	Jeffrey 3 in 2030	Jeffrey 3 in 2030
Wind Additions	500 MW in 2026	450 MW in 2026
Solar Additions	500 MW in 2028 500 MW in 2029 500 MW in 2030 500 MW in 2031	300 MW in 2028 450 MW in 2029 450 MW in 2030 450 MW in 2031
Gas Additions		
DSM	RAP (Metro and Missouri West), RAP- (Kansas Central)	RAP (Metro and Missouri West), RAP- (Kansas Central)

For the years 2032 – 2041, there are more planned solar additions in 2033 – 2035, the addition of 450 MW of wind in 2041, and the replacement of some assumed combustion turbines between 2036 and 2041 with combined cycle resources. The Company continues to assume that these resources currently modeled as natural gas-fired combustion turbines and combined cycle plants will ultimately be replaced by new non-emitting, firm, dispatchable resources.[1] For the years of 2032 – 2041, the changes from the 2021 Triennial IRP to the 2022 IRP Annual Update for EMM, EMW, and the Company jointly are illustrated in the following tables:

Table 8: Evergy Metro Resource Plan Long Term 2032-2041

	2021 Triennial IRP	2022 IRP Annual Update
Retirements	LaCygne 1 in 2032 Iatan 1 in 2039 LaCygne 2 in 2039	LaCygne 1 in 2032 Iatan 1 in 2039 LaCygne 2 in 2039
Wind Additions		450 MW in 2041
Solar Additions	120 MW in 2032	108 MW in 2032 108 MW in 2033 108 MW in 2034 108 MW in 2035
Gas Additions	3 CT (699 MW) in 2040	1 CC (418 MW) in 2040
DSM	RAP	RAP

Table 8: Evergy Missouri West Resource Plan Long Term 2032-2041

	2021 Triennial IRP	2022 IRP Annual Update
Retirements	Iatan 1 in 2039 Jeffrey 1 in 2039 Jeffrey 2 in 2039	Iatan 1 in 2039 Jeffrey 1 in 2039 Jeffrey 2 in 2039
Wind Additions		
Solar Additions	80 MW in 2032	72 MW in 2032 72 MW in 2033 72 MW in 2034 72 MW in 2035
Gas Additions	1 CT (233 MW)in 2033 1 CT (233 MW) in 2039 1 CT (233 MW) in 2040	1 CT (237 MW) in 2036 1 CT (237 MW) in 2040
DSM	RAP	RAP

[1] *2022 IRP Annual Update*, filed on June 10, 2022, in Case Nos. EO-2022-0201 and EO-2022-0202, pg. 10.

Table 7: Evergy Joint Resource Plan Long Term 2032-2041

	2021 Triennial IRP	2022 IRP Annual Update
Retirements	LaCygne 1 in 2032 Iatan 1 in 2039 LaCygne 2 in 2039 Jeffrey 1 in 2039 Jeffrey 2 in 2039	LaCygne 1 in 2032 Iatan 1 in 2039 LaCygne 2 in 2039 Jeffrey 1 in 2039 Jeffrey 2 in 2039
Wind Additions		450 MW in 2041
Solar Additions	500 MW in 2032	450 MW in 2032 450 MW in 2033 450 MW in 2034 450 MW in 2035 150 MW in 2036
Gas Additions	1 CT (233 MW) in 2036 1 CT (233 MW) in 2037 1 CT (233 MW) in 2039 12 CT (2,796 MW) in 2040	1 CT (237 MW) in 2036 1 CC (418 MW) in 2038 2 CC (836 MW) in 2039 4 CT (948 MW) in 2040
DSM	RAP (Metro and Missouri West), RAP- (Kansas Central)	RAP (Metro and Missouri West), RAP- (Kansas Central)

ALTERNATIVE RESOURCE PLANS

20 CSR 4240-22.060(1) requires the utility to design alternative resource plans ("ARP") to satisfy at least the objectives and priorities identified in 20 CSR 4240-22.010(2). In total, ten EMM alternative resource plans were developed for the 2022 IRP Annual Update. In total, eleven EMW alternative resource plans were developed for the 2022 IRP Annual Update. The alternative resource plans for EMM and EMW are illustrated in the following tables:

Table 23: Evergy Metro Alternative Resource Plan Overview

Plan Name	DSM Level	Retire	Renewable Additions		Generation Additions (if needed)
Metro AAAAA	RAP + DSR (MO) /RAP- + DSR (KS)	LaCygne 1: Dec 31, 2032 LaCygne 2: Dec 31, 2039 Iatan 1: Dec 31, 2039	120 MW Wind 2025 120 MW Wind 2026	230 MW Solar 2024 120 MW Solar 2028 120 MW Solar 2029 120 MW Solar 2030 120 MW Solar 2031 120 MW Solar 2032	1 CC (418 MW) in 2040
Metro BBAAA	RAP + DSR (MO) /RAP- + DSR (KS)	LaCygne 1: Dec 31, 2032 LaCygne 2: Dec 31, 2039 Iatan 1: Dec 31, 2039	150 MW Wind 2024 150 MW Wind 2025	230 MW Solar 2026 120 MW Solar 2028 120 MW Solar 2029 120 MW Solar 2030 120 MW Solar 2031 120 MW Solar 2032	1 CC (418 MW) in 2040
Metro CBAAA	RAP + DSR (MO) /RAP- + DSR (KS)	LaCygne 1: Dec 31, 2032 LaCygne 2: Dec 31, 2039 Iatan 1: Dec 31, 2039	150 MW Wind 2024 150 MW Wind 2025	230 MW Solar 2026 120 MW Solar 2028 120 MW Solar 2029 120 MW Solar 2030 120 MW Solar 2031 120 MW Solar 2032	1 CC (418 MW) in 2040
Metro CBBAB	RAP + DSR (MO) /RAP- + DSR (KS)	LaCygne 1: Dec 31, 2032 LaCygne 2: Dec 31, 2039 Iatan 1: Dec 31, 2039	150 MW Wind 2024 150 MW Wind 2025	230 MW Solar 2026 120 MW Solar 2028 120 MW Solar 2029 120 MW Solar 2030 120 MW Solar 2031 120 MW Solar 2032 36 MW Solar 2033 108 MW Solar 2034 108 MW Solar 2035 150 MW Solar 2038	1 CC (418 MW) in 2040
Metro CCBAA	RAP + DSR (MO) /RAP- + DSR (KS)	LaCygne 1: Dec 31, 2032 LaCygne 2: Dec 31, 2039 Iatan 1: Dec 31, 2039	150 MW Wind 2024 150 MW Wind 2025	72 MW Solar 2032 108 MW Solar 2033 108 MW Solar 2034 72 MW Solar 2035 150 MW Solar 2040 150 MW Solar 2041	1 CC (418 MW) in 2040
Metro CCBAB	RAP + DSR (MO) /RAP- + DSR (KS)	LaCygne 1: Dec 31, 2032 LaCygne 2: Dec 31, 2039 Iatan 1: Dec 31, 2039	150 MW Wind 2024 150 MW Wind 2025 108 MW Wind 2026	72 MW Solar 2028 108 MW Solar 2029 108 MW Solar 2030 108 MW Solar 2031 108 MW Solar 2032 108 MW Solar 2033 108 MW Solar 2034 108 MW Solar 2035	1 CC (418 MW) in 2040
Metro CCBAC	RAP + DSR (MO) /RAP- + DSR (KS)	Hawthorn 5: Dec 31, 2029 LaCygne 1: Dec 31, 2032 LaCygne 2: Dec 31, 2039 Iatan 1: Dec 31, 2039	150 MW Wind 2024 150 MW Wind 2025 36 MW Wind 2026	108 MW Solar 2030 108 MW Solar 2031 108 MW Solar 2032 108 MW Solar 2033 72 MW Solar 2034 108 MW Solar 2035 300 MW Solar 2036 300 MW Solar 2038 300 MW Solar 2039 300 MW Solar 2041	2 CC (836 MW) in 2040
Metro CCBAD	RAP + DSR (MO) /RAP- + DSR (KS)	LaCygne 2: Dec 31, 2029 LaCygne 1: Dec 31, 2032 Iatan 1: Dec 31, 2039	150 MW Wind 2024 150 MW Wind 2025 108 MW Wind 2026	36 MW Solar 2028 108 MW Solar 2029 108 MW Solar 2030 108 MW Solar 2031 108 MW Solar 2032 108 MW Solar 2033 108 MW Solar 2034 108 MW Solar 2035	1 CC (418 MW) in 2040
Metro CCBAE	RAP + DSR (MO) /RAP- + DSR (KS)	Iatan 1: Dec 31, 2029 LaCygne 1: Dec 31, 2032 LaCygne 2: Dec 31, 2039	150 MW Wind 2024 150 MW Wind 2025 108 MW Wind 2026	36 MW Solar 2029 108 MW Solar 2030 108 MW Solar 2031 108 MW Solar 2032 108 MW Solar 2033 108 MW Solar 2034 108 MW Solar 2035	1 CC (418 MW) in 2040
Metro CDAAA	RAP + DSR (MO) /RAP- + DSR (KS)	LaCygne 1: Dec 31, 2032 LaCygne 2: Dec 31, 2039 Iatan 1: Dec 31, 2039	150 MW Wind 2024 150 MW Wind 2025 108 MW Wind 2026	72 MW Solar 2028 108 MW Solar 2030 108 MW Solar 2031 108 MW Solar 2032 108 MW Solar 2033 108 MW Solar 2034 108 MW Solar 2035 108 MW Solar 2035	1 CC (418 MW) in 2040

Table 24: Evergy Missouri West Alternative Resource Plan Overview

Plan Name	DSM Level	Retire	Renewable Additions		Generation Additions (if needed)
West AAAAA	RAP + DSR	Lake Road 4/6: Dec 31, 2024 Jeffrey 3: Dec 31, 2030 Jeffrey 1 & 2: Dec 31, 2039 Iatan 1: Dec 31, 2039	80 MW Wind 2025 80 MW Wind 2026	120 MW Solar 2024 80 MW Solar 2028 80 MW Solar 2029 80 MW Solar 2030 80 MW Solar 2031 80 MW Solar 2032	1 CT (237 MW) in 2036 1 CT (237 MW) in 2040
West BBAAA	RAP + DSR	Lake Road 4/6: Dec 31, 2024 Jeffrey 3: Dec 31, 2030 Jeffrey 1 & 2: Dec 31, 2039 Iatan 1: Dec 31, 2039	150 MW Wind 2024	120 MW Solar 2026 80 MW Solar 2028 80 MW Solar 2029 80 MW Solar 2030 80 MW Solar 2031 80 MW Solar 2032	1 CT (237 MW) in 2036 1 CT (237 MW) in 2040
West CBAAA	RAP + DSR	Lake Road 4/6: Dec 31, 2024 Jeffrey 3: Dec 31, 2030 Jeffrey 1 & 2: Dec 31, 2039 Iatan 1: Dec 31, 2039	150 MW Wind 2024	120 MW Solar 2026 80 MW Solar 2028 80 MW Solar 2029 80 MW Solar 2030 80 MW Solar 2031 80 MW Solar 2032	1 CT (237 MW) in 2036 1 CT (237 MW) in 2040
West CBBAB	RAP + DSR	Lake Road 4/6: Dec 31, 2024 Jeffrey 2 & 3: Dec 31, 2030 Jeffrey 1: Dec 31, 2039 Iatan 1: Dec 31, 2039	150 MW Wind 2024	120 MW Solar 2026 80 MW Solar 2028 80 MW Solar 2029 80 MW Solar 2030 80 MW Solar 2031 80 MW Solar 2032 24 MW Solar 2033 72 MW Solar 2034 72 MW Solar 2035 150 MW Solar 2038	1 CT (237 MW) in 2036 1 CT (237 MW) in 2040
West CCBAA	RAP + DSR	Lake Road 4/6: Dec 31, 2024 Jeffrey 3: Dec 31, 2030 Jeffrey 1 & 2: Dec 31, 2039 Iatan 1: Dec 31, 2039	150 MW Wind 2024	48 MW Solar 2032 72 MW Solar 2033 72 MW Solar 2034 48 MW Solar 2035	1 CT (237 MW) in 2036 1 CT (237 MW) in 2040
West CCBAB	RAP + DSR	Lake Road 4/6: Dec 31, 2024 Jeffrey 2 & 3: Dec 31, 2030 Jeffrey 1: Dec 31, 2039 Iatan 1: Dec 31, 2039	150 MW Wind 2024 72 MW Wind 2026	48 MW Solar 2028 72 MW Solar 2029 72 MW Solar 2030 72 MW Solar 2031 72 MW Solar 2032 72 MW Solar 2033 72 MW Solar 2034 72 MW Solar 2035	1 CT (237 MW) in 2036 1 CT (237 MW) in 2040
West CCBAC	RAP + DSR	Lake Road 4/6: Dec 31, 2024 Jeffrey 3: Dec 31, 2030 Jeffrey 1 & 2: Dec 31, 2039 Iatan 1: Dec 31, 2039	150 MW Wind 2024 24 MW Wind 2026	72 MW Solar 2030 72 MW Solar 2031 72 MW Solar 2032 72 MW Solar 2033 48 MW Solar 2034 72 MW Solar 2035	1 CT (237 MW) in 2036 1 CT (237 MW) in 2040
West CCBAD	RAP + DSR	Lake Road 4/6: Dec 31, 2024 Jeffrey 3: Dec 31, 2030 Jeffrey 1 & 2: Dec 31, 2039 Iatan 1: Dec 31, 2039	150 MW Wind 2024 72 MW Wind 2026	24 MW Solar 2028 72 MW Solar 2029 72 MW Solar 2030 72 MW Solar 2031 72 MW Solar 2032 72 MW Solar 2033 72 MW Solar 2034 72 MW Solar 2035	1 CT (237 MW) in 2036 1 CT (237 MW) in 2040
West CCBAE	RAP + DSR	Lake Road 4/6: Dec 31, 2024 Iatan 1: Dec 31, 2029 Jeffrey 3: Dec 31, 2030 Jeffrey 1 & 2: Dec 31, 2039	150 MW Wind 2024 72 MW Wind 2026	24 MW Solar 2029 72 MW Solar 2030 72 MW Solar 2031 72 MW Solar 2032 72 MW Solar 2033 72 MW Solar 2034 72 MW Solar 2035	1 CT (237 MW) in 2036 1 CT (237 MW) in 2040
West CDAAA	RAP + DSR	Lake Road 4/6: Dec 31, 2024 Jeffrey 3: Dec 31, 2030 Jeffrey 1 & 2: Dec 31, 2039 Iatan 1: Dec 31, 2039	150 MW Wind 2024 72 MW Wind 2026	48 MW Solar 2028 72 MW Solar 2029 72 MW Solar 2030 72 MW Solar 2031 72 MW Solar 2032 72 MW Solar 2033 72 MW Solar 2034 72 MW Solar 2035	1 CT (237 MW) in 2036 1 CT (237 MW) in 2040
West CDAAF	RAP + DSR	Lake Road 4/6: Dec 31, 2030 Jeffrey 3: Dec 31, 2030 Jeffrey 1 & 2: Dec 31, 2039 Iatan 1: Dec 31, 2039	150 MW Wind 2024 72 MW Wind 2026	48 MW Solar 2028 72 MW Solar 2029 72 MW Solar 2030 72 MW Solar 2031 72 MW Solar 2032 72 MW Solar 2033 72 MW Solar 2034 72 MW Solar 2035	1 CT (237 MW) in 2036 1 CT (237 MW) in 2040

STAFF CONCERN

Capacity Expansion Model Optimization

It is not clear from Staff's review of the Company's 2022 IRP Annual Update how the Company is using the Plexos capacity expansion model to evaluate its ARPs. The tables and discussion in the 2022 IRP Annual Update do not provide enough information to determine if the capacity additions in the ARPs tested were pre-determined resource plans or represent resource plans selected by Plexos through its optimization process.

Pre-determined resource plans specify the type, timing, and amount of resource developments as inputs to a capacity expansion model. In contrast, capacity expansion models like Plexos can also be provided with an inventory of resource options, both specific resources and/or generic resources, that are then selected by the model through its optimization process based on their relative cost and operating characteristics. Resource plans derived in this manner are model outputs, rather than inputs.

In its 2022 IRP Annual Update, the Company states that through the implementation of Plexos, the Company is now able to complete capacity expansion modeling. In capacity expansion modeling, the model (Plexos) is able to generate an "optimized" (lowest cost) resource plan given a certain market scenario and a set of constraints and resource options. This new capability has created additional flexibility in the Company's modeling processes and was used in this 2022 IRP Annual Update process to supplement individual ARPs which were used to test discrete decisions (similar to past IRPs). Capacity expansion modeling was not performed using MIDAS (the Company's prior modeling software) in the past.[2]

The Company's statement appears to indicate that Plexos was used to generate optimized capacity expansion plans. However, it is not clear from the narrative whether the type, amount, and schedule of development for the ARPs considered by the Company were inputs to the model or outputs from the model. Plexos can be used to "test discrete decisions" by estimating the Net Present Value of Revenue Requirement ("NPVRR") of a pre-determined set of resource plans (i.e., type, amount, and schedule) under a range of inputs (e.g., CO_2 prices) and constraints (e.g., plant retirement assumptions). Alternatively, it can be used to develop resource plans under a range of inputs using the model's optimization logic to select the type, amount, and schedule of resource development.

[2] *2022 IRP Annual Update*, filed on June 10, 2022, in Case Nos. EO-2022-0201 and EO-2022-0202, pg. 45.

Given the similarities in ARPs (Demand-Side Management ("DSM") levels, retirements, and renewable additions), it appears these retirements and resources were an input to Plexos as opposed to an output derived from the model's optimization process. Staff is concerned that the Company is influencing the inputs in its modeling to get the outputs it wants.

STAFF RECOMMENDATION

Due to Staff's concern that the Company is influencing the inputs in its capacity expansion modeling to get the outputs it wants, the Company should allow the capacity expansion model to develop an optimized resource plan by selecting from an inventory of resource options, including both supply-side and demand-side resources. The Company should provide further clarification of how the Plexos capacity expansion model is being used to both develop and test ARPs. If the Company is pre-determining DSM levels, retirements, and renewable additions it should identify which ARPs use pre-determined inputs and which ARPs were derived either wholly, or in part, through the Plexos capacity expansion optimization process. The Company should also provide this information in future Triennial IRPs and IRP annual updates.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Evergy Metro, Inc., d/b/a Evergy Missouri Metro's 2022 Integrated Resource Plan Annual Update Filing	)))	**File No. EO-2022-0201**
In the Matter of Evergy Missouri West, Inc., d/b/a Evergy Missouri West's 2022 Integrated Resource Plan Annual Update Filing	))))	**File No. EO-2022-0202**

AFFIDAVIT OF BRAD J. FORTSON

STATE OF MISSOURI)
) ss.
COUNTY OF COLE)

COMES NOW BRAD J. FORTSON, and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing *Staff Recommendation, in Memorandum form;* and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

BRAD J. FORTSON

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 11th day of August, 2022.

Dianna L. Vaught
Notary Public

DIANNA L VAUGHT
Notary Public - Notary Seal
STATE OF MISSOURI
Cole County
My Commission Expires: July 18, 2023
Commission #: 15207377