Exhibit: _____
Issues: Integrated Resource Planning
Witness: Kayla Messamore
Type of Exhibit: Surrebuttal Testimony
Sponsoring Party: Evergy Missouri West
Case No. EF-2022-0155
Date Testimony Prepared: July 22, 2022

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. EF-2022-0155

SURREBUTTAL TESTIMONY

OF

KAYLA MESSAMORE

ON BEHALF OF

EVERGY MISSOURI WEST

Kansas City, Missouri
July 2022

Table of Contents

SURREBUTTAL TESTIMONY

OF

KAYLA MESSAMORE

Case No. EF-2022-0155

I. INTRODUCTION

Q: Please state your name and business address.

A: My name is Kayla Messamore. 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 Vice President of Strategy and Long Term Planning 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 West, Inc. d/b/a Evergy Missouri West ("EMW" or the "Company").

Q: Did you previously submit direct testimony in this docket on March 11, 2022?

A: I did not. Direct testimony regarding EMW's fuel and purchased power costs and its operations during Winter Storm Uri was provided by John Bridson. However, in responding to Mr. Bridson's testimony, the Office of the Public Counsel ("OPC") focused

its allegations of imprudence on EMW's resource planning processes and not on EMW's actions during Winter Storm Uri. As a result, I will be responding to these allegations.

Q: What are your responsibilities?

A: My responsibilities include development of Evergy's corporate strategy and leadership of long-term planning activities, which include Energy Resource Management ("ERM"), Transmission Planning, Distribution Planning, Operations Compliance Engineering and Operations Technology. Specifically related to this testimony, the activities of ERM include integrated resource planning, wholesale energy purchase and sales evaluations, and renewable energy standards compliance.

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

A: I hold a Bachelor of Business Administration from the University of Texas at Austin. I worked as a strategy consultant in the power and utilities industry beginning in 2014 and have worked in strategy and planning at Evergy since 2018.

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: Yes.

Q: What is the purpose of your surrebuttal testimony?

A: The purpose of my surrebuttal testimony is to respond to the rebuttal testimony of OPC witnesses Lena Mantle and John Robinett.

Q: Please summarize the allegations and recommendations outlined in OPC witness Mantle and Robinett's testimony.

A: Mr. Robinett simply provides a summary of past documentation related to Ms. Mantle's testimony and does not make any additional arguments or recommendations. As a result, I will focus on Ms. Mantle's rebuttal testimony primarily where at page 2 she makes the following allegations and recommendations:

- "…that the costs incurred by Evergy West were not the result of the extreme and anomalous conditions of Winter Storm Uri but were the result of poor resource planning decisions."
- "…that the Commission not allow Evergy West to recover all of its Storm Uri fuel and purchased power costs *because of its imprudent planning* and because it did not use the option of controlled curtailment during Storm Uri to reduce costs [emphasis added]."

I will respond to each of these items below. Other allegations and recommendations from Ms. Mantle's testimony will be addressed by other Company witnesses.

<u>EMW Resource Planning</u>

Q: What support does OPC provide for the allegation that EMW's resource planning decisions were "poor" and "imprudent"?

A: As outlined in the testimony of Company witnesses John Reed and Larry Kennedy, OPC relies on no established prudence standard to support its allegation of imprudence. Instead, OPC attempts to support the allegation with a variety of incomplete, inaccurate, unsubstantiated, and inappropriate assertions, which I will address in detail below.

Q: OPC makes the claim that "Evergy, Inc… has been playing games with the resource plans of Evergy West ever since Great Plains Energy (now known as Evergy) acquired Aquila, Inc." How do you respond to this claim? (Mantle Rebuttal, p. 3, lines 17-19)

A: It's unclear what "games" OPC is claiming were played. Immediately after this claim, OPC outlines events in November 2018 regarding the retirement of Sibley Unit 3 and changes to EMW's resource mix since that time, but does nothing to explain why these decisions over the last four years equated to an alleged history of "gamesmanship" that stretches back almost 15 years to the acquisition of Aquila. Simply making this allegation without providing any factual support is a good example of the argumentative tone of OPC's testimony and its failure to assess EMW's decision-making according to the Commission's prudence standards.

Q: Please explain EMW's resource planning process and its primary objectives.

A: EMW completes and files an Integrated Resource Plan ("IRP") every three years, with annual updates in intervening years, as outlined in the IRP rules in 20 CSR 4240-22. As outlined in those rules, "the fundamental objective of the resource planning process at electric utilities shall be to provide the public with energy services that are safe, reliable, and efficient, at just and reasonable rates, in compliance with all legal mandates, and in a manner that serves the public interest and is consistent with state energy and environmental policies." This objective is met through the evaluation of a variety of Alternative Resource Plans ("ARPs") which include sufficient quantities of demand- and supply-side resources to meet expected customer demands and the Southwest Power Pool ("SPP") reserve margin requirements. These ARPs are modeled in a large number of different scenarios which reflect the combination of varying levels of Critical Uncertain Factors to determine the

costs of different ARPs in different market environments. This modeling is done in order to assess the risk presented to ARP economics as a result of market uncertainty. Ultimately, in each IRP a Preferred Plan is selected with the minimization of long-term customer costs, calculated on the basis of net present value of revenue requirement ("NPVRR"), as the primary objective function under the Commission's IRP rules.

Q: Does this resource planning process focus on "what is best for all of Evergy's utilities," as Ms. Mantle alleges at page 16?

A: No. This process is conducted for EMW standalone and has been, as required by the IRP rules, for as long as IRPs have been conducted by EMW and its predecessors. This process includes developing ARPs which meet **EMW's** load and reserve margin requirements, evaluating NPVRR for **EMW** ARPs under a variety of market scenarios, and selecting a Preferred Plan for **EMW**. While Evergy does and has conducted Joint Planning which evaluates ARPs across its utilities in order to assess potential shared resource additions or decisions related to jointly-owned plants, this is ultimately for the purpose of informing the selection of a plan for each individual utility – including EMW – which meets the fundamental IRP objectives from the perspective of that utility alone. This is the process which Evergy and its predecessors have followed for years and OPC should be well aware of it given they have reviewed all of Evergy's IRP filings, but this is a fact which is conveniently ignored in OPC's testimony in this case because it does not support their narrative. I have attached excerpts of the most recent Missouri West 2022 Annual Update and the 2017 KCP&L Greater Missouri Operations ("GMO") Annual Update as Schedules KM-1 and KM-2, respectively. Both documents include the Preferred Plan selected for EMW standalone, as required by the Commission's IRP rule.

Q: Does OPC's testimony regarding the prudence of EMW's resource planning align with the fundamental objective outlined in the IRP rules?

A: No. OPC claims that the fact that EMW consistently purchases more from the SPP than it sells is evidence that EMW "cannot meet its customers' load and therefore its resource planning is imprudent." (Mantle Rebuttal, p. 13, lines 6-7) This alleged "standard" of prudent resource planning is inconsistent with the actual objectives outlined in the IRP rules. As Mr. Reed describes, this "standard" would also be completely outside the mainstream of utility conduct. (Reed Surrebuttal, p. 18) OPC ignores the fact that the decision whether energy should be produced by other generators in SPP or by company-owned or contracted generation is an economic decision in every operational interval, such as a 5-minute or a 1-hour basis, as well as on a long term-basis. In the operational timeframe, these decisions are made by SPP as they dispatch the most economic mix of resources given load, wind output, generation costs, generation availability, transmission congestion, and other factors – regardless of who those resources are owned by. In the long-term, net energy purchases are economic decisions evaluated through an IRP which uses all-in generation costs (fixed, variable, fuel), expected market prices using a large variety of scenarios, and forecasted capacity requirements to select a Preferred Plan with a primary goal of minimizing long-term customer costs.

Q: OPC states that Evergy West's most recent IRP Annual Update in Case No. EO-2022-0202 "does not discuss how its resource planning process assesses the ability of Evergy West to provide reliable service to Evergy West's customers." Do you agree with this? (Mantle Rebuttal, p. 23)

A: No. The process used to assess the ability of Evergy's resource plan to provide reliable service for its customers – building ARPs which meet forecasted load and reserve margin requirements – takes place for EMW in the same way it does in all other standalone utility or combined modeling in Evergy's IRP. Every EMW ARP is designed to meet EMW's standalone load and reserve margin requirements.

Q: Ms. Mantle claims at page 5 of her rebuttal testimony that EMW's fuel adjustment clause ("FAC") shifts the risk of EMW resource planning to customers. Was this a factor in the IRP?

A: No. The mechanisms used by EMW to recover its costs are irrelevant to IRP modeling which only focuses on total customer costs.

Q: Why did SPP show that EMW was not meeting its resource adequacy requirements beginning in 2019? (Robinett Schedule JAR D-4, p. 2)

A: At that time, EMW's submission reflected the retirement of Sibley, but not the planned procurement of additional contracted capacity because a capacity contract was not yet in place. Ultimately, EMW did have sufficient capacity in 2019 to meet SPP's reserve margin requirements.

Q: What is your response to Ms. Mantle's statement that EMW and Evergy Metro have combined their resources to meet their 12% reserve margin requirement with SPP since 2018? (Mantle Rebuttal, p. 23)

A: Prior to the 2018 SPP resource adequacy process, EMW and Metro did report their capacity separately to SPP. However, the ability to report them as a combined entity has existed since they began taking joint Network Integration Transmission Service ("NITS") from SPP in **2015**. Nothing about the arrangement between Evergy Metro and EMW changed in 2018 other than how their capacity was reported to SPP.

Q: Does EMW currently have sufficient capacity to meet its share of the reserve margin requirement as a standalone entity?

A: Yes, it does. As OPC notes, some of EMW's capacity comes from a contract with Evergy Metro, but this is a valid source of capacity and would allow EMW to meet SPP's resource adequacy requirements even if it was viewed as a standalone entity by SPP.

Q: Is that true for both winter and summer reserve margin requirements for EMW?

A: Yes. While OPC is correct that there is currently no penalty for not meeting SPP winter resource adequacy requirements, this does not mean that the EMW-Evergy Metro capacity contract does not provide winter capacity. (Mantle, p. 17, line 21-22) That capacity contract *does* provide winter capacity and, if EMW was viewed as a standalone entity by SPP, it would meet SPP's winter requirements.

Q: Does EMW's IRP process incorporate the fact that in hours where it has less generation than load, EMW is a net purchaser from the SPP market?

A: Yes. Although OPC ignores the fact that every IRP includes an assessment of EMW's standalone resource plans and their economics, those analyses have been done to support

all of EMW's Preferred Plans over the years. The IRP model works largely the same way as the SPP market. EMW's generation is dispatched based on its economics relative to the SPP market and, when EMW's load can be served more economically by the SPP market overall, it purchases energy from the market. This means that, for example, when EMW modeling showed that a resource plan which included the retirement of Sibley Unit 3 and the replacement of that resource with a capacity contract and market energy that was more economic than keeping Sibley in operation, it incorporated the costs of purchasing energy from the market without any offsetting margins from Sibley generation (at a large variety of market prices across different scenarios).

Sibley Retirement

Q: How does the Sibley retirement factor into OPC's allegations of imprudence?

A: It is not completely clear from Ms. Mantle's testimony; however, it seems that OPC believes EMW's retirement of Sibley Unit 3 and the subsequent procurement of capacity from Evergy Metro are examples of the allegedly "imprudent" resource planning processes which led to the costs incurred over two years later during Winter Storm Uri.

Q: Does OPC demonstrate any actual imprudence in the case of the Sibley retirement and the Evergy Metro capacity contract?

A: No. OPC's only discussion of the IRP process which supported these resource decisions relies on the inaccurate claims I've addressed above. Essentially, OPC claims these decisions were imprudent primarily because they relied on combined modeling of Evergy's utilities. This claim is false, as I've already demonstrated. Second, OPC points to the fact that EMW generally purchases more energy from SPP than it sells to SPP as evidence of imprudence. As I've explained, this dynamic is considered in the evaluation of resource

plan economics through the IRP and certainly does not constitute failing to meet a "fundamental objective" of the IRP process. OPC does not point to any alleged imprudence specifically related to the decision to retire Sibley Unit 3 and procure capacity from Evergy Metro.

Q: Please explain the evaluation that led to the decision to retire Sibley.

A: Sibley Unit 3 was identified for retirement beginning with the 2017 IRP Annual Update. In that update, one ARP which included the retirement of Sibley in 2018 and the procurement of a Purchased Power Agreement ("PPA") for capacity was compared to another ARP where Sibley continued to operate throughout the period. The economics of this plan were modeled across 18 different scenarios which included three levels of natural gas prices, three levels of load growth, and two levels of carbon pricing. The retirement of Sibley was more economic than its continued operations in **100%** of the modeled scenarios, saving approximately $220M for EMW customers on an expected value basis.[1] This modeling and the savings estimated were for EMW standalone and not for any combination of Evergy utilities. The Sibley Unit 3 retirement plan incorporated a capacity-only PPA and factored in the need for EMW to purchase its load from the market. Based on this evaluation, the ARP which included the retirement of Sibley became EMW's Preferred Plan. Based on that plan, Sibley Unit 3 was retired.

Q: What concerns did OPC express at the time Sibley was identified for retirement?

A: OPC stated in its comments to the 2017 IRP that it was "concerned [that] the premature retirements, specifically of the Sibley 3 generating unit, creates significant risk by not fully

[1] Savings of $220 million based on comparison of Plan GBFCA (Sibley 3 continued operations) and Plan GCDCP (Sibley 3 retirement and replacement with PPA). See, *GMO Integrated Resource Plan 2017 Annual Update*, Section 6.3, p. 46, File No. EO-2017-0230, dated June 1, 2017.

accounting for the highly uncertain, interdependent energy market and policy arena in which the utility now operates. More specifically, the premature closure of base load-serving generation in favor of unknown capacity contracts through the SPP energy market raises prudency concerns moving forward by potentially producing significant stranded costs, increased risk exposure from market volatility and future reliability concerns."

Q: In those concerns, did OPC indicate any specific areas of imprudence in EMW's decision-making?

A: They did not. OPC simply stated that the Sibley retirement introduced more market price uncertainty for EMW. This is true, but was addressed by the wide range of potential market prices that were already evaluated in the IRP which resulted in Sibley being identified for retirement. In fact, OPC's statement that the decision "raises prudency concerns moving forward" shows the lack of support for any claim of imprudence at the time of the decision to retire was made. OPC's subsequent hindsight-driven assertions of imprudence in this case have no merit, as discussed in the Surrebuttal Testimony of Mr. Reed.

Q: How do you respond to OPC's reference to generators as "hedges" against the market?

A: Generators like Sibley can act as "insurance by offering margins to offset fuel and purchased power costs whenever prices are high. However, that "insurance" comes at a cost. The value of that "insurance" was assessed in the 18 scenarios evaluated in EMW's 2017 IRP, and retiring Sibley was the more favorable option in each and every modeled scenario.

It's true that the IRP does not include extreme scenarios like Winter Storm Uri.[2] Even Ms. Mantle acknowledges at pages 10-11 that "there is no way to accurately plan for all extreme circumstances" and that focusing on balancing "economics" and "reliability" through the resource planning process is a proper way to mitigate energy volatility. However, Ms. Mantle's assertion that "a proper balance in the resource planning process will mitigate *any* volatility in the energy market" (emphasis added) is not credible. A resource planning process could never mitigate <u>all</u> volatility from hour to hour or across the Day Ahead and Real Time markets. Using Sibley as a specific example, the forecasted costs for continued operations through 2021 at the time the plant was retired were $165M compared to annual SPP margins of approximately $4M per year 2015-2017. Based on that information, combined with the risk analysis performed in the IRP, Sibley would have been very expensive insurance.

Ironically, OPC argues in this proceeding Sibley should have been retained as a long-term hedge on market prices despite being conclusively uneconomic based on IRP results, but it complains that Evergy's proposed implementation of a hedging program in its pending rate cases ER-2022-0129/-0130 to manage market exposure in the short-term is "a risky proposition."[3] In the case of Sibley, the forecasted cost of maintaining the resource was relatively certain ($165M for 2018-2021) and the potential "upside" was dependent on an extreme event outside of the bounds of the large range of scenarios already evaluated. Based on this available information at the time the retirement decision was made, retaining Sibley would have been a very risky – and costly – hedge. The fact that

[2] Winter Storm Uri was an extraordinary event that caused the largest controlled firm load shed event in U.S. history and led to the death of over 200 people, according to the FERC, NERC and Regional Entity Staff Report of November 2021, entitled "The February 2021 Cold Weather Outages in Texas and the South Central United States."
[3] ER-2022-0129/0130 Mantle Direct p. 19.

an extreme event occurred over two years after Sibley was retired is irrelevant in assessing whether the decision to retire the unit – as opposed to retaining it as a hedge – was prudent.

Recommended Disallowance

Q: Please describe OPC's recommended disallowance.

A: As opposed to the total Winter Storm Uri costs of $295,511,691[4], OPC recommends that the Commission allow EMW to recover between $42,486,659 and $161,540,730, for a disallowance of between $133,970,961 and $253,025,032. (Mantle Rebuttal, p. 6)

Q: How does OPC calculate this recommended disallowance?

A: To calculate the range, OPC removes 50% to 100% of ** [redacted] ** from EMW's fuel and purchased power costs based on the "SPP netting amount" for February 2021. This amount represents all of EMW's net purchases from the SPP market. In addition to this, OPC removes 5%. The removal of 5% will be addressed by Company Witness Ives. I will speak to the removal of purchased power costs below.

Q: Does OPC provide any analysis to support for the removal of net purchased power costs in calculating its recommended disallowance?

A: No. The removal of either 50% or 100% of net purchased power costs is arbitrary and unreasonable. OPC's testimony focuses on the prudence of EMW's resource planning over the last 15 years, and not on the prudence of the purchased power costs it incurred during February 2021. I have described above why EMW's resource planning process and decisions were prudent. Given that OPC has not asserted any imprudence by EMW *during* February 2021, the purchased power costs which resulted from decisions made during

[4] See, Klote Surrebuttal, *Table 1* "Total Current Winter Storm Uri Costs – Retail", p. 14.

Winter Storm Uri must be considered prudent ones. OPC's recommended disallowance should be rejected because it is without merit.

Summary and Conclusion

Q: Please summarize your testimony.

A: OPC has recommended large disallowances from the fuel and purchased power costs which EMW incurred during February 2021 on the basis of "poor resource planning decisions", specifically related to the retirement of Sibley. However, OPC relies on a variety of inaccurate, irrelevant and unsupported assertions to advance this recommendation, none of which align with any established prudence standard. As I've described, EMW's resource planning decisions have been made based on risk analysis through the IRP process which demonstrated significant savings for EMW customers from the retirement of Sibley. On the basis of this analysis, the retirement of Sibley was prudent, EMW's resource planning process has been and is prudent and, as a result, EMW's costs during February 2021 were prudently incurred and there should be no disallowance.

Q: Does that conclude your testimony?

A: Yes, it does.

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 a Financing Order Authorizing the Financing of Extraordinary Storm Costs Through an Issuance of Securitized Utility Tariff Bonds.	))))))	Case No. EF-2022-0155

AFFIDAVIT OF KAYLA MESSAMORE

STATE OF MISSOURI)
) ss
COUNTY OF JACKSON)

Kayla Messamore, being first duly sworn on his oath, states:

1. My name is Kayla Messamore. I work in Kansas City, Missouri, and I am employed by Evergy Metro, Inc. as Director of Long Term Planning.

2. Attached hereto and made a part hereof for all purposes is my Surrebuttal Testimony on behalf of Evergy Missouri West consisting of fourteen (14) 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.

Kayla Messamore

Subscribed and sworn before me this 22nd day of July 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

SECTION 7: RESOURCE ACQUISITION STRATEGY

7.1 2022 ANNUAL UPDATE PREFERRED PLAN

The Alternative Resource Plans (ARP) developed and analyzed under the requirements of 20 CSR 4240-22.060 were designed to meet the objectives of 20 CSR 4240-22.010(2).

The Company has selected CDAAA as its Preferred Plan at the Evergy level and CDAAF as the Preferred plan for Evergy Missouri West. These plans are lower cost than the 2021 IRP Preferred Plan at both the Evergy and Evergy West level. CDAAA was selected despite being higher cost than many of the accelerated retirement plans which were modeled at the Evergy level due to the exclusion of specific additional accelerated retirements because of the significant uncertainty which exists related to such accelerated retirements (Section 6.2). This plan allows Evergy to continue building renewables at a ratable pace, consistent with its 2021 Triennial IRP, while maintaining flexibility to adjust as technology and policy change in the future. Ultimately, it seems likely that an additional retirement may occur in the late-2020s/early 2030s, but there is currently too much uncertainty to commit to a specific unit retirement. Additional discussion is provided in the Customer/Shareholder Risk Analysis Special Contemporary Issue. The Preferred Plan selected for Evergy West – CDAAF – which is consistent with the Evergy-level Preferred Plan but includes the delayed retirement of Lake Road 4/6 to 2030, was the lowest-cost plan on an expected value basis for Evergy West.

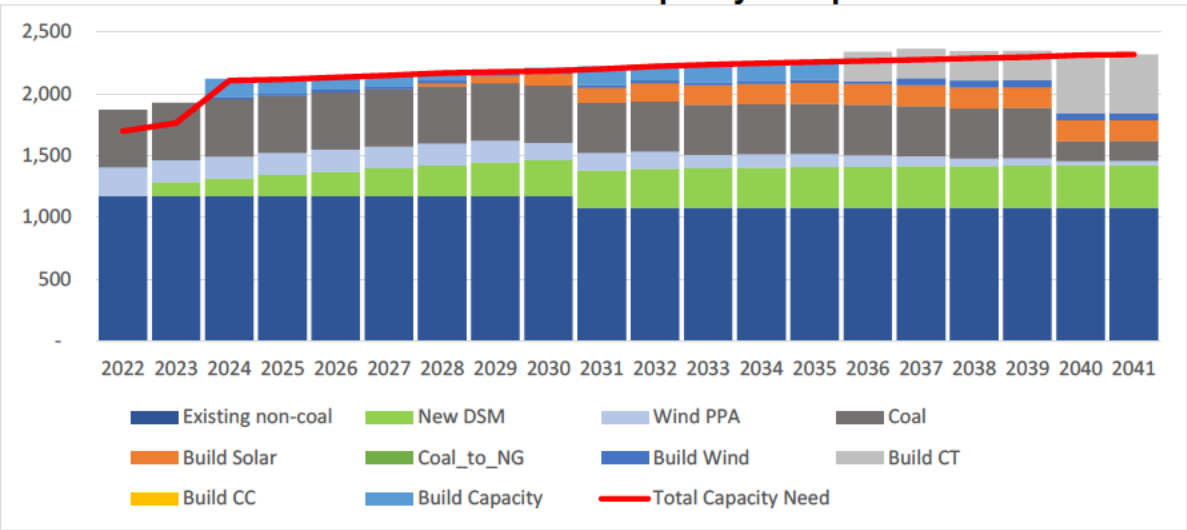
The Evergy Missouri West Preferred Plan CDAAF for the 20-year planning period is shown in Table 38 below:

Table 38: Evergy Missouri West Planning Preferred Plan CDAAF

Year	Wind (MW)	Solar (MW)	Thermal (MW)	Capacity Only (Annual MW)	DSM (Annual MW)	Retirements (MW)
2022					118	
2023					161	
2024	150			150	186	
2025				125	206	
2026	72			100	227	
2027				100	246	
2028		48		75	261	
2029		72		25	278	
2030		72		25	291	
2031		72		150	296	155
2032		72		125	296	
2033		72		150	297	
2034		72		150	299	
2035		72		150	300	
2036			237		302	
2037					306	
2038					309	
2039					311	
2040			237		310	246
2041					309	

7.1.1 PREFERRED PLAN COMPOSITION

Table 39: Preferred Plan Capacity Composition



The Evergy Missouri West Preferred Plan includes the following renewable additions: 150 MW of wind generation in 2024 and 72 MW of wind generation in 2026. Additionally, 48 MW of solar generation in 2028 and 72 MW of solar generation in each of the years 2029 to 2035. Over the 20-year planning period, total renewable additions equal 222 MW of wind generation and 552 MW of solar generation. Also, thermal resources are modeled to replace retiring coal capacity beginning in 2036, including 2 combustion turbines. The Preferred Plan also includes the RAP level of DSM for Evergy Missouri West.

SECTION 7: RESOURCE ACQUISITION STRATEGY

7.1 2017 ANNUAL UPDATE PREFERRED PLAN

The 2017 Annual Update Preferred Plan for the 20-year planning period is shown in Table 40 below.

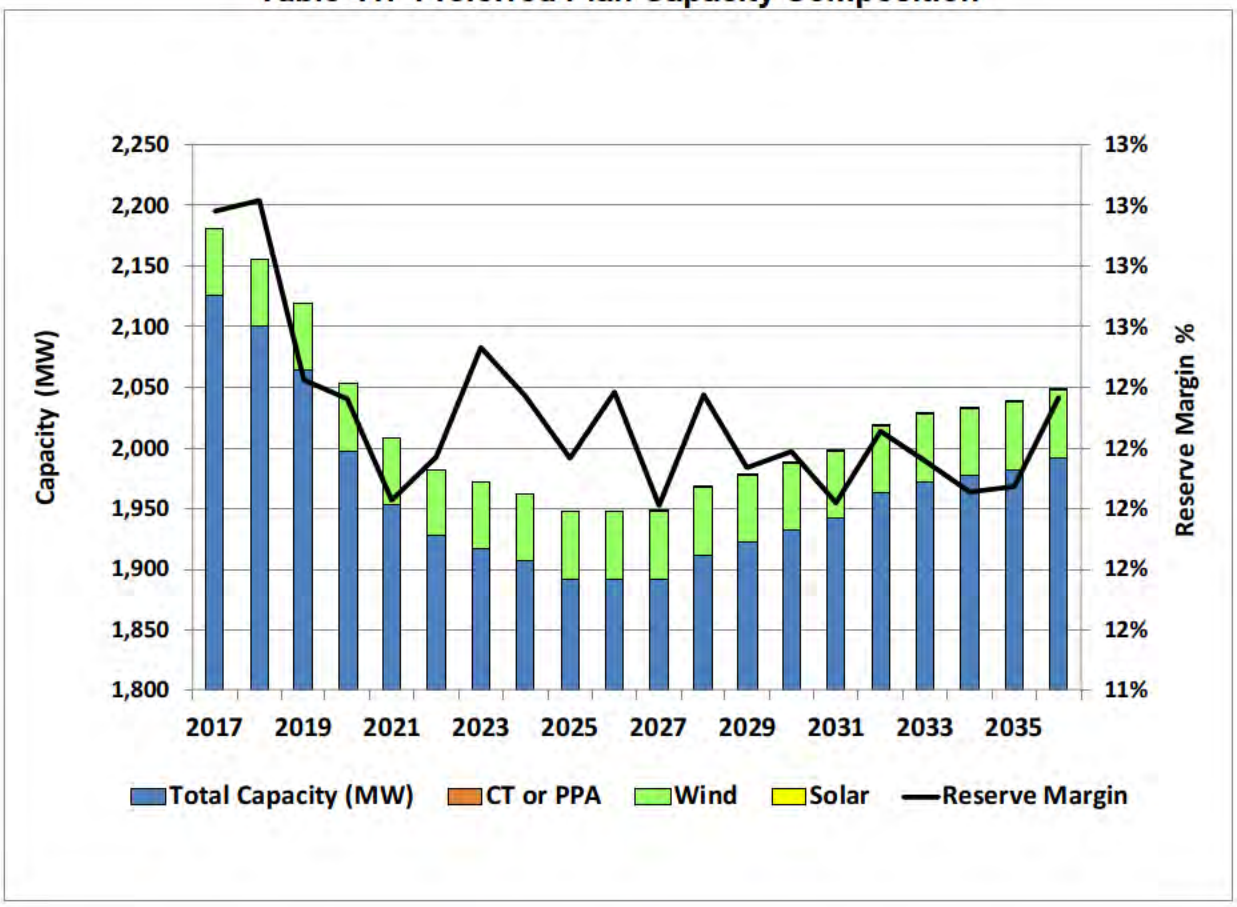
Table 40: 2017 Annual Update Preferred Plan

Year	CT or PPA (MW)	Wind (MW)	Solar (MW)	DSM (MW)	Retire (MW)	Existing Capacity (MW)
2017	0	120		60		2,151
2018	0			94	411	2,150
2019	0			122	96	2,064
2020	0			186		1,998
2021	0			224		1,953
2022	0			258		1,927
2023	0			280		1,917
2024	0			296		1,907
2025	0			309		1,892
2026	0			321		1,892
2027	0		5	328		1,892
2028	0			331		1,912
2029	0			329		1,922
2030	0			331		1,932
2031	0			331		1,942
2032	0			329		1,963
2033	0			333		1,972
2034	0			339		1,977
2035	0			347		1,982
2036	0			356		1,892

7.1.1 PREFERRED PLAN COMPOSITION

Existing and new capacity additions for the 2017 Annual Update Preferred Plan are shown in Table 41 below:

Table 41: Preferred Plan Capacity Composition



Based in part upon current Missouri RPS rule requirements, the Preferred Plan includes a 5 MW solar addition by 2028 and 120 MW of wind additions over the twenty-year planning period. The 120 MW wind addition is GMO's portion of the Rock Creek wind project located in Atchison County, Missouri is expected to be in-service by 2018. The DSM resources that were modeled consisted of a suite of eight residential and eight commercial programs three of which are demand response programs, two are educational programs, and eleven energy efficiency programs. Additionally, six demand-side rate (DSR) programs are currently expected to commence in 2019. The six DSR programs are: Time of Use, Time of Use with Electric Vehicle, Demand Rate, Demand Rate with Electric Vehicle, Real Time Pricing, and Inclining Block Rate. The

Preferred Plan reflects Sibley Units 2 and 3 retiring by 2019 and Lake Road 4/6 retiring by 2020. It should be noted that Sibley-1 is being retired from electric service in June, 2017 and not considered as having accredited capacity due to a safety-related boiler issue. However, the Sibley-1 boiler will remain in service to provide start-up steam to Sibley- 3 until the station is retired.

Drivers that contributed to these retirements include Mercury and Air Toxics Standards Rule, Ozone National Ambient Air Quality Standards (NAAQS), PM NAAQS, Clean Water Act Section 316(a) and (b), Effluent Guidelines, Coal Combustion Residuals Rule, Clean Power Plan as well as long term forecasts of low priced natural gas. These drivers will be monitored by GMO to determine if and when retiring these generating units continues to be prudent decisions.

7.1.2 PREFERRED PLAN ECONOMIC IMPACT

The expected value of economic impact by year of the Preferred Plan GCGHP is represented in Table 42 below. The economic impact of all plans can be found in Appendix D.

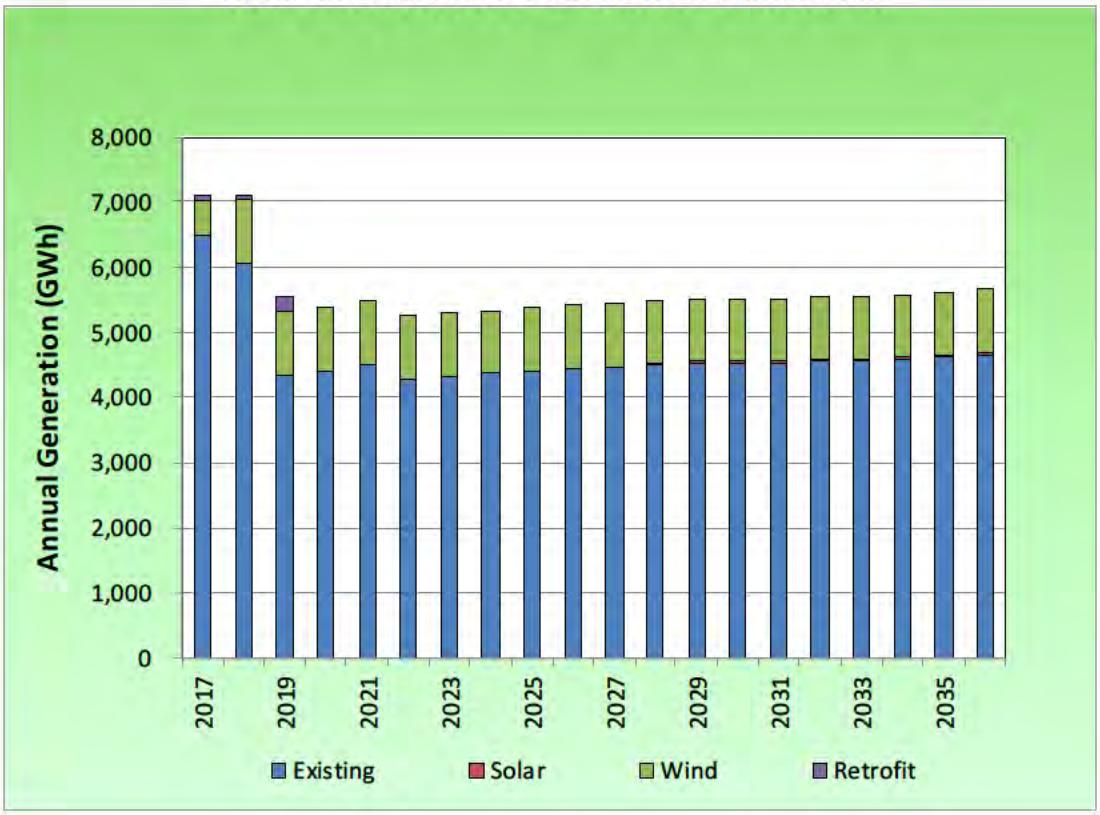
Table 42: Preferred Plan Economic Impact ** Highly Confidential **

Year	Revenue Requirement ($MM)	Levelized Annual Rates ($/kW-hr)	Rate Increase
2017	856	0.097	0.00%
2018	869	0.099	1.68%
2019	902	0.103	4.22%
2020	916	0.105	1.83%
2021	909	0.105	-0.29%
2022	957	0.110	5.40%
2023	981	0.113	2.35%
2024	1,000	0.115	1.61%
2025	1,006	0.115	0.57%
2026	1,007	0.115	-0.25%
2027	1,025	0.116	1.17%
2028	1,045	0.118	1.22%
2029	1,054	0.118	0.25%
2030	1,078	0.120	1.70%
2031	1,089	0.121	0.46%
2032	1,113	0.123	1.52%
2033	1,136	0.125	1.58%
2034	1,165	0.127	1.83%
2035	1,191	0.129	1.48%
2036	1,218	0.131	1.48%

7.1.3 PREFERRED PLAN ANNUAL GENERATION

The expected value of annual generation for the Preferred Plan is shown in Table 43 below. The annual generation for all plans is included in Appendix C.

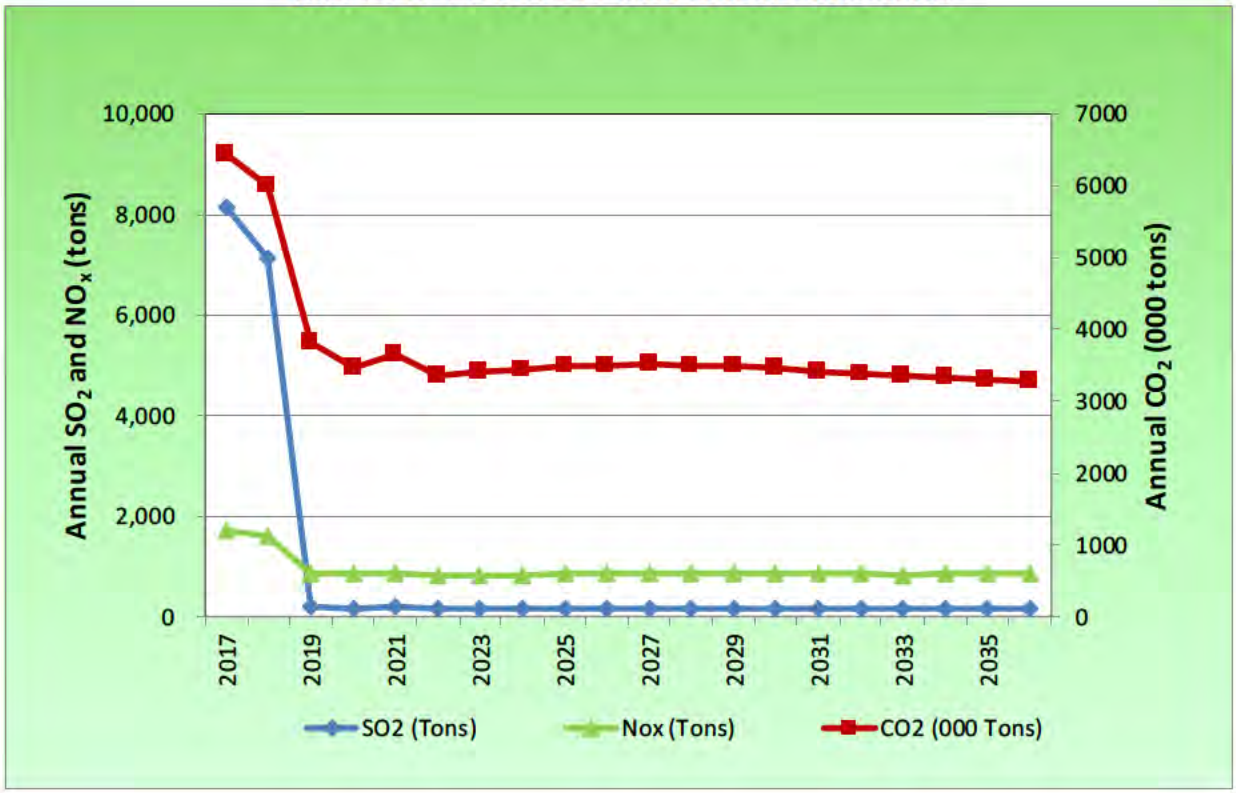
Table 43: Preferred Plan Annual Generation



7.1.4 PREFERRED PLAN ANNUAL EMISSIONS

The expected value of annual emissions for the Preferred Plan is shown in Table 44 below. The annual emissions for all plans is included in Appendix C.

Table 44: Preferred Plan Annual Emissions



7.1.5 PREFERRED PLAN DISCUSSION

Based in part upon current Missouri RPS rule requirements, the Preferred Plan includes a 5 MW solar addition currently expected to be in-service by 2028 and a 120 MW portion of a Missouri wind facility expected to be commercially operational by 2018. The DSM resources that were modeled consisted of a suite of eight residential and eight commercial programs three of which are demand response programs, two are educational programs, and eleven are energy efficiency programs. The Preferred Plan also includes Sibley Units 2 and 3 retiring by 2019 and Lake Road 4/6 retiring by 2020. The retirement of Sibley Generation Station may result in the need to curtail Greenwood generation during certain system conditions. The redispatch would be handled by the SPP market.

The Preferred Plan selected was the lowest cost plan from a Net Present Value of Revenue Requirement (NPVRR) perspective. The Preferred Plan therefore meets the fundamental planning objectives as required by Rule 22.010(2) to provide the public with energy services that are safe, reliable, and efficient, at just and reasonable rates, in compliance with all legal mandates, and in a manner that serves the public interest and is consistent with state energy and environmental policies.

It should be noted that the 2015 Triennial IRP Preferred Plan was modeled as an Alternative Resource Plan, GBBCA, and determined to have a higher NPVRR than the 2017 Annual Update Preferred Plan. The NPVRR difference between the 2017 Annual Update Preferred Plan, GCGHP and the 2015 Triennial IRP Preferred Plan, GBBCA, was $282MM as shown in Table 45 below. The difference in the levelized annual rates and maximum rate increase performance measures between the 2015 Triennial IRP Preferred Plan and the 2017 Annual Update Preferred Plan are provided in Table 45 as well. A significant factor in the 2017 Annual Update was the inclusion of the DSM from the just-completed DSM Potential Study. The integrated analysis results determined that retirement of Sibley-2 and Lake Road 4/6 a year earlier than the 2015 Triennial IRP Preferred Plan along with the retirement of Sibley-3 resulted in a lower NPVRR. The Preferred Plan in the 2015 Triennial IRP filing also included Sibley-1 retiring in 2019 but due to a safety-related boiler issue it is being retired from electric service in June, 2017.

However, the Sibley-1 boiler will remain in service to provide start-up steam to Sibley- 3 until the station is retired.

Table 45: 2017 Annual Update Preferred Plan Vs. 2015 Triennial Preferred Plan
**** Highly Confidential ****

Rank (L-H)	Plan	NPVRR ($MM)	Delta ($MM)	Levelized Annual Rates ($/KW-hr)	Maximum Rate Increase
1	GCGHP	9,768	$ -	0.115	5.40%
2	GCDCP	9,826	$ 58	0.115	5.34%
3	GCGCP	9,827	$ 59	0.115	5.34%
4	GBFCA	10,046	$ 279	0.118	6.41%
5	GBCCA	10,046	$ 279	0.118	6.41%
6	GBBCA	10,049	$ 282	0.118	6.52%
7	GBCAA	10,059	$ 292	0.120	6.42%
8	GAACA	10,070	$ 302	0.118	6.46%
9	GBECA	10,079	$ 312	0.119	6.47%
10	GBCCW	10,079	$ 312	0.118	5.74%
11	GCDCA	10,201	$ 433	0.119	10.06%
12	GCDCB	10,217	$ 450	0.119	6.69%
13	GCDAA	10,247	$ 479	0.121	11.24%
14	GBCDA	10,255	$ 488	0.117	6.04%
15	GCDDA	10,439	$ 672	0.118	11.66%

From the 2015 Triennial IRP filing, the contingency plan consisted of retirement of Sibley-1 and Sibley-2 by 2020 and Lake Road 4/6 and Sibley-3 by 2021. The 2017 Annual Update Preferred Plan retires Sibley-2 and Sibley-3 by 2019 and Lake Road 4/6 retiring by 2020 as these earlier retirement dates have shown to reduce NPVRR. As noted earlier, Sibley-1 is being retired from electric service in June, 2017 due to a safety-related boiler issue. Regarding DSM, the 2015 Triennial IRP filing contingency plan utilized a 2013 DSM Potential Study whereas the 2017 Annual Update Preferred Plan utilized the recently completed DSM Potential Study.