

Public Version

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Issue: Dogwood Energy Facility  
Witness: John R. Carlson  
Type of Exhibit: Direct Testimony  
Sponsoring Party: Evergy Missouri Metro and Evergy  
Missouri West  
Case No.: ER-2024-0189  
Date Testimony Prepared: February 2, 2024

**MISSOURI PUBLIC SERVICE COMMISSION**

**CASE NO.: ER-2024-0189**

**DIRECT TESTIMONY**

**OF**

**JOHN R. CARLSON**

**ON BEHALF OF**

**EVERGY MISSOURI WEST**

**Kansas City, Missouri  
February 2024**

**DIRECT TESTIMONY**

**OF**

**JOHN R. CARLSON**

**Case No. ER-2024-0189**

**I. INTRODUCTION**

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

A: My name is John R. Carlson. My business address is 1200 Main, Kansas City, Missouri 64105.

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

A: I am employed by Evergy Metro, Inc. and serve as Director Project Management & Controls 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. (“Company”).

**Q: What are your responsibilities?**

A: My responsibilities include oversight of a team responsible for the project management and delivery of renewable generating assets for the Company. Additionally, I oversee the team responsible for tracking project controls, namely scope, cost and schedule tracking for both conventional and renewable generation additions across Evergy’s companies.

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

2 A: I received a Bachelor of Science degree in Architectural Engineering from the University  
3 of Kansas in 1997. In 2004, I received a Master of Business Administration from the  
4 University of Chicago Booth School of Business. I joined KCP&L in 2006 as an Energy  
5 Consultant in the Delivery Division. My responsibilities included managing all facets of  
6 the customer relationship for KCP&L's large industrial customers and developing  
7 solutions that met the customer's needs, as well as demand response and energy efficiency  
8 opportunities. In 2007, I became Manager of Market Competitiveness where I was  
9 responsible for developing and implementing non-regulated products and services for  
10 residential, commercial and industrial customers. In 2010, I moved to the Supply Division  
11 at KCP&L and started work as an Originator of wholesale power transactions. In 2017 I  
12 started working in market operations and managed the group responsible for submitting  
13 assets and load to the SPP daily. I recently moved into the Company's Development group  
14 where I manage a team responsible for project management for renewable generation  
15 projects and for project controls for new conventional and renewable generation.

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

19 A: Yes. I have testified before the MPSC.

20 **Q: What is the purpose of your direct testimony?**

21 A: I will be providing an overview of the Dogwood generation facility.

1 **Q: Please provide a detailed overview of Dogwood.**

2 A: Dogwood is a nominal 668 MW combined cycle generation facility located in Pleasant  
3 Hill, Cass County, Missouri about 30 miles southeast of Kansas City in EMW's service  
4 territory on approximately sixty-seven (67) acres. At SPP summer rating conditions,  
5 Dogwood is expected to generate 643 MW. The SPP accredited net capacity of a generating  
6 unit is determined by conducting generator capability tests as described in the SPP Planning  
7 Criteria.<sup>1</sup> The accredited capacity of a generating unit might be lower than its nominal MW  
8 rating due to ambient conditions, as is the case with Dogwood's summer rating being less  
9 than its nominal rating. Because EMW is a summer peaking utility, Dogwood's summer  
10 rating is most relevant to operations. The Company is purchasing a 22.2% interest in the  
11 Asset which equates to approximately 143 MW of SPP-accredited capacity.

12 Dogwood has been in commercial operation since 2002 and interconnects to SPP's  
13 transmission system at the Pleasant Hill 345 kV substation, which is owned by the  
14 Company. From a fuel supply perspective, Dogwood has firm gas transport with both the  
15 SSCG and the PEPL systems. This transport arrangement provides flexibility with natural  
16 gas procurement and reduces operational risk. A more detailed description of the Asset is  
17 contained in Dogwood Energy's response to EMW's 2022 RFP in Confidential Schedule  
18 JC-1. In addition, Confidential Schedule JC-2 includes as-built site and electrical one-line  
19 drawings of the Facility.

20 **Q: What is a combined cycle generation facility?**

21 A: Simply stated, a combined cycle generation facility is comprised of a natural gas-fired  
22 combustion turbine or turbines with equipment that captures the exhaust heat off the

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<sup>1</sup> See <https://spp.org/documents/69543/spp%20planning%20criteria%20v2.4.pdf>

1 turbines and converts that heat to steam which is then used to fire a steam-fired turbine on  
2 the back end. Dogwood has two gas-fired turbines, each with a heat recovery steam  
3 generator (“HRSG”) that generates steam from the exhaust heat. The steam from the two  
4 HRSGs is combined and feeds one steam turbine.

5 Combined cycle generation facilities tend to be more efficient than a standard  
6 combustion turbine because the waste heat from the turbine(s) is used to generate  
7 incremental electricity instead of being exhausted to the atmosphere.

8 **Q: How has Dogwood operated since becoming commercially operational in 2002?**

9 A: Dogwood has operated continuously and successfully since 2002. The performance of  
10 power plants is often measured by their net capacity factor (“NCF”) which is the ratio of  
11 the number of megawatt-hours (“MWhs”) produced versus the theoretical maximum  
12 number of MWhs produced. For instance, if a 100 MW nameplate capacity generator were  
13 to run for all 8,760 hours of the year at full nameplate capacity, it would produce 876,000  
14 MWhs for the year. This would represent the denominator in the net capacity factor  
15 equation. If the generator produced 400,000 MWh for the year, the NCF would be 400,000  
16 MWh/876,000 MWh or 45.66%.

17 Over the past five years ending in 2022, Dogwood has successfully operated and  
18 met its obligations when dispatched in the SPP. Dogwood’s average NCF for this period  
19 is 35.7%. By comparison, the current EMW combustion turbine fleet had an average NCF  
20 over the last five years of 2.8%, with the highest year being 2022 when the average NCF  
21 was 5.5%. While EMW’s turbine fleet is comprised of peaking units with higher heat rates,  
22 designed to operate during the peak hours of the year, the NCF comparison is valid since

1 Dogwood would be added to the fleet and would operate more hours at a lower heat rate  
2 than EMW's existing combustion turbines.

3 A generating plant's average heat rate is a measure of efficiency in converting fuel  
4 input to electric energy output using the ratio of British thermal unit ("Btu") heat input to  
5 kilowatt-hour ("kWh") output. Dogwood's average heat rate from 2018-2022 was 7,725  
6 Btu/kWh. With a continued focus on efficiency at the Facility, over the last two years  
7 Dogwood had heat rate values even lower at around 7,600 Btu/kWh. By comparison, the  
8 average heat rate for the EMW combustion turbine fleet in 2022 was approximately 14,000  
9 Btu/kWh.

10 As SPP continues to experience the variability of renewable generation, the  
11 availability and reliability of fossil generation units is important. Dogwood's five-year  
12 average equivalent availability factor ("EAF") and start reliability were 83.2% and 97.1%,  
13 respectively. EAF is a ratio of the hours when a plant is available, subtracting derate hours,  
14 to the total hours for the period. The higher the EAF number, the more a plant is available  
15 to the SPP market. Additional historical operational performance metrics for the Facility  
16 can be found in Confidential Schedule JC-3.

17 These performance metrics speak to Dogwood's value as a market participant in  
18 the SPP Integrated Marketplace which consists of day-ahead, real-time, and ancillary  
19 services electricity markets. As more baseload fossil fuel generation is retired and more  
20 renewable generation is brought online, there will be an increased need for resources to  
21 provide generation when the wind does not blow or the sun does not shine. Dogwood's  
22 current average NCF is higher than EMW's current fleet of natural gas generation. This  
23 indicates that Dogwood is more attractive to the market than other EMW units because it

1 is dispatched more frequently. As more baseload thermal generation is retired in SPP, it is  
2 reasonable to expect that the Asset's NCF will increase. From a heat rate perspective,  
3 Dogwood is more efficient than the EMW fleet which means its cost to generate on a  
4 \$/MWh basis is lower and thus is more attractive to the market.

5 In summary, Dogwood is available when needed (EAF), has been dispatched more  
6 than EMW's natural gas fleet (NCF), and operates efficiently when dispatched (heat rate).  
7 As the SPP market continues to change, the Company expects that Dogwood will provide  
8 value to its customers.

9 **Q: What transmission arrangements are needed to get Dogwood energy from its facility**  
10 **to EMW customers?**

11 A: The Project is interconnected to the SPP transmission system viat the 345 kV Pleasant Hill  
12 substation owned by EMW. For EMW to have the Dogwood capacity counted toward its  
13 SPP capacity accreditation requirements, EMW will need to either have the capacity  
14 counted as deliveragel capacity (subject to SPP rules) or make a network transmission  
15 service ("TSR") request with the SPP. This will occur commensurate with the capacity  
16 becoming available to EMW. With the Dogwood facility being located in EMW's service  
17 territory, the Company does not expect any problems with obtaining transmission service,  
18 should they need to go this route.

19 **Q: Please describe the expected schedule for EMW to receive the capacity and energy**  
20 **benefits from Dogwood.**

21 A: The capacity from the Asset will be available to EMW on a phased-in schedule starting  
22 June 1, 2026. The phase-in is necessary due to existing capacity agreements of Dogwood  
23 Energy. By January 1, 2031, all the capacity will be available to EMW. A portion of the

1 capacity agreements will be assigned to EMW, consistent with the MWs purchased by  
2 EMW. The revenues from those capacity agreements will belong to EMW. The table  
3 below shows the capacity phase-in and associated capacity agreement revenue phase-out:

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6 While the capacity isn't available until June of 2026, the energy from the Asset will be  
7 immediately available.

8 **Q: Please summarize your testimony.**

9 A: Dogwood is a well-managed electric generating unit that is operating efficiently. The  
10 capacity from Dogwood will phase-in between June 1, 2026 and January 1, 2031 as  
11 existing capacity agreements roll off, and the capacity revenues from those agreements will  
12 phase-out over the same time period.

13 **Q: Does that conclude your testimony?**

14 A: Yes, it does.





**SCHEDULES JC-1 THROUGH JC-3  
CONTAIN CONFIDENTIAL  
INFORMATION  
NOT AVAILABLE TO THE PUBLIC.  
  
ORIGINALS 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: February 2, 2024

CONFIDENTIAL INFORMATION

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

Document/Page	Reason for Confidentiality from List Below
Carlson Direct, p. 7, Ins. 4-5	3, 4, and 6
Schedule JC-1	3, 4, 6, and 7
Schedule JC-2	3, 4, 6, and 7
Schedule JC-3	3, 4, and 6

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.