

Exhibit No.:
Issue(s): Heat Rates
Witness: Jordan Hull
Sponsoring Party: MoPSC Staff
Type of Exhibit: Direct Testimony
Case Nos.: ER-2022-0130
Date Testimony Prepared: May 25, 2022

MISSOURI PUBLIC SERVICE COMMISSION

INDUSTRY ANALYSIS DIVISION

ENERGY RESOURCES DEPARTMENT

DIRECT TESTIMONY

OF

JORDAN T. HULL

**Evergy Metro, Inc. d/b/a Evergy Missouri Metro (EMM)
Case No. ER-2022-0129**

**Evergy West, Inc. d/b/a Evergy Missouri West (EMW)
Case No. ER-2022-0130**

*Jefferson City, Missouri
June 2022*

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OF

JORDAN T. HULL

**Evergy Metro, Inc. d/b/a Evergy Missouri Metro
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EXECUTIVE SUMMARY1
HEAT RATES2

1 **DIRECT TESTIMONY**

2 **OF**

3 **JORDAN T. HULL**

4 **Evergy Metro, Inc. d/b/a Evergy Missouri Metro**
5 **Case No. ER-2022-0129**

6 **Evergy West, Inc. d/b/a Evergy Missouri West**
7 **Case No. ER-2022-0130**

8 Q. Please state your name and business address.

9 A. Jordan T. Hull, 200 Madison Street, Jefferson City, MO 65101.

10 Q. By whom are you employed and in what capacity?

11 A. I am employed by the Missouri Public Service Commission (“Commission” or
12 “PSC”) as an Associate Engineer.

13 Q. Please describe your educational background and work experience.

14 A. Please refer to Schedule JTH-d1 attached hereto.

15 Q. Have you previously filed testimony before this Commission?

16 A. Yes, I have. Please refer to the attached Schedule JTH-d2 for a list of cases in
17 which I have previously filed testimony.

18 **EXECUTIVE SUMMARY**

19 Q. What is the purpose of your direct testimony?

20 A. The purpose of this testimony is to discuss Staff’s review of the heat rates
21 submitted by Evergy Missouri West (“EMW”) and Evergy Missouri Metro (“EMM”) for their
22 generating units, which are incorporated into Staff’s fuel and production cost modeling.

23 Q. What are Staff’s findings after reviewing these heat rates?

1 A. Staff reviewed the heat rate/efficiency test results and found them to be
2 reasonable based on comparisons with data filed in Evergy's previous general rate case
3 proceedings and known changes in power plant operating parameters.

4 **HEAT RATES**

5 Q. What is a heat rate?

6 A. A heat rate is a calculation of total volume of fuel burned for electric generation
7 multiplied by the average heat content of that volume of fuel for a given time period divided by
8 the total net generation of electricity in kilowatt hours (kWh) for that same time period.

9 Q. Why do we look at the heat rate of a unit?

10 A. Heat rates of generating units are an indicator of each unit's performance.
11 Heat rates are inversely related to the operating efficiency of the generating unit. Increasing
12 heat rates of specific units over time may indicate that a specific unit's efficiency is declining.
13 Heat rates can vary greatly depending on operating conditions including but not limited to load,
14 hours of operation, shutdowns and startups, unit outages, derates,¹ and weather conditions.
15 Therefore, a good indication of unit performance for a utility's frequently used units is an
16 analysis of the trend of heat rates over time.

17 Q. Did EMM and EMW supply the heat rate testing results and monitoring
18 procedures of the testing for its generating units required per 20 CSR 4240-20.090(2)(A)15?

19 A. Yes. Whenever an electric utility requests that a rate adjustment mechanism
20 ("RAM"), such as a Fuel Adjustment Clause ("FAC") be continued or modified, Commission
21 Rule 20 CSR 4240-20.090(2)(A) specifies that the electric utility shall file supporting

¹ Derate- To lower the rating of (a device), especially because of a deterioration in efficiency or quality.

1 information, in electronic format where available, with all links and formulas intact, as part of,
2 or in addition to, its direct testimony as part of its direct filing in a general rate proceeding.

3 20 CSR 4240-20.090(2)(A)(15) specifically requires *A level of efficiency*
4 *for each of the electric utility's generating units determined by the results*
5 *of heat rate/efficiency tests or monitoring that were conducted or*
6 *obtained on each of the electric utility's steam generators, including*
7 *nuclear steam generators, heat recovery steam generators, steam*
8 *turbines and combustion turbines within twenty-four (24) months*
9 *preceding the filing of the general rate increase case.*

10 Eversource West's witness Eric T. Peterson included heat rate test results conducted within the
11 previous 24 months in ETP-4 (confidential). The documentation for the testing/monitoring
12 procedures is provided in ETP-5 (confidential).

13 Q. What was Staff's conclusion after reviewing these heat rates?

14 A. Staff reviewed the heat rate/efficiency test results and found them to be
15 reasonable based on comparisons with data filed in Eversource's previous general rate case
16 proceedings and known changes in power plant operating parameters.

17 **CONCLUSION**

18 Q. Does this conclude your direct testimony?

19 A. Yes it does.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Evergy Metro, Inc. d/b/a Evergy)
Missouri Metro's Request for Authority to) Case No. ER-2022-0129
Implement a General Rate Increase for Electric)
Service)

In the Matter of Evergy Missouri West, Inc.)
d/b/a Evergy Missouri West's Request for) Case No. ER-2022-0130
Authority to Implement a General Rate)
Increase for Electric Service)

AFFIDAVIT OF JORDAN T. HULL

STATE OF MISSOURI)
) ss.
COUNTY OF COLE)

COMES NOW JORDAN T. HULL and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing *Direct Testimony of Jordan T. Hull*; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

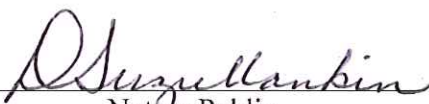


JORDAN T. HULL

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 6th day of June 2022.

D. SUZIE MANKIN
Notary Public - Notary Seal
State of Missouri
Commissioned for Cole County
My Commission Expires: April 04, 2025
Commission Number: 12412070



Notary Public

Jordan T. Hull

CURRENT POSITION:

I am currently an Associate Engineer in the Energy Resources Department, Industry Analysis Division, of the Missouri Public Service Commission.

EDUCATIONAL BACKGROUND & WORK EXPERIENCE:

I received my Bachelor of Science Degree in Biological Engineering from the University of Missouri-Columbia in May of 2016. In June of 2016 I began employment with the Missouri Department of Natural Resources in the Air Pollution Control Program as an Environmental Engineer I. In June of 2017, I was promoted to an Environmental Engineer II within the Air Pollution Control Program. I began employment with the commission in November of 2018.

Jordan T. Hull

Summary of Case Involvement:

Case Number	Utility	Type	Issues
EO-2019-0067	KCP&L GMO	FAC Prudency Review	Heat Rates, Plant Outages, Generation Utilization
EO-2019-0068	KCP&L	FAC Prudency Review	Heat Rates, Plant Outages, Generation Utilization
EO-2019-0049	Liberty-Empire Electric Company	Integrated Resource Plan	Misc.
EO-2019-0132 & EO-2019-0133	KCP&L	MEEIA	Misc.
EO-2019-0257	Ameren- Missouri	FAC Prudency Review	Heat Rates, Plant Outages, Generation Utilization
ER-2019-0335	Ameren- Missouri	Rate Case	Heat Rates
ER-2019-0374	Liberty-Empire Electric Company	Rate Case	Heat Rates
EO-2020-0059	Liberty-Empire Electric Company	FAC Prudency Review	Heat Rates, Plant Outages, Generation Utilization
EO-2020-0262	EvergyWest	FAC Prudency Review	Heat Rates, Plant Outages, Generation Utilization, Self-Commitment.
EO-2020-0263	Evergy Metro	FAC Prudency Review	Heat Rates, Plant Outages, Generation Utilization, Self-Commitment
EO-2021-0060	Ameren- Missouri	FAC Prudency Review	Heat Rates, Plant Outages, Generation

cont'd List of Case Involvement

Jordan T. Hull

			Utilization, Self-Commitment
EO-2021-0281	Liberty- Empire	FAC Prudency Review	Heat Rate, Plant Outages, Generation Utilization, Self-Commitment
EO-2021-0035	Evergy- Metro	Integrated Resource Plan	Misc.
EO-2021-0036	Evergy- West	Integrated Resource Plan	Misc.
EO-2021-0060	Ameren- Missouri	FAC Prudency Review	Heat Rate, Plant Outages, Generation Utilization, Self-Commitment
ER-2021-0240	Ameren- Missouri	Rate Case	Heat Rate
ER-2021-0312	Liberty- Empire	Rate Case	Heat Rate
EA-2022-0099	Ameren- Missouri	Transmission	Qualified to construct