

Exhibit No.:
Issue(s): *Weather*
Witness: *Michael L. Stahlman*
Sponsoring Party: *MoPSC Staff*
Type of Exhibit: *Direct Testimony*
Case No.: *GR-2025-0107*
Date Testimony Prepared: *April 23, 2025*

MISSOURI PUBLIC SERVICE COMMISSION

INDUSTRY ANALYSIS DIVISION

TARIFF/RATE DESIGN DEPARTMENT

DIRECT TESTIMONY

OF

MICHAEL L. STAHLMAN

**SPIRE MISSOURI INC.,
d/b/a Spire**

CASE NO. GR-2025-0107

Jefferson City, Missouri
April 2025

DIRECT TESTIMONY

OF

MICHAEL L. STAHLMAN

**SPIRE MISSOURI INC.,
d/b/a Spire**

CASE NO. GR-2025-0107

Q. Please state your name and business address.

A. My name is Michael L. Stahlman, and my business address is Missouri Public Service Commission, P.O. Box 360, Jefferson City, Missouri, 65102.

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

A. I am employed by the Missouri Public Service Commission (“Commission”) as a Regulatory Economist for the Tariff/Rate Design Department, in the Industry Analysis Division.

Q. Please describe your educational and work background.

A. Please see Schedule MLS-d1.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to describe the normal weather that I provided to Staff witness Melissa J. Reynolds for use in weather normalization in this proceeding.

Q. Please summarize your testimony.

A. I calculated Staff’s normal weather for the St. Louis and Kansas City regions.

Q. Why does Staff calculate “normal weather”?

A. Natural gas usage and revenue vary from year to year based on weather conditions. The temperature pattern in the test year is the primary determinant for

1 weather-sensitive¹ customers' gas usage and Spire Missouri's revenue in the test year. Each
2 year's weather is unique, so rates for weather-sensitive customer classes must be based on test
3 year usage and revenue adjusted to a level commensurate with "normal" weather conditions,
4 rather than actual test year usages and revenue.

5 Q. How did Staff calculate daily normal weather?

6 A. Staff updated the normal weather that was used in Spire Missouri's prior rate
7 case² with historical weather data from the Midwestern Regional Climate Center ("MRCC").
8 MRCC is a cooperative program between the National Centers for Environmental Information
9 ("NCEI") and Purdue University, Indiana.³ The NCEI is a part of the US Department of
10 Commerce's National Oceanic and Atmospheric Administration ("NOAA"), which provides
11 climatic normals.⁴ The Kansas City Airport and Lambert Airfield in St. Louis were selected
12 for the relative reliability of the weather data and the location of the weather station with respect
13 to Spire's East and West service territories.

14 Staff used a ranking method to calculate normal weather estimates of daily normal
15 temperature values. The mean daily temperatures ("MDTs") in a calendar month are ranked
16 with every calendar month in a 30-year historical period, from hottest to coldest, and then
17 averaged using the MDTs of the same rank in a calendar month. This average is the normal
18 weather and is matched to the rank of weather in the same calendar month of the test period.
19 The ranking process preserves the normal extremes by averaging the hottest days in each month
20 of the 30-year normal period regardless of the calendar day.

¹ Residential, Small General Service, and Large General Service are considered weather sensitive.

² Case No. GR-2022-0179.

³ Midwestern Regional Climate Center (2023). *About the MRCC*. <https://mrcc.purdue.edu/about>. (26MAR2025).

⁴ National Centers for Environmental Information. *About*. National Oceanic and Atmospheric Administration. <https://www.ncei.noaa.gov/about>. (26MAR2025).

1 Q. What are climatic normals?

2 A. A climate normal has been traditionally defined as the 30-year averages of
3 various weather variables, including temperature and precipitation.⁵ This has been the starting
4 point for Staff's weather analysis, but has been modified for reasons discussed below.

5 Q. Is Staff's normal weather the same as NOAA's climatic normals?

6 A. No. NOAA's published climatic normals are not directly usable by Staff
7 because the daily normal is based on a calendar date average rather than the ranked daily
8 average that Staff uses. NOAA's dated average method calculates a simple arithmetic mean of
9 MDTs of the same calendar date for each year in the 30-year normal period. Staff's calculated
10 daily normal temperatures are based on the ranking of the actual temperatures of the
11 accumulation period and the daily actual temperatures do not follow smooth patterns from day
12 to day. The ranked average method produces a more realistic daily temperature variation.
13 Staff's calculations are also different from NOAA's because Staff uses a more recent 30-year
14 period, in this case January 1993 through December 2022, while NOAA only updates its
15 climatic normals at the end of every ten year period (*i.e.*, January 1991 through
16 December 2020).

17 Q. What test period was used for weather?

18 A. Because the dates of Spire Missouri's revenue months⁶ do not match with
19 calendar months, Staff needs at least thirteen (13) calendar months of normal weather for an
20 appropriate test period. I provided Staff witness Melissa J. Reynolds two years of normal and

⁵ National Environmental Satellite, Data, and Information Service (May 19, 2021). *A NOAA Expert Discusses the New Climate Normals*. National Oceanic and Atmospheric Administration, Department of Commerce. <https://www.nesdis.noaa.gov/news/noaa-expert-discusses-the-new-climate-normals>. (26MAR2025).

⁶ A bill's revenue month is usually the month in which the bill was sent to the customer. The usage in that bill normally contains usage from the prior month, especially if the customer's meter was read early in the revenue month.

1 actual weather based on Spire Missouri's test year ending September 2024 and provided
2 additional normal weather ending December 2024. She will use the weather to perform her
3 weather normalization analysis, which enables her to run regression analysis to estimate
4 customer natural gas usage with normal weather conditions.

5 Q. Does this conclude your testimony?

6 A. Yes it does.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Spire Missouri Inc. d/b/a Spire's)
Request for Authority to Implement a General) Case No. GR-2025-0107
Rate Increase for Natural Gas Service Provided)
in the Company's Missouri Service Areas)

AFFIDAVIT OF MICHAEL L. STAHLMAN

STATE OF MISSOURI)
) ss.
COUNTY OF COLE)

COMES NOW MICHAEL L. STAHLMAN and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing *Direct Testimony of Michael L. Stahlman*; and that the same is true and correct according to his best knowledge and belief.

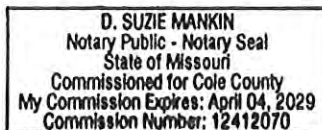
Further the Affiant sayeth not.

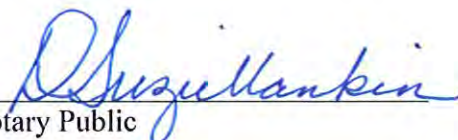


MICHAEL L. STAHLMAN

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 18th day of April 2025.





Notary Public

Michael L. Stahlman

Education

2009 M. S., Agricultural Economics, University of Missouri, Columbia.
2007 B.A., Economics, Summa Cum Laude, Westminster College, Fulton, MO.

Professional Experience

2010 - Regulatory Economist, Missouri Public Service Commission
2007 – 2009 Graduate Research Assistant, University of Missouri
2008 Graduate Teaching Assistant, University of Missouri
2007 American Institute for Economic Research (AIER) Summer
Fellowship Program
2006 Price Analysis Intern, Food and Agricultural Policy Research Institute
(FAPRI), Columbia, MO
2006 Legislative Intern for State Representative Munzlinger
2005 – 2006 Certified Tutor in Macroeconomics, Westminster College, Fulton, MO
1998 – 2004 Engineering Watch Supervisor, United States Navy

Expert Witness Testimony

Union Electric Company d/b/a AmerenUE GR-2010-0363
In the Matter of Union Electric Company d/b/a AmerenUE for Authority to File
Tariffs Increasing Rates for Natural Gas Service Provided to Customers in the
Company's Missouri Service Area

Union Electric Company d/b/a Ameren Missouri GT-2011-0410
In the Matter of the Union Electric Company's (d/b/a Ameren Missouri) Gas
Service Tariffs Removing Certain Provisions for Rebates from Its Missouri Energy
Efficient Natural Gas Equipment and Building Shell Measure Rebate Program

KCP&L Great Missouri Operations Company EO-2012-0009
In the Matter of KCP&L Greater Missouri Operations Company's Notice of Intent
to File an Application for Authority to Establish a Demand-Side Programs
Investment Mechanism

Union Electric Company d/b/a Ameren Missouri EO-2012-0142
In the Matter of Union Electric Company d/b/a Ameren Missouri's Filing to
Implement Regulatory Changes Furtherance of Energy Efficiency as Allowed by
MEEIA

Kansas City Power & Light Company EO-2012-0323
In the Matter of the Resource Plan of Kansas City Power & Light Company

KCP&L Great Missouri Operations Company EO-2012-0324
In the Matter of the Resource Plan of KCP&L Greater Missouri Operations
Company

Kansas City Power & Light Company	EO-2012-0135
KCP&L Great Missouri Operations Company	EO-2012-0136
In the Matter of the Application of Kansas City Power & Light Company [KCP&L Great Missouri Operations Company] for Authority to Extend the Transfer of Functional Control of Certain Transmission Assets to the Southwest Power Pool, Inc.	
Kansas City Power & Light Company, KCP&L Great Missouri Operations Company, and Transource Missouri	EA-2013-0098 EO-2012-0367
In the Matter of the Application of Transource Missouri, LLC for a Certificate of Convenience and Necessity Authorizing it to Construct, Finance, Own, Operate, and Maintain the Iatan-Nashua and Sibley-Nebraska City Electric Transmission Projects	
Kansas City Power & Light Company	EU-2014-0077
KCP&L Great Missouri Operations Company	
In the Matter of the Application of Kansas City Power & Light Company and KCP&L Greater Missouri Operations Company for the Issuance of an Accounting Authority Order relating to their Electrical Operations and for a Contingent Waiver of the Notice Requirement of 4 CSR 240-4.020(2)	
Kansas City Power & Light Company	EO-2014-0095
In the Matter of Kansas City Power & Light Company's Notice of Intent to File an Application for Authority To Establish a Demand-Side Programs Investment Mechanism	
Veolia Energy Kansas City, Inc	HR-2014-0066
In the Matter of Veolia Energy Kansas City, Inc for Authority to File Tariffs to Increase Rates	
Grain Belt Express Clean Line, LLC	EA-2014-0207
In the Matter of the Application of Grain Belt Express Clean Line LLC for a Certificate of Convenience and Necessity Authorizing It to Construct, Own, Operate, Control, Manage, and Maintain a High Voltage, Direct Current Transmission Line and an Associated Converter Station Providing an Interconnection on the Maywood - Montgomery 345 kV Transmission Line	
Union Electric Company d/b/a Ameren Missouri	ER-2014-0258
In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariff to Increase Its Revenues for Electric Service	
Empire District Electric Company	ER-2014-0351
In the Matter of The Empire District Electric Company for Authority to File Tariffs Increasing Rates for Electric Service Provided to Customers in the Company's Missouri Service Area	
Kansas City Power & Light Company	ER-2014-0370
In the Matter of Kansas City Power & Light Company's Request for Authority to Implement a General Rate Increase for Electric Service	

Kansas City Power & Light Company	EO-2014-0240
In the Matter of Kansas City Power & Light Company's Filing for Approval of Demand-Side Programs and for Authority to Establish a Demand-Side Programs Investment Mechanism	
KCP&L Great Missouri Operations Company	EO-2014-0241
In the Matter of KCP&L Greater Missouri Operations Company's Filing for Approval of Demand-Side Programs and for Authority to Establish a Demand-Side Programs Investment Mechanism	
Ameren Transmission Company of Illinois	EA-2015-0146
In the Matter of the Application of Ameren Transmission Company of Illinois for Other Relief or, in the Alternative, a Certificate of Public Convenience and Necessity Authorizing it to Construct, Install, Own, Operate, Maintain and Otherwise Control and Manage a 345,000-volt Electric Transmission Line from Palmyra, Missouri to the Iowa Border and an Associated Substation Near Kirksville, Missouri	
Empire District Electric Company	ER-2016-0023
In the Matter of The Empire District Electric Company's Request for Authority to Implement a General Rate Increase for Electric Service	
KCP&L Great Missouri Operations Company	ER-2016-0156
In the Matter of KCP&L Greater Missouri Operations Company's Request for Authority to Implement a General Rate Increase for Electric Service	
Kansas City Power & Light Company	ER-2016-0285
In the Matter of Kansas City Power & Light Company's Request for Authority to Implement A General Rate Increase for Electric Service	
Union Electric Company d/b/a Ameren Missouri	ER-2016-0179
In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariff to Increase Its Revenues for Electric Service	
Grain Belt Express Clean Line, LLC	EA-2016-0358
In the Matter of the Application of Grain Belt Express Clean Line LLC for a Certificate of Convenience and Necessity Authorizing it to Construct, Own, Operate, Control, Manage and Maintain a High Voltage, Direct Current Transmission Line and an Associated Converter Station Providing an Interconnection on the Maywood-Montgomery 345kV transmission line.	
Spire Missouri, Inc.	GR-2017-0215 and GR-2017-0216
In the Matter of Spire Missouri, Inc.'s Request to Increase Its Revenues for Gas Service	
Liberty Utilities	GR-2018-0013
In the Matter of Liberty Utilities (Midstates Natural Gas) Corp. d/b/a Liberty Utilities' Tariff Revisions Designed to Implement a General Rate Increase for Natural Gas Service in the Missouri Service Areas of the Company	

Spire Missouri, Inc. In the Matter of Spire Missouri, Inc. d/b/a Spire's Request to Decrease [Increase] WNAR	GO-2019-0058 and GO-2019-0059
Grain Belt Express Clean Line LLC Invenergy Transmission LLC Invenergy Investment Company LLC In the Matter of the Joint Application of Invenergy Transmission LLC, Invenergy Investment Company LLC, Grain Belt Express Clean Line LLC and Grain Belt Express Holding LLC for an Order Approving the Acquisition by Invenergy Transmission LLC of Grain Belt Express Clean Line LLC	EM-2019-0150
Union Electric Company d/b/a Ameren Missouri In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Increase its Revenues for Natural Gas Service	GR-2019-0077
Union Electric Company d/b/a Ameren Missouri In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Decrease Its Revenues for Electric Service	ER-2019-0335
Empire District Electric Company In the Matter of The Empire District Electric Company's Request for Authority to File Tariffs Increasing Rates for Electric Service Provided to Customers in its Missouri Service Area	ER-2019-0374
Union Electric Company d/b/a Ameren Missouri In the Matter of the Application of Union Electric Company d/b/a Ameren Missouri for Permission and Approval and a Certificate of Public Convenience and Necessity Under 20 CSR 4240-3.105	EA-2020-0371
Spire Missouri, Inc. In the Matter of Spire Missouri Inc.'s d/b/a Spire Request for Authority to Implement a General Rate Increase for Natural Gas Service Provided in the Company's Missouri Service Areas	GR-2021-0108
Union Electric Company d/b/a Ameren Missouri In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Adjust Its Revenues for Electric Service	ER-2021-0240
Union Electric Company d/b/a Ameren Missouri In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Adjust Its Revenues for Natural Gas Service	GR-2021-0241
The Empire District Electric Company In the Matter of the Request of The Empire District Electric Company d/b/a Liberty for Authority to File Tariffs Increasing Rates for Electric Service Provided to Customers in its Missouri Service Area	ER-2021-0312
The Empire District Gas Company In the Matter of The Empire District Gas Company's d/b/a Liberty Request to File Tariffs to Change its Rates for Natural Gas Service	GR-2021-0320

Ameren Transmission Company of Illinois In the Matter of the Application of Ameren Transmission Company of Illinois for a Certificate of Convenience and Necessity Under Section 393.170.1, RSMo. Relating to Transmission Investments in Southeast Missouri	EA-2022-0099
Evergy Metro, Inc d/b/a Evergy Missouri Metro In the Matter of Evergy Metro, Inc. d/b/a Evergy Missouri Metro's Request for Authority to Implement A General Rate Increase for Electric Service	ER-2022-0129
Evergy Missouri West, Inc. d/b/a Evergy Missouri West In the Matter of Evergy Missouri West, Inc. d/b/a Evergy Missouri West's Request for Authority to Implement A General Rate Increase for Electric Service	ER-2022-0130
Spire Missouri, Inc. In the Matter of Spire Missouri, Inc. d/b/a Spire's Request for Authority to Implement a General Rate Increase for Natural Gas Service Provided in the Company's Missouri Service Areas	GR-2022-0179
Union Electric Company d/b/a Ameren Missouri In the Matter of the Application of Union Electric Company d/b/a Ameren Missouri for Approval of a Subscription-Based Renewable Energy Program	EA-2022-0245
Union Electric Company d/b/a Ameren Missouri In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Adjust Its Revenues for Electric Service	ER-2022-0337
Grain Belt Express Clean Line LLC In the Matter of the Application of Grain Belt Express LLC for an Amendment to its Certificate of Convenience and Necessity Authorizing it to Construct, Own, Operate, Control, Manage, and Maintain a High Voltage, Direct Current Transmission Line and Associated Converter Station	EA-2023-0017
Union Electric Company d/b/a Ameren Missouri In the Matter of the Application of Union Electric Company d/b/a Ameren Missouri for Permission and Approval and Certificates of Public Convenience and Necessity Authorizing it to Construct Renewable Generation Facilities	EA-2023-0286
Evergy Metro, Inc d/b/a Evergy Missouri Metro Evergy Missouri West, Inc. d/b/a Evergy Missouri West In the Matter of Requests for Customer Account Data Production from Evergy Metro, Inc. d/b/a Evergy Missouri Metro and Evergy Missouri West, Inc. d/b/a Evergy Missouri West	EO-2024-0002
Liberty Utilities (Midstates Natural Gas) Corp. d/b/a Liberty In the Matter of the Request of Liberty Utilities (Midstates Natural Gas) Corp. d/b/a Liberty to Implement a General Rate Increase for Natural Gas Service in the Missouri Service Areas of the Company	GR-2024-0106
Evergy Missouri West, Inc. d/b/a Evergy Missouri West In the Matter of Evergy Missouri West, Inc. d/b/a Evergy Missouri West's Request for Authority to Implement a General Rate Increase for Electric Service	ER-2024-0189

Union Electric Company d/b/a Ameren Missouri

ER-2024-0319

In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to
Adjust Its Revenues for Electric Service

Selected Manuscripts

Stahlman, Michael and Laura M.J. McCann. "Technology Characteristics, Choice
Architecture and Farmer Knowledge: The Case of Phytase." Agriculture and
Human Values (2012) 29: 371-379.

Stahlman, Michael. "The Amoralism of Signals." Awarded in top 50 authors for SEVEN
Fund essay competition, "The Morality of Profit."