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|---|---|
| *Exhibit No.:* | |
| *Issue(s):* | *Weather Normalization, Load Requirement at Transmission* |
| *Witness:* | *Michael L. Stahlman* |
| *Sponsoring Party:* | *MoPSC Staff* |
| *Type of Exhibit:* | *Direct Testimony* |
| *Case Nos.:* | *ER-2022-0129 and ER-2022-0130* |
| *Date Testimony Prepared:* | *June 8, 2022* |

# MISSOURI PUBLIC SERVICE COMMISSION

## INDUSTRY ANALYSIS DIVISION

## TARIFF/RATE DESIGN DEPARTMENT

## DIRECT TESTIMONY

## OF

## MICHAEL L. STAHLMAN

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

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

***Jefferson City, Missouri***
***2022***

**TABLE OF CONTENTS OF**

**DIRECT TESTIMONY OF**

**MICHAEL L. STAHLMAN**

**Evergy Metro, Inc. d/b/a Evergy Missouri Metro**
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**Evergy Missouri West, Inc. d/b/a Evergy Missouri West**
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**DIRECT TESTIMONY**

**OF**

**MICHAEL L. STAHLMAN**

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

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

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 in the Tariff/Rate Design Department in the Industrial Analysis Division.

Q. Please describe your educational and work background.

A. Please see Schedule MLS-1.

Q. Are you the same Michael L. Stahlman that previously provided testimony in this case during the discovery conference held on May 5, 2022?

A. Yes I am.

## EXECUTIVE SUMMARY

Q. What is the purpose of your testimony?

A. The purpose of my direct testimony is present the results of Staff's weather normalization analysis for Evergy Missouri Metro ("EMM") and Evergy Missouri West ("EMW").

Q. Please summarize your testimony.

A. I calculated the Staff's Weather Normalization and 365 Day Adjustments. These calculations relied on the weather data provided by Staff witness Mr. Poudel, loss data from Staff and data provided by the company through data requests. The results were given to Staff witness Kim Cox for use in her revenue calculation.

I also calculated the Load Requirement at Transmission. This calculation relied on loss factors provided by Staff witness Alan Bax, weather data provided by Staff witness Mr. Poudel, data provided by the company through data requests and 3.190 reports, and normalized sales provided by Staff witness Kim Cox. The results were provided to Staff witnesses Shawn Lange and Charles Poston for use in the fuel model.

**Weather Normalization**

Q. What is weather normalization?

A. In many of the classes of service, electricity consumption is highly responsive to the weather, specifically temperature. As the temperature reaches higher levels, the demand for cooling, air conditioning and fans increases the customers' consumption of electricity. As the weather becomes colder, the demand for additional heating, via electric space heating, also forces an increase in electricity consumption. Electric air conditioning and space heating is prevalent in EMM and EMW's service territory; therefore, it follows that the respective electric loads of EMM and EMW are linked with and responsive to temperature. Weather normalization is the process of measuring the impact of weather on energy consumption and removing abnormal weather influence from the test period in order to provide a more accurate representation of "normal" electric usage.

Q. Where did the weather data come from for this analysis?

A. Weather data was provided by Staff witness Hari Poudel. Mr. Poudel further describes the weather data in his testimony, including a description of "normal" weather.

Q. What time period did Staff weather normalize?

A. Staff weather normalized the update period for this case, the twelve months ending December 31, 2021.

Q. Why did Staff weather normalize for the update period, when EMM and EMW weather normalized for the test year?

A. The Commission ordered that there be an update period for this case for the 12 months ending December 31, 2021.[1] In an attempt to capture a more likely forward-looking indictor of non-weather electricity usage per customer, Staff weather normalized the update period as it includes the most current information available for analysis and will more closely align to revenue estimates and costs as an outcome of this rate case.

Q. Briefly describe the weather normalization process.

A. Staff used MetrixND to run regression analysis to determine a class's response to weather and other variables. The method and model used by Staff is similar to those used by EMM and EMW. Staff's model and method contained elements important in the class-level weather normalization process: use of daily load research data to determine non-linear, class-specific responses to changes in temperature with the incorporation of different base usage parameters to account for different days of the week, months of the year and holidays. Staff then used the model to simulate energy consumption by substituting normal daily weather data with the actual daily weather data. The results of Staff's analysis were provided to Staff witness Kim Cox to be used in the normalization of revenues for weather sensitive classes,

[1] Commission's Order Establishing Test Year issued on 3/3/2022

Residential ("RES"), Small General Service ("SGS"), Medium General Service ("MGS", EMM only), and Large General Service ("LGS"), and to Staff witness Alan Bax for the Sale for Resale ("SFR").

Q. Did Staff weather normalize Large Power?

A. No. Staff reviewed the data for individual large power customers and found that only a minority of the customers had a usage pattern consistent with being weather sensitive. A larger portion appeared seasonal, and others were weather insensitive.

Q. How did Staff obtain usage data for the update period for each customer class?

A. Staff submitted several data requests.

Q. Were the initial responses to these data requests responsive?

A. No. Staff first asked Evergy on Feb 8, 2022 in Staff Data Requests 0230 (EMM) and 0228 (EMW) to:

> "Please provide updates to Evergy witness Al Bass' workpapers for Evergy Missouri West and Evergy Missouri Metro with data through December 31, 2021 and update through June 30, 2022 as soon as the information is available." (emphasis added)

Additionally, Staff Data Requests 0250 (Metro) and 0247 (West), issued February 16, 2022, asked:

> Please hourly load information for each of the following customer classifications, and indicate the voltage at which the loads are provided, for the period Jan 1, 2020 – Dec 31, 2021: (1) Residential (2) Residential TOU (3) Residential NM (4) SGS Primary (5) SGS Secondary (6) LGS Primary (7) LGS Secondary (8) LPS Primary (9) LPS Secondary (10) LPS Substation (11) LPS Transmission (12) Thermal Service (13) SIL/Nucor (14) Lighting (15) CCN Please indicate the source of such data, such as whether it is calculated based on load research or if it is the summation of AMI meter reads. (emphasis added)

None of the responses to those data requests provided load data through Dec. 31, 2021.

In fact, the response to 247 was explicit, "In the attached file 'Q0247_MPSC_20220216_Q0247_West' the hourly loads are provided for the period of January 1, 2020 – June 30, 2021…" (emphasis added)

Q. Did Staff follow-up with Evergy to try and obtain the necessary data?

A. Yes. First, Staff issued two more data requests to specifically address what information was sought on 3/15/2022 for DR 285 (Metro) and 3/14/2022 for DR 291:

> Please update workpapers found in the following folders of Mr. Bass's direct workpapers through the revenue month of December 2021: 1. Billed calibration data 2. Google Mobility data 3. Load and Precision 4. NDModels.

Secondly, on March 22, 2022, Staff had a discussion with Evergy on the responses to DRs 228, 230, 247, and 250. This discussion also mentioned DRs 285 and 291 above. At the conclusion of the conversation, Evergy agreed to provide an update to DRs 247 and 250.

Q. Did the amended responses provide Staff with the necessary data?

A. No. Evergy amended its responses on April 4, 2022 to respond to DRs 250 and 247 stating:

> Question 0250A [0247A] addresses the above data request and additionally NSI, Google Mobility, Meter Read Schedule and MEEIA as discussed with MPSC staff on March 22, 2022…Hourly loads are attached in the Access database "GMO_loadresearch" for Residential, Small General Service (SGS), Large General Service (LGS), Large Power (LP) and Sales for Resale (SFR) for the time-period of Jan 1, 2021 through December 31, 2021. The hourly loads are based on the summation of the AMI meter reads. The Metrix ND weather normalization models link directly to this Access database." (emphasis added)

However, Staff noticed that the hourly loads used in Evergy's direct filing were not the same as the loads in the amended responses for the overlapping time periods.

Q. Did Staff again follow-up with Evergy to try and obtain the necessary data?

A. Yes. Staff issued DRs 250.2 (Metro) and 247.2 (West) on 4/11/2022, asking, among other questions:

> Please explain, in detail, why there is a difference between the data provided the Company's response to DR 250 and the data provided in the "LoadData" Data Tables in the MetrixND files from Mr. Bass's direct workpapers for the same class on the same hour in the same day. Include an explanation for each difference and the impact on the data provided…Please provide the hourly load data for each class consistent with the "LoadData" Data Tables in the MetrixND files.provided as direct workpapers of Mr. Bass for the period of 1/1/2019 through 12/31/2021.

Evergy response on 5/2/2022:

> The MetrixND files MPSC Staff is requesting are not updated through 12/31/21. The company does not weather normalize for a different period outside the test year. If MPSC Staff is wanting to weather normalize for a different time-period other than the test year, MPSC Staff will need to do the following steps to make the AMI data provided in DR 250 equal to the AMI data in the table "LoadData". (emphasis added)

Q. Was Staff given sufficient data to transform the AMI data into the equivalent "LoadData" table?

A. Not initially. Among the steps listed was to, "Update the BilledNDCalib.xls spreadsheet". That spreadsheet, which was provided in direct, says, "Calibration numbers…come from BilledCal_LR.xls spreadsheet (calibration between Load Research and Billed Data from Regulatory)." Staff was not provided this data until 5/5/2022, just prior to the discovery conference on that date.

Q. Has Staff incorporated the adjusted data to the current weather normalization models?

A. No. Due to the need to provide the adjustments to other Staff members, Staff used the unadjusted AMI data. Staff will continue to adjust the AMI data, and should any significant issues arise, Staff will address these issues in rebuttal.

**365-Days Adjustment to Usage**

Q. Why does Staff make a 365-day adjustment?

A. Calendar months and revenue months differ from one another because of the periods they cover and the differing beginning and ending times. Calendar months coincide with the calendar, beginning on the first day of the month and ending on the last day of the month. EMM's and EMW's respective customers' usage is measured and rate revenues are collected over a period known as a revenue month, which is the interval over which EMM and EMW read customers' meters and issues bills. A bill rendered for a given revenue month may

charge for usage in parts of two calendar months. Revenue months usually take their names from the calendar month in which the customer's bill is rendered. For example, assume a customer's meter was read and usage determined on June 8 and then again on July 8 and that the bill was sent to the customer on July 15. The revenue month for this bill is July even though 22 days of the usage measured for this bill occurred from June 9 through June 30 and it contained only eight days of usage in July.

The length of a revenue month is dependent upon the interval between meter readings and does not necessarily have the same number of days that occur in a given calendar month of the same name; that is, a revenue month may have more than or less than the number of days for the same-named calendar month. For the example given above, the usage is for 30 days (June 9 through July 8), even though the revenue month is July, which has 31 days. When revenue month usage is totaled over the year, the resulting revenue year will include usage from the immediately prior calendar year and assign usage to the next calendar year, meaning a revenue year may contain more than or less than 365 days' usage. Therefore, since the costs and expenses are accounted over a calendar year, Staff calculates an annualization adjustment to bring the revenue year kWh into a 365-days interval. This adjustment is stated in kWh and is referred to as the 365-Days Adjustment. Staff calculated the 365-Days Adjustment by adjusting individual bill cycles that had more than or less than 365 days' usage from the first date in that cycle’s revenue test year to the last meter read date in that cycle’s revenue test year. The overall average usage per day of that cycle was then multiplied by the days over/under 365 days to determine the kWh adjustment.

The 365-Days Adjustment for RES, SGS, MGS (EMM only), and LGS were provided to Staff witness Kim Cox, who used the 365-Days Adjustment to adjust the revenues of the weather-normalized class revenues months to the twelve months ended April 30, 2021.

**Load Requirement at Transmission**

Q. What is the load requirement at transmission?

A. Hourly load requirement at transmission is the hourly electric supply necessary to meet the energy demands of both the company's customers and the company's own needs. This is calculated at the transmission level to account for losses in the transmission and distribution system.

Q. Where did Staff obtain the load and weather data?

A. The hourly loads used in the analysis of the period of January 2021, through December 2021, were obtained from EMM's and EMW's data provided in accordance with 20 CSR 4240-3.190 (1)(C). Staff witness Hari Poudel provided actual and normal daily temperatures used in this analysis.

Q. Why does Staff weather normalize the load requirement at transmission?

A. Due to the high saturation of air conditioning, and the presence of significant electric space heating in EMM's and EMW's service territory, the magnitude and shape of EMM's and EMW's load requirement are directly related to daily temperatures. The actual daily temperatures for the update period differed from normal conditions. Therefore, to reflect normal weather, daily peak and average load requirement are adjusted independently, but using the same method.

Q. Why does Staff weather normalize the average load separately from the peak load?

A. Independent adjustments are necessary because average loads and peak loads respond differently to weather. Daily average load is calculated as the daily energy divided by twenty-four hours and the daily peak is the maximum hourly load for the day. Separate regression models estimate both a base component, which is allowed to fluctuate across time, and a weather sensitive component, which measures the response to daily fluctuations in weather for daily average loads and peak loads. The regression parameters, along with the difference between normal and actual cooling and heating measures, are used to calculate weather adjustments to both the average and peak loads for each day. The adjustments for each day are added respectively to the actual average and peak loads for each day.

Q. How does Staff calculate the load requirement at transmission?

The starting point for allocating both the weather-normalized daily peak and the weather- normalized average loads to the hours is the actual hourly loads. A unitized load curve is calculated for each day as a function of the actual peak and average loads for that day. The corresponding weather-normalized daily peak and average loads, along with the unitized load curves, are used to calculate weather-normalized hourly loads.

Once Staff's normalized, annualized test year usage for EMM's and EMW's retail customer classes is completed, weather-normalized wholesale usage is added. Then, the non-sale for resale classes annual usage was increased by the average annual loss factor supplied by Staff witness Alan J. Bax. A weather normalized SFR class' annualized usage was added to the non-transmission-level classes annual usage to produce an annual sum of the hourly load requirement that equals the adjusted test year usage and is consistent with Staff's normalized revenues.

A factor was applied to each hour of the weather-normalized loads to produce an annual sum of the hourly load requirement that equals the adjusted test year usage, plus losses, and is consistent with normalized revenues. Once completed, the test-year hourly normalized system loads were given to Staff witnesses Shawn E. Lange and Charles T. Poston to be used in developing the test year fuel and purchased-power expense.

Q. Please summarize your testimony.

A. I calculated Staff's weather normalization adjustment, 365-day adjustment, and load requirement at transmission using inputs from other Staff witnesses and Evergy's responses to data requests and reports. The results of my calculations were then provided to other Staff witnesses.

Q. Does this conclude your testimony?

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 Implement a General Rate Increase for Electric Service | ) ) ) ) | Case No. ER-2022-0129 |
| 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 | ) ) ) ) | Case No. ER-2022-0130 |

**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 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

# Michael L. Stahlman

## Education

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

## Professional Experience

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| 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, KCP&L Great Missouri EA-2013-0098
Operations Company, and Transource Missouri 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 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 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. GO-2019-0058 and GO-2019-0059
In the Matter of Spire Missouri, Inc. d/b/a Spire's Request to Decrease [Increase] WNAR

Grain Belt Express Clean Line LLC EM-2019-0150
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

Union Electric Company d/b/a Ameren Missouri GR-2019-0077
In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Increase its Revenues for Natural Gas Service

Union Electric Company d/b/a Ameren Missouri ER-2019-0335
In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Decrease Its Revenues for Electric Service

Empire District Electric Company ER-2019-0374
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

Union Electric Company d/b/a Ameren Missouri EA-2020-0371
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

Spire Missouri, Inc. GR-2021-0108
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

Union Electric Company d/b/a Ameren Missouri ER-2021-0240
In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Adjust Its Revenues for Electric Service

Union Electric Company d/b/a Ameren Missouri GR-2021-0241
In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Adjust Its Revenues for Natural Gas Service

The Empire District Electric Company ER-2021-0312
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

The Empire District Gas Company GR-2021-0320
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

Ameren Transmission Company of Illinois EA-2022-0099
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

Evergy Metro, Inc d/b/a Evergy Missouri Metro ER-2022-0129
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

Evergy Missouri West, Inc. d/b/a Evergy Missouri West ER-2022-0130
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

**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 Amorality of Signals." Awarded in top 50 authors for SEVEN Fund essay competition, "The Morality of Profit."

**Selected Posters**

Stahlman, Michael, Laura M.J. McCann, and Haluk Gedikoglou. "Adoption of Phytase by Livestock Farmers." Selected poster at the American Agricultural Economics Association Annual Meeting, Orlando, FL, July 27-29, 2008. Also presented at the USDA/CSREES Annual Meeting in St. Louis, MO in February 2009.

McCann, Laura, Haluk Gedikoglu, Bob Broz, John Lory, Ray Massey, and Michael Stahlman. "Farm Size and Adoption of BMPs by AFOs." Selected poster at the 5th National Small Farm Conference in Springfield, IL in September 2009.