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Retail Rate Revenue
Witness: *Joel McNutt*
Sponsoring Party: *MoPSC Staff*
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Case No.: *GR-2021-0320*
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MISSOURI PUBLIC SERVICE COMMISSION

INDUSTRY ANALYSIS DIVISION

TARIFF/RATE DESIGN DEPARTMENT

DIRECT TESTIMONY

OF

JOEL McNUTT

THE EMPIRE DISTRICT GAS COMPANY,
d/b/a Liberty (Empire)

CASE NO. GR-2021-0320

Jefferson City, Missouri
January 2022

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CASE NO. GR-2021-0320

Q. Please state your name and business address.

A. Joel McNutt, 200 Madison Street, Jefferson City, MO 65101

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

A. I am employed by the Missouri Public Service Commission ("Commission") as an Economics Analyst for the Tariff and Rate Design Department, of the Industry Analysis Division of the Commission Staff.

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

A. I received my Bachelor of Science in Economics from Central Missouri State University in Warrensburg, MO in May 2002. I completed my Master of Business Administration from William Woods University in Jefferson City, MO in December 2007.

I am currently employed as an Economics Analyst in the Tariff/Rate Design Department within the Industry Analysis Division of the Missouri Public Service Commission. I was previously employed with the Missouri Public Service Commission as a Regulatory Economist in 2013 and 2014. I have currently been employed with the Missouri Public Service Commission since 2020.

Prior to joining the Commission, I worked in the fields of Procurement and Economic Development for the Missouri Department of Transportation and the Missouri Department of Economic Development. In my previous 10 years of experience working for the State of

Missouri, I have administered several State-run programs such as the Missouri Enhanced Enterprise Zone Program and the Missouri Certified Sites Program. I also have private sector experience in the fields of healthcare, banking, and nuclear security as well as previous experience in higher education.

Q. Have you previously filed testimony before the Commission?

A. Yes, I have attached Schedule JM-d1, which illustrates my history of cases before the Commission in which I provided testimony, Staff recommendation, or significant analysis.

EXECUTIVE SUMMARY

Q. What is the purpose of your direct testimony?

A. The purpose of my testimony is to present the results of Staff's weather normalization analysis and calculation of retail rate revenue for the non-transportation rate classes for this The Empire District Gas Company ("Empire") rate case.

WEATHER NORMALIZATION

Q. What is weather normalization?

A. Weather normalization is the process of measuring the impact of weather on energy consumption. Weather patterns will vary widely from day-to-day and year-to-year, weather for a given season may be colder or warmer. As natural gas in Missouri is primarily used for the purpose of space heating, natural gas sales are dependent upon weather conditions. Weather normalization removes abnormal weather influence from the test period in order to provide a more accurate representation of "normal" natural gas usage.

Q. What time period did Staff weather normalize?

A. Staff weather normalized the update period for this case, the twelve months ending September 30, 2021.

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

A. Empire requested that there be an update period for this case for the 12 months ending September 30, 2021. 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. Did Staff utilize raw weather data from both Conception and Kansas City International Airport ("KCI") weather stations for their weather normalization analysis?

A. No. Staff utilized the raw weather data from the KCI weather station only. The reasons for this are discussed in the direct Cost of Service normal weather testimony of Staff witness Michael L. Stahlman.

Q. Did Staff weather normalize all of Empire's customer classes?

A. No. Staff only weather normalized the Residential ("RS"), Small Commercial Firm Service Small ("SCFS"), and Small Commercial Firm Service Medium ("SCFM") customer classes.

Q. Why did Staff not weather normalize the Small Commercial Firm Service Large Class ("SCFL") and the Large Volume/Transportation Classes?

A. Large Volume and Transportation classes are traditionally not weather sensitive. Staff did conduct a weather normalization analysis on the SCFL. The results of this analysis indicated a weak correlation between gas usage and weather fluctuations for this customer class. As evidenced by the chart below, there is not a strong relationship in this customer class

between the usage-per-customer per day (U/C/D) and the heating degree day per day (HDD/D) in the months of October, November, and December 2020. This indicates that this customer class is not highly weather sensitive. Staff has submitted a data request to Empire to provide the names of all customers in this class to validate that most customers in this class have business characteristics that are not weather sensitive and that some customers may not operate in the winter months.

Billing Month	Customer Numbers	Total Ccf	Observed (U/D)	Actual (C*HDD/D)	Observed (U/C/D)	Actual (HDD/D)	Predicted (U/C/D)
Oct	32	97,399	3,247	76	101.4571	2.3833	38.7033
Nov	34	103,557	3,341	381	98.2513	11.1935	53.5425
Dec	34	65,552	2,260	603	66.4830	17.7241	64.5422
Jan	33	84,510	2,914	977	88.3075	29.6207	84.5798
Feb	33	92,595	2,723	1,192	82.5264	36.1324	95.5475
Mar	33	114,928	4,105	1,705	124.3809	51.6607	121.7023
Apr	33	62,973	2,031	611	61.5569	18.5161	65.8761
May	33	42,957	1,534	527	46.4906	15.9821	61.6081
Jun	33	23,233	704	168	21.3339	5.0909	43.2637
Jul	33	16,089	536	47	16.2515	1.4167	37.0751
Aug	33	15,146	489	0	14.8053	0.0000	34.6890
Sep	33	14,296	461	0	13.9742	0.0000	34.6890

Q. What is the process that Staff used to weather normalize sales?

A. The process to weather normalizing natural gas sales includes several steps. First, Staff receives actual billed usage from Empire for the update period for each rate class and by each billing cycle. Empire has approximately ten (10) separate billing cycles that indicate when a customer's meter is read in a given month. For example, the first billing cycle of the month may indicate a customer's meter is read on the first business day of the month and the second billing cycle may indicate a customer's meter is read on the second business day of the month. Customers' accounts are grouped into one of ten (10) billing cycles. Staggering the billing of customers' accounts through the billing month allows Empire to distribute the work

required in order to bill its customers. A billing cycle is generally no more than 34 days long and no less than 26 days long.

Staff adjusted monthly natural gas volumes to reflect 365 days for each billing cycle, since the number of days can fluctuate from month to month. If the annual number of days in a billing cycle, over a 12-month period, is below or above 365, Staff added or subtracted the average daily usage difference to the non-heating season. This adjustment is performed so that each billing cycle is set to the same total number of days over a 12-month period. Since natural gas utilities are winter peaking, HDDs[1] that are removed based on the 365 day adjustment are added back to the October billing month, since it is a shoulder month to the heating season.[2] Using the non-heating months minimizes the impact on the heating season.

After each billing cycle is adjusted so that it contains the proper number of days, the next step is to calculate the difference between normal and actual HDDs for each billing cycle. Then, Staff will multiply these differences by the estimate rendered from the regression analysis described in further detail below to determine the change in usage in each billing cycle due to abnormal weather. The next step is to sum the change in usage per billing cycle over the month. Lastly, Staff will add the monthly adjustments in usage to the total monthly natural gas sales to calculate the normalized level of usage per month. The normalized level of natural gas usage per month is then used by Staff to calculate revenue.

Q. How did Staff apply this weather normalization process?

[1] **HEATING DEGREE DAYS (HDD):** A measure of the coldness of the weather experienced, based on the extent to which the daily mean temperature falls below a reference temperature, usually 65 degrees F. For example, on a day when the mean outdoor dry-bulb temperature is 35 degrees F, there would be 30 degree days experienced. A daily mean temperature usually represents the sum of the high and low readings divided by two.

[2] HDDs that belong to a day that is removed are added back so that over a 365-day period, the total HDDs match the normal level of HDDs.

A. This information was used in Staff's weather normalization model utilizing daily actuals and daily normal HDDs provided by Staff witness Michael L. Stahlman. Mr. Stahlman addresses the calculation of HDDs as part of his direct testimony in this case. As mentioned above, Empire has established billing cycles for groups of customers where each billing cycle corresponds to different days of the month. Based on the number of customers, usage, and HDDs per billing cycle per month, Staff calculated the average use per customer per day and the number of HDDs per day for each of the twelve months of the update period for the rate classes mentioned above for Empire.

The billing month averages are calculated from the data provided by the utility on the numbers of customers, natural gas usage, and summed HDDs from the billing cycles for each billing month by customer class. The daily average HDDs in each billing month and billing cycle are weighted by the percentage of customers in that billing cycle. Thus, the billing cycles with the most customers are given more weight when computing the daily average HDDs for the billing month. Staff uses the twelve monthly average-usage-per-customer amounts across the billing cycles to calculate the daily average usage for one month. The usage and weather billing month averages are used to study the relationship between space-heating natural gas usage and cold weather, which is used to estimate the change in usage related to a change in HDDs.

Staff uses regression analyses to estimate the relationship for each rate class. The regression equation develops quantitative measures that describe the relationship between daily usage per customer in centum cubic feet (Ccf) to the daily HDDs. The regression equation estimates a change in the daily natural gas usage per customer whenever the daily average weather changes by a HDD.

Q. What were the results of Staff's weather normalization analysis for the RS, SCFS, and SCFM customer classes?

A. Staff's weather normalization analysis determined that the weather in the update period was warmer than normal for these customer classes and that customer usage needs to be adjusted upward by the following weather normalized adjustment percentages for Empire's North/South and Northwest Districts.

Normal Weather Adjustment for Update Period	**North/South District**	**Northwest District**
Residential (RS)	3.39%	3.40%
Small Commercial Firm Service Small (SCFS)	3.38%	3.48%
Small Commercial Firm Service Medium (SCFM)	2.71%	N/A

Q. Should the Commission adopt Staff's weather normalization analysis?

A. Yes. Staff recommends that the Commission utilize Staff's weather normalization adjustments that are outlined above and in the supporting work papers.

RETAIL RATE REVENUE

Q. What is the purpose of calculating non-gas operating retail rate revenue?

A. The largest component of non-gas operating revenues is a result of rates charged to Empire's retail customers. A comparison of non-gas operating revenues with the cost of service is fundamentally a test of the adequacy of the currently effective retail natural gas rates to meet Empire's current costs of providing utility service.

One of the major tasks in a rate case is to determine the magnitude of any deficiency (or excess) between a company's cost of service and its operating revenues. Test period revenues need to be appropriately normalized and annualized in order to accurately measure

the amount of any deficiency (or excess) in the current level of operating revenues. Once determined, the deficiency (or excess) can only be made up (or otherwise addressed) by adjusting retail rates (i.e., rate revenue) prospectively.

Q. What are non-gas operating retail rate revenues?

A. Non-gas operating revenues are composed of two components: (1) Rate Revenue and (2) Other Operating Revenue. The definitions of these components are as follows:

Rate Revenue: Rate Revenues are defined as the revenue a utility collects from its customers based on its Commission approved base rates. Base rates are made up of a variable rate that is dependent on usage and a fixed monthly customer charge. Test period rate revenues consist solely of the revenues derived from Empire's Commission approved rates for providing natural gas service to its retail customers for the 12 months ending December 31, 2020, and updated through September 30, 2021. Empire's variable charges are determined by the amount of each customer's usage and the (per unit) rates that are applied to that usage. Each customer also pays a flat monthly customer charge dependent upon each customer's rate class. The Empire rate classes include RS, SCFS, SCFM and SCFL customer classes.

Other Operating Revenue: Other operating revenue are dollars collected by the utility for items other than the sale of natural gas. Other operating revenue includes late payment charges, collection trip charges, special meter reading charges, and disconnection/reconnection of service charges. Each of these charges is established by the Commission, and all of these revenue items are taken into account in setting retail rates for gas service to customers.

Q. How was retail rate revenue for the non-transportation rate classes developed for this case?

A. To determine the level of Empire's test period revenue, Staff applied standard ratemaking adjustments to actual monthly gas usage and customer counts. Staff makes these adjustments in order to determine the normalized level of revenue that Empire would collect on an annual basis, under normal weather or climatic conditions, natural gas usage and customer levels, based on information that is "known and measurable" as of the end of the update period. In this particular case, the test year is the 12 months ended December 2020, updated for known and measurable changes through September 2021.

Rate revenue was developed and summarized in two different ways: (1) type of regulatory adjustment and (2) total revenue by rate class. This testimony describes the nine major regulatory adjustments Staff made to test period billed rate revenues:

a. update period adjustment,
b. weather normalization,
c. customer growth,
d. large customer annualization,
e. tax adjustment,
f. removal of gas costs, and
g. removal of Gross Receipts Tax ("GRT") revenue and expense.

Not all of these adjustments affect both sales (Ccfs) and rate revenue dollars, and not all rate classes are subject to all adjustments.

Q. Did Staff calculate retail rate revenue for the transportation rate classes?

A. Yes. Staff witness Joseph P. Roling discusses the calculation of transportation class revenues in his direct-filed testimony.

Q. How did Staff calculate its update period adjustment?

A. The update period adjustment is simply an adjustment to update the test period through the 12 months ending September 30, 2021. The update period adjustment is determined

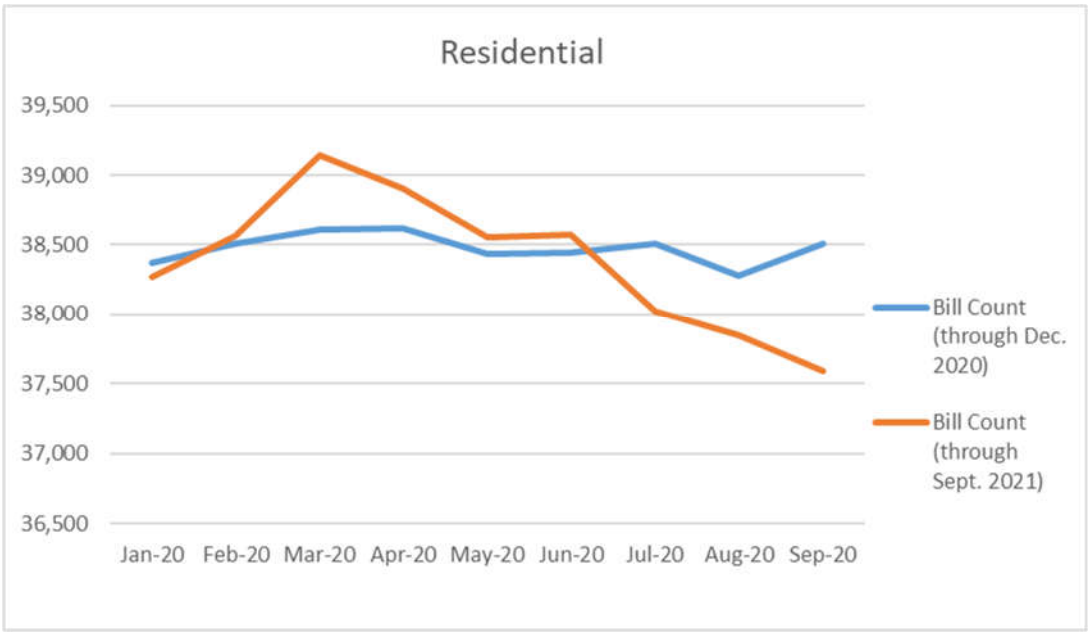
by calculating the difference of billed usage and revenue through December 31, 2020, compared to the billed usage and revenue through September 30, 2021.

Q. How did Staff calculate its weather normalization adjustment to retail rate revenue?

A. Staff applied the normalized monthly usage developed as described above, to each month of the test period and then calculated revenue based on the weather normalized level of monthly usage. The difference between non-weather normalized billed usage and the weather normalized billed usage resulted in Staff's weather normalization adjustment.

Q. How did Staff calculate its customer growth adjustment to retail rate revenue?

A. Staff did not calculate a customer growth adjustment in this case. Staff found that customer numbers per month were consistent across the months of the test period given that natural gas customers tend to drop off in non-winter months and reconnect in winter months. For example, below is a comparison of monthly customer numbers for the residential class.



The greatest difference between customer numbers exist between the months of September 2020 and September 2021. Staff found that during calendar year 2020 the number of disconnections were greatly reduced compared to prior years due to COVID-19. Since Empire's disconnection practices have resumed and customers tend to disconnect during non-winter months and reconnect in winter months, Staff did not adjust customer numbers for September 2021 up to the September 2020 customer levels.

Q. What is Staff's adjustment for tax?

A. Effective October 24, 2018, for Case No. GR-2018-0229, rates took effect for all Empire customers that reflect the federal Tax Cuts and Jobs Act of 2017 ("TCJA") (Public Law 115-97). For purposes of this case, Staff calculated the value of the rate credits over the 12 months of the test period based on the final normalized and annualized level of monthly usage. This adjustment only impacts the final class revenue and does not impact class usage.

Q. What are Staff's results for retail rate revenue?

A. Staff's ending normalized and annualized revenues for the non-transportation rate classes are shown in the table below.

Rate Class	Total MO Normalized Revenue
Residential Service	**$ 12,468,385**
Small Commercial Firm Service Small	$ 3,166,351
Small Commercial Firm Service Medium	$ 1,010,520
Small Commercial Firm Service Large	$ 223,610
Large Volume Firm & Interruptible Service	$ 283,782
Total Non-Residential Service	**$ 4,684,264**

Q. Does this conclude your direct testimony?

A. Yes it does.

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

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	)))	Case No. GR-2021-0320

AFFIDAVIT OF JOEL McNUTT

STATE OF MISSOURI)
) ss.
COUNTY OF COLE)

COMES NOW JOEL McNUTT and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing *Direct Testimony of Joel McNutt*; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

JOEL McNUTT

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 20th day of January 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

JOEL McNUTT CREDENTIALS

PRESENT POSITION

I am currently employed as an Economics Analyst in the Tariff/Rate Design Department within the Industry Analysis Division of the Missouri Public Service Commission. I was previously employed with the Missouri Public Service Commission as a Regulatory Economist in 2013 and 2014. I have currently been employed with the Missouri Public Service Commission since 2020.

EDUCATION

I received my Bachelor of Science in Economics from Central Missouri State University in Warrensburg, MO in May 2002. I completed my Master of Business Administration from William Woods University in Jefferson City, MO in December 2007.

EMPLOYMENT BACKGROUND

Prior to joining the Commission, I worked in the fields of Procurement and Economic Development for the Missouri Department of Transportation and the Missouri Department of Economic Development. In my previous 10 years of experience working for the State of Missouri, I have administered several State run programs such as the Missouri Enhanced Enterprise Zone Program and the Missouri Certified Sites Program. I also have private sector experience in the fields of healthcare, banking, and nuclear security as well as previous experience in higher education.

PREVIOUS CASE EXPERIENCE

GR-2014-0007 – Laclede Gas Company – Rate Design
GR-2014-0086 - Summit Natural Gas of Missouri – Class Cost of Service
GR-2021-0108 – Spire Missouri Inc - Weather Normalization
GR-2021-0241 – Ameren Missouri – Weather Normalization and Retail Revenue for Transportation Classes.
GR-2021-0320 – Empire Gas – Weather Normalization and Retail Revenue for Non-Transportation Classes.

STAFF RECOMMENDATIONS EXPERIENCE

GA-2020-0251 – Summit Gas – CCN
GA-2021-0010 – Spire Gas - CCN
GT-2021-0273 – Liberty Gas – WNAR
GT-2021-0063 – Liberty Gas – WNAR