Exhibit No.:
Issue(s): *Depreciation*
Witness: *David T. Buttig, PE*
Sponsoring Party: *MoPSC Staff*
Type of Exhibit: *Direct Testimony*
Case No.: *GR-2021-0320*
Date Testimony Prepared: *January 24, 2022*

MISSOURI PUBLIC SERVICE COMMISSION

INDUSTRY ANALYSIS DIVISION

ENGINEERING ANALYSIS DEPARTMENT

DIRECT TESTIMONY

OF

DAVID T. BUTTIG, P.E.

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

CASE NO. GR-2021-0320

Jefferson City, Missouri
January 2022

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DIRECT TESTIMONY

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DAVID T. BUTTIG, PE

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

CASE NO. GR-2021-0320

Q. Please state your name and business address.

A. My name is David T. Buttig, and my business address is 200 Madison Street, Jefferson City, Missouri, 65101.

Q. By whom are you employed?

A. I am a Professional Engineer employed by the Missouri Public Service Commission ("Commission') in the Engineering Analysis Department.

Q. Please describe your educational background and work experience.

A. I graduated from the Missouri University of Science & Technology in May of 2012 with a Bachelor of Science Degree in Environmental Engineering. Before coming to work at the Commission, I was employed by the Missouri Department of Natural Resources' Air Pollution Control Program as an Environmental Engineer I and was promoted to an Environmental Engineer II. I worked at the Air Pollution Control Program from February 2013 to July 2018. I began employment with the Commission in July 2018.

Q. Have you previously filed testimony before the Commission?

A. Yes. Please refer to Schedule DTB-d1, attached to this Direct Testimony for a list of cases I have filed testimony in with the Commission.

EXECUTIVE SUMMARY

Q. What is the purpose of your direct testimony?

A. The purpose of my direct testimony is to describe the process in which Staff conducted its review of the depreciation rates for The Empire District Gas Company ("Empire") and to recommend depreciation rates to be ordered by the Commission.

DEPRECIATION

Q. What is depreciation?

A. Depreciation as applied to depreciable plant is defined as "the loss in service value, not restored by current maintenance, incurred in connection with the consumption or prospective retirement of utility plant in the course of service from causes which are known to be in current operation and against which the utility is not protected by insurance. Among the causes to be given consideration are wear and tear, decay, action of the elements, inadequacy, obsolescence, changes in the art, changes in demand, and requirements of public authorities."[1]

Q. Are gas utilities required to submit depreciation studies?

A. Yes. According to 20 CSR 4240-40.090(1), "Each gas utility subject to the Commission's jurisdiction shall submit a depreciation study, database, and property unit catalog to the manager of the Commission's Engineering Analysis Unit and to the Office of the Public Counsel, as required by the terms of subsection (1)(B)."

Q. How often are these gas utilities required to submit their depreciation study, database, and property unit catalog?

A. A gas utility is required to submit its depreciation study, database, and property unit catalog no later than five years since the last time the Commission's Staff received the utility's depreciation study, database, and property unit catalog.

[1] 18 CFR Part 101 Uniform System of Accounts Prescribed for Public Utilities and Licensees Subject to Provision of the Federal Power Act Definition 12.

Q. Did Empire submit its depreciation study, database, and property unit catalog in accordance with 20 CSR 4240-40.090?

A. Yes. Empire submitted its depreciation study with the direct testimony of Dan T. Stathos as Schedule DS-1. The property unit catalog and database were submitted to Staff in this case through data requests.

Q. Did Staff perform its own depreciation study?

A. Yes. Staff reviewed the asset information submitted in this case and information submitted in previous Empire cases in order to calculate its own depreciation rates to be used by Empire. Those depreciation rates are included as Schedule DTB-d2.

Q. What data did Staff use to calculate the depreciation rates?

A. Staff received the actuarial data from Empire for the plant accounts. This data of the assets includes installation year, FERC account, type of transaction, transaction year, amount of transaction, and group codes. Staff then sorted this data by account and used a version of Gannett Fleming Depreciation Software to analyze the information to calculate the depreciation rate.

Q. By what method, procedure, and technique did Staff use to calculate the depreciation rates?

To calculate the depreciation rate, Staff used the straight-line method, broad group-averaging procedure, and whole life technique for all analyzed accounts. The straight-line method allocates expense evenly over the expected life of the assets. The broad-group averaging life procedure bases annual depreciation on the average service life of the account rather than the specific installation year. The whole life technique applies the

depreciation rate over the entire life of the assets and does not take into account the current level of depreciation reserve.

Q. What did Staff do to calculate the service life, net salvage rate, and depreciation rates for the accounts?

For each account, Staff estimated the average service life and net salvage rate. Average service life is the estimated useful life of the assets in the account and net salvage is the scrap value of the asset minus the cost of removal. To estimate the average service life for the accounts, Staff reviewed the historical plant, salvage, and cost of removal data provided by Empire. Staff then uses depreciation software to analyze the data and calculate the ratio of retirements to exposures by age, and solve for the percent surviving by age to develop a survivor curve for each account. To determine a survivor curve, the exposures at a given age are the dollars remaining from the various vintages that have survived to that age. The retirement ratio is the dollars retired during an age interval divided by the exposures at the beginning of that interval. The survivor ratio is then calculated by subtracting the retirement ratio from "1". Multiplying each successive survivor ratio by the percent surviving of the previous age will generate a survivor curve. For an account in which all plant is retired, the full survivor curve is available and average service life can be calculated. Accounts with plant remaining have a partial curve, which is known as a stub curve. This survivor curve or stub curve is then smoothed and fitted to an empirically developed statistical model known as an Iowa curve.[2] The average service life of an account's survivor curve is estimated as the area under the selected Iowa curve. Staff then utilizes engineering experience and the information provided in Empire's Direct

[2] The Iowa curves are widely accepted models of the life characteristics of utility property. The curves were developed at the Iowa Engineering Experiment Station at what is now known as Iowa State University. The Iowa curves were first published in 1935 and reconfirmed in 1980. The survivor curve is mathematically and visually matched with various Iowa curves to determine which has the most appropriate fit.

Testimony and data request responses to assign an appropriate average service life for each plant account.

Net salvage is the gross salvage of the assets minus the cost of its removal. Staff requested the salvage data for the assets from Empire. Empire provided Staff with the salvage data for the years 2013 through 2017. Staff combined this data with the salvage data from the previous rate case to find any trends in the net salvage rate.

Staff used the developed average service lives and net salvage rates of the accounts to calculate its proposed depreciation rates by the method, procedure, and technique previously discussed.

CONCLUSION

Q. What does Staff propose in this case for depreciation?

A. Staff proposes that the Commission order the depreciation rates included in Schedule DTB-d2 be used by Empire.

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 DAVID T. BUTTIG, PE

STATE OF MISSOURI	)	
	)	ss.
COUNTY OF COLE	)	

COMES NOW DAVID T. BUTTIG, PE and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing *Direct Testimony of David T. Buttig, PE*; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

DAVID T. BUTTIG, PE

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 19th 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

DAVID T. BUTTIG, PE

PRESENT POSITION:

I am a Professional Engineer in the Engineering Analysis Department, Industry Analysis Division, of the Missouri Public Service Commission.

EDUCATIONAL BACKGROUND AND WORK EXPERIENCE:

I received my Bachelor of Science Degree in Environmental Engineering from the Missouri University of Science & Technology in May of 2012. In February of 2013 I began employment with the Missouri Department of Natural Resources in the Air Pollution Control Program as an Environmental Engineer I. In February of 2014, I was promoted to an Environmental Engineer II within the Air Pollution Control Program. I began employment with the commission as an engineer in July of 2018. I am a licensed professional engineer in the State of Missouri.

SUMMARY OF CASE INVOLVEMENT:

Case Number	Utility	Type	Issue
EA-2019-0010	Empire District Electric Company	Staff Report	Certificate of Convenience and Necessity
GR-2019-0077	Ameren Missouri (Gas)	Staff Report Rebuttal Testimony	Depreciation
GE-2020-0009	Summit Natural Gas of Missouri	Memorandum	Waiver Request
WR-2020-0264	Raytown Water Company	Staff Memorandum	Depreciation
WA-2021-0116	Missouri American Water Company	Staff Memorandum	Depreciation
GR-2021-0108	Spire Missouri	Staff Report Rebuttal Testimony	Depreciation
EE-2021-0423	Evergy	Staff Memorandum	Waiver Request

Case Number	Utility	Type	Issue
ER-2019-0335	Ameren	Staff Report Surrebuttal Testimony	Depreciation
SA-2021-0074	Missouri American Water Company	Staff Recommendation	Depreciation
GR-2021-0241	Ameren	Staff Report Surrebuttal Testimony	Depreciation
WA-2021-0425/ SA-2021-0426	Confluence River	Staff Recommendation	Depreciation
WM-2021-0412/ SM-2021-0413	Confluence River	Staff Recommendation	Depreciation

THE EMPIRE DISTRICT GAS COMPANY
d/b/a Liberty (Empire)
SCHEDULE of DEPRECIATION RATES
(GAS)
GR-2021-0320

ACCOUNT NUMBER	ACCOUNT NAME	AVERAGE SERVICE LIFE	NET SALV. PCT.	DEPRECIATION RATE	AVERAGE AGE
	TRANSMISSION PLANT				
367	MAINS	70	0%	1.43%	31.2
369	MEASURING AND REGULATING STATIONS	55	0%	1.82%	22.5
	DISTRIBUTION PLANT				
375	STRUCTURES	50	0%	2.00%	19.8
376	MAINS	55	0%	1.82%	22.4
378	MEASURING AND REGULATING STATIONS	55	0%	1.82%	26.2
379	CITY GATE STATIONS	55	0%	1.82%	21.1
380	SERVICES	50	-1%	2.02%	22.2
381	METERS	30	0%	3.33%	10.7
383	REGULATORS	40	0%	2.50%	26.3
385	INDUSTRIAL MEASURING AND REGULATING EQUIPMENT	50	0%	2.00%	16.6
	GENERAL PLANT				
390	STRUCTURES AND IMPROVEMENTS	40	0%	2.50%	9.5
391.1	OFFICE FURNITURE AND EQUIPMENT	11	0%	9.09%	3.5
391.3	COMPUTER EQUIPMENT	7	0%	14.29%	10.9
392	TRANSPORTATION EQUIPMENT	14	1%	7.07%	6.7
393	STORES EQUIPMENT	30	0%	3.33%	14.8
394	TOOLS, SHOP AND GARAGE EQUIPMENT	40	0%	2.50%	18.5
395	LABORATORY EQUIPMENT	35	0%	2.86%	31.5
396	POWER OPERATED EQUIPMENT	18	1%	5.50%	7.4
397	COMMUNICATION EQUIPMENT	25	0%	4.00%	8.5
398	MISCELLANEOUS EQUIPMENT	26	0%	3.85%	17.2