Exhibit No.:
Issue(s): *Depreciation*
Witness: *Malachi Bowman*
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

ENGINEERING DEPARTMENT

DIRECT TESTIMONY

OF

MALACHI BOWMAN

SPIRE MISSOURI INC.,
d/b/a Spire

CASE NO. GR-2025-0107

Jefferson City, Missouri
April 2025

TABLE OF CONTENTS OF

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MALACHI BOWMAN

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d/b/a Spire

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DIRECT TESTIMONY

OF

MALACHI BOWMAN

SPIRE MISSOURI INC.,
d/b/a Spire

CASE NO. GR-2025-0107

Q. Please state your name and business address.

A. My name is Malachi Bowman. My business address is 200 Madison Street, Jefferson City, Missouri 65101

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

A. I am employed by the Missouri Public Service Commission ("Commission") as an Associate Engineer in the Engineering Analysis Department, Industry Analysis Division.

Q. Please describe your educational background and work experience.

A. Please refer to Schedule MB-d1 attached to this Direct testimony for my credentials and list of cases in which I have filed testimony or recommendations.

EXECUTIVE SUMMARY

Q. What is the purpose of your direct testimony?

A. I am providing Staff's recommendations regarding depreciation rates for Spire Missouri Inc., d/b/a Spire's ("Spire Missouri") plant in service.

Q. Do you provide input or work product to another Staff witness for development of an issue?

A. Yes. I provided my recommended depreciation rates to Staff witness Lindsey Smith to use in the development of Staff's Accounting Schedules.

Q. Through this testimony, do you provide any recommendations that should specifically be reflected in the Commission's Report and Order in this case?

A. Yes. In this testimony I recommend that the Commission order the depreciation rates included as Schedule MB-d2.

DEPRECIATION

Q. What is depreciation?

A. According to the Code of Federal Regulations, 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 electric 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]

In simple terms, depreciation is the loss of value associated with an asset due to factors which cannot be alleviated through normal maintenance. These factors, such as "wear and tear, decay, action of the elements, inadequacy, obsolescence, changes in the art, changes in demand and requirements of public authorities", vary in severity based on the type of asset, the manufacturer, where the asset is located, and many other variables.

For example, when one goes to sell a car they bought several years before, they will most likely notice the decrease in their vehicle's value regardless of how the car has been kept with annual maintenance, car washes, etc. This decrease in value is depreciation. In addition to this, the value can also vary based on what climate the car has been in the

[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.

last few years. If it was located in a coastal area, there may be certain environmental effects that additionally reduce the vehicle's value. If the car only has a cassette tape player and no other ability to play music, that could also factor into the reduction of the car's value due to obsolescence.

Q. How does depreciation apply to a regulated utility?

A. For consumer goods, such as the car example, the buyer may not have bought the car in expectation of receiving a return on investment. But for a regulated, investor-owned utility, assets are purchased in expectation that there will be a return on investment through the service provided to consumers. So, while the car depreciated in value and the seller had to deal with the disappointment of selling their depreciated vehicle at a lower price than they bought it for, the utility regulator seeks to keep the utility from experiencing the same disappointment so that the utility can make a reasonable return on their investment while also maintaining reasonable rates for the consumer.

This is where depreciation expense is used, which is the return of investment to investors spread over the timespan of the asset's useful life to ensure that the loss in value, due to depreciation, will be eventually recovered through the consumer rates.

Q. How is depreciation calculated?

A. There are several methods that can be used to calculate depreciation but, in this case, Staff and Spire witness Spanos used the 'Straight Line' method which "allocates the depreciable cost of an asset evenly throughout its service life"[2]. Additionally, there are two techniques that can be used within the 'Straight Line' method to calculate depreciation; the 'Remaining Life' technique and the 'Whole Life' technique. In this case, both Staff and

[2] USAID, Depreciation Expense: *A Primer for Utility Regulators*, 2021, p. 25.

Spire witness Spanos elected to use the 'Whole Life' technique which calculates depreciation based on the entire or "whole" service life of the account.

To calculate annual depreciation for a group of assets using the whole life technique, the following formula is used:

(1) $$Annual\ Depreciation = \frac{Total\ Initial\ Asset\ Value - Total\ Net\ Salvage}{Average\ Service\ Life}$$

And the depreciation rate is:

(2) $$Depreciation\ rate\ (\%) = \frac{100\% - Net\ Salvage\%}{Average\ Service\ Life}$$

Q. How is Average Service Life determined?

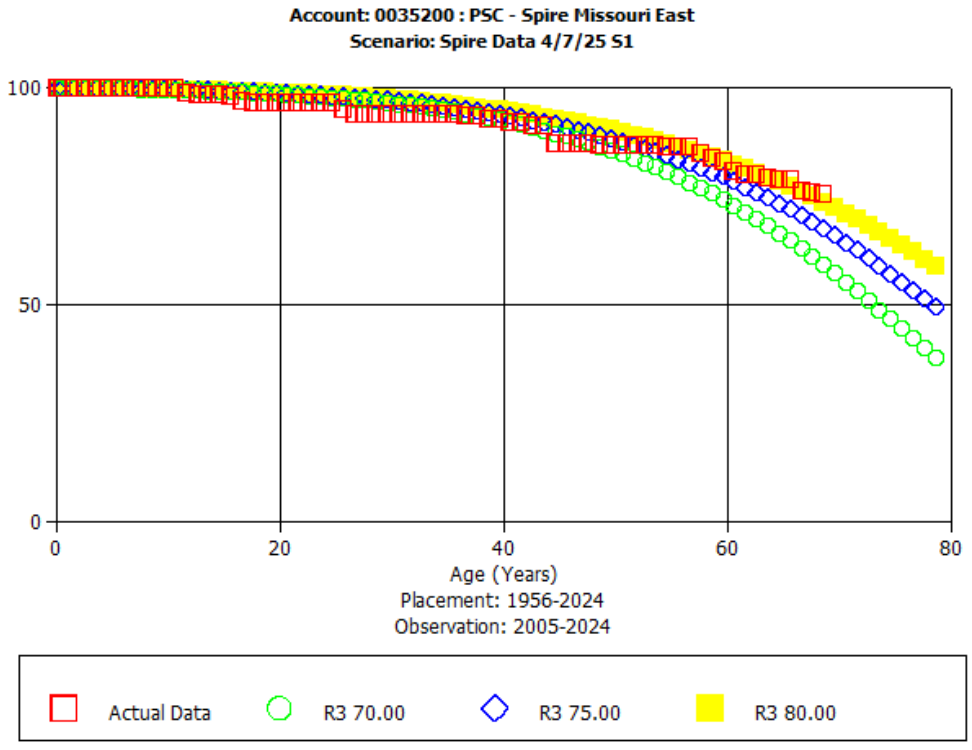
A. Since there are many factors that attribute to how a particular account will depreciate, it is necessary to track the additions and retirements by vintage year and year retired over time to establish an understanding on how certain accounts depreciate. This data, along with other factors that could influence the future life of the property, and expert judgement is used to determine the average service life of the account.

When a complete set of data is available, it can be used, through actuarial methods, to produce a 'survivor curve' of a given account which is used to estimate the accounts' average service life. A technique called 'Smoothing' is then used to eliminate irregularities in the original survivor curve by using established 'type curves' to 'fit' the data. The most widely used standard set of 'type curves' are the Iowa Curves. The selection of these smoothing curves determines what the Average Service Life will be for a given account.

It is also necessary in the selection of these smoothing curves to consider any other known factors for the account that may influence the service life such as changes in technology, services provided, or capital budgets. If there are no other known factors that could influence

the life of the account, NARUC states, "Trends in life or retirement dispersion can often be expected to continue. Likewise, unless there is some reason to expect otherwise, stability in life or retirement dispersion can be expected to continue, at least in the near term"[3] meaning that the actuarial analysis of the survivor curves for determining service lives of accounts can be reasonably relied upon unless there is some reason to expect otherwise.

For example, consider account 352, where the original survivor curve is in red and three Iowa Curves with varying service lives are being used as comparison to the data to find the best fit. For this account, Staff is unaware of any other factors that could influence the future life of the property, so the historical analysis can be reasonably relied upon. The R3-75 was seen as a reasonable selection making the Average Service Life of this account 75 years.



[3] National Association of Regulatory Utility Commissioners, *Public Utility Depreciation Practices*, 1996, p. 126.

Q. How is Net Salvage determined?

A. At the end of an asset's useful life when the asset is retired, there is either a value or cost associated with the asset which is called the 'Net Salvage' value. Net Salvage is the amount of money recovered from selling the asset minus any losses from the removal of the asset. Net Salvage is considered in the depreciation rate calculation, as shown in formula (2), by determining a Net Salvage percentage for the account.

This Net Salvage percentage is based primarily upon judgement considering the analysis of historical data including retirements, cost of removal, and gross salvage, and any other known factors such as knowledge of company management plans and/or operating policies.

Q. Did Spire Missouri provide a depreciation study?

A. Yes. Spire Missouri provided a depreciation study through September 30, 2024.

Q. Did Staff review Spire Missouri's depreciation and perform its own depreciation study?

A. Yes. Staff reviewed the depreciation study performed by Spire Missouri witness John Spanos and performed a depreciation study using the data provided by Spire Missouri.[4]

Q. What are the differences between the results of the depreciation study performed by Spire Missouri witness John Spanos and Staff's?

A. Staff calculated different depreciation rates than Spire Missouri witness John Spanos for several accounts. Below are the accounts which Staff determined different values for:

[4] Spire Missouri Response to Staff Data Request No. 0238, Response Date 3/12/2025.

Account	Account Description	Spanos Depreciation Rates	Staff Depreciation Rates
305	Structures and Improvements	1.91%	1.77%
351.2	Compressor Station Structure	2.20%	2.00%
351.4	Other Structures	2.20%	2.00%
353	Lines	1.79%	1.56%
371.7	Other Equipment	2.63%	2.10%
374.2	Land Rights	1.25%	1.33%
375	Structures and Improvements	2.20%	2.40%
376.1	Steel Mains	2.43%	2.00%
376.3	Plastic Mains	2.51%	2.33%
380.1	Steel Services	5.28%	5.38%
381	Meters	3.80%	3.03%
385	Comm & Ind Meas & Reg Eqpt	3.10%	3.11%
390.2	Structures and Improvements	2.38%	2.86%
391	Office Furniture & Equipment	4.81%	5.00%
391.1	Data Processing Systems	11.37%	6.67%
391.2	Mechanical Office Equipment	6.67%	12.00%
391.3	Data Processing Software	9.87%	10.00%
391.95	Enterprise Software	5.71%	10.00%
392.2	Transportation Eqpt-Trucks	7.27%	7.73%
393	Stores Equipment	2.25%	3.33%
394	Tools, Shop & Garage Equipment	3.63%	4.00%
395	Laboratory Equipment	3.47%	5.00%
397.1	Communication Equipment	5.02%	6.67%
398	Miscellaneous Equipment	4.65%	5.00%

Additionally, there are accounts which Spire Missouri did not include in its deprecation study so Staff is recommending currently ordered rates. These accounts are listed below along with their associated rates:

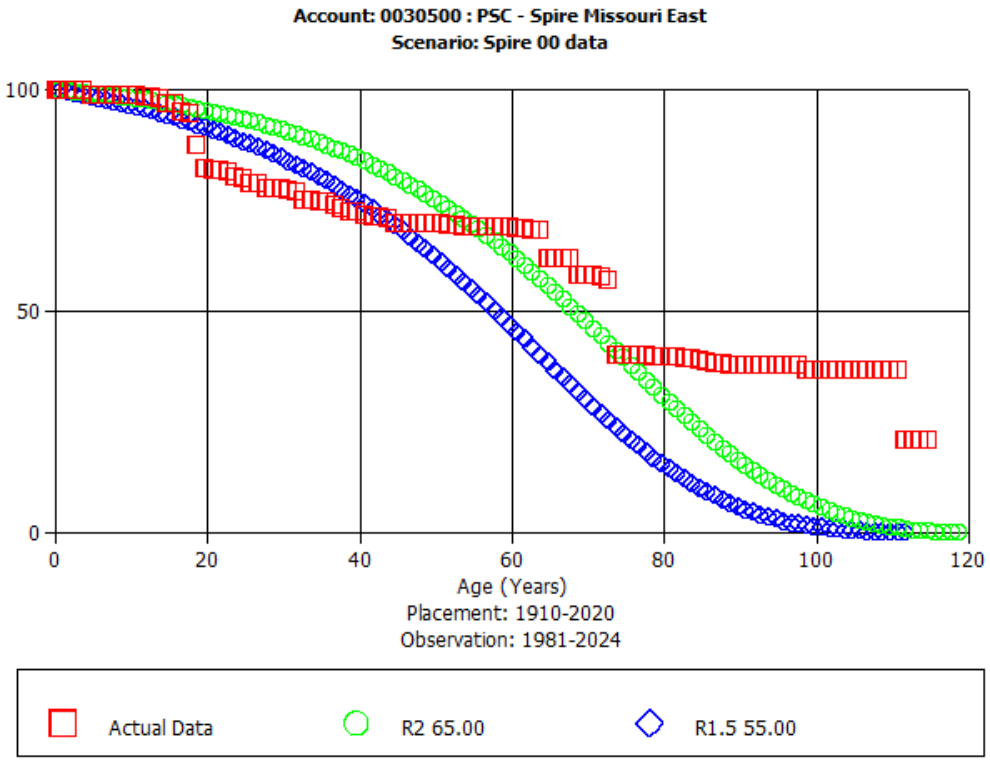
Account	Account Description	Rate
301	Organization	0.00%
302	Franchises & Consents	0.00%
304	Land and Land Rights - Mfg Gas	0.00%
350.1	Land - UG Storage	0.00%
360	Land and Land Rights	0.00%
361	Structures & Improvements	0.00%
365.2	Rights of Way - Transmission	0.00%
367	Mains - Transmission	2.00%
374	Land - Dist Plant	0.00%
390.7	Structures - Gen Plant - Monat	2.73%
391.31	Software-Oct 2012 Forward	9.89%
391.4	Data processing systems	9.89%
391.5	Enterprise Software - EIMS	0.00%
394.5	Equipment-CNG Fuel Stations	3.62%
396.1	Power Operated Equipment - Trucks	6.07%
397	Communication Equipment	5.81%

Spire submitted updated data with its supplemental direct testimony which Staff is still reviewing. Staff may have modifications to its recommended rates in rebuttal.

Q. Why are Staff's rates different?

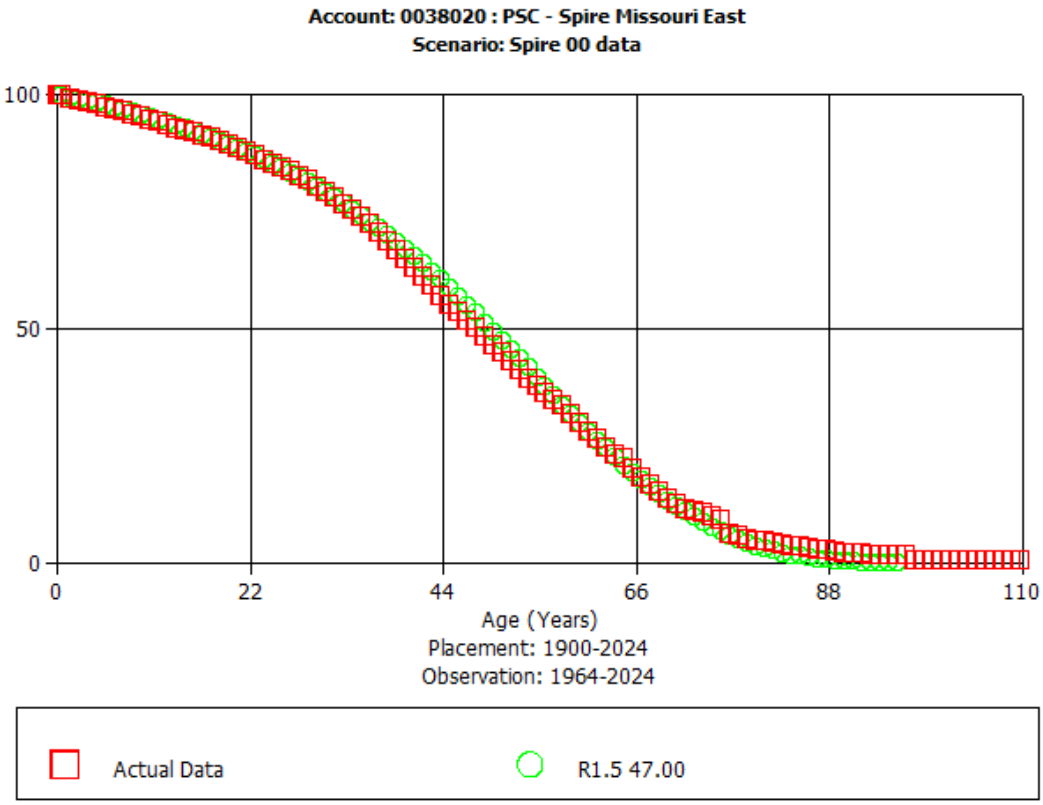
A. For many of the accounts, Staff did not find reasonable justification to change the service lives of the accounts from what is currently ordered based upon the original survivor curves which Staff generated using data provided by Spire Missouri. Staff did not find justification in Spire Witness Spanos' testimony for many of these changes.

For example, consider the survivor curve for account 305 graphed below. The original curve is in red, while the currently ordered survivor curve is in green and Witness Spanos' selection in blue:



Staff did not find reasonable justification to change the service life of this account from 65 years to 55 years since no other reasons for changing the service life of this account were listed in Witness Spanos' testimony.

Where reasonable justification was given, Staff used Spire Missouri's selected service lives. An example is account 380.2 where Staff found that the R1.5-47 curve was the best fit for the data as shown below:



Witness Spanos states:

> The primary causes of retirements for plastic and copper services are breaks and main replacement. Management has established replacement of the majority of copper services with plastic services and increased its capital budget for installing new plastic services when the associated main is replaced, particularly the replacement of cast iron main. The historical indication of life characteristics is quite supportive of the 40-R1 through age 80. Due to the significant installations of plastic services and removal of copper services, the retirement ratios increase from age 40 through age 55, which substantiates the good fit of the 40-R1.[5]

Staff regarded this as reasonable justification and therefore agreed that a 40-year service life is reasonable for use in calculating depreciation rates.

[5] Witness Spanos Direct Testimony, Schedule JJS-2, p. III-4.

Q. Did Staff perform a net salvage analysis?

A. Yes, Staff performed a net salvage analysis using net salvage data provided by Spire[6] and Staff reviewed Witness Spanos' net salvage analysis.

Q. Is Spire Missouri's supplied data consistent with the analysis performed by Mr. Spanos?

A. No. Spire Missouri submitted updated data with Mr. Spanos' supplemental direct testimony filed on March 7, 2025 which Staff is still reviewing. For many accounts, the data provided to Staff did not match the data included in Witness Spanos' testimony so Staff has asked a Data Request to clarify what modifications were made to the data provided to see if there is data which was excluded in Witness Spanos' depreciation study or if the data provided to Staff is inaccurate. For most accounts, Staff used the currently ordered Net Salvage values to calculate depreciation rates. Staff may have modifications to its recommended rates in rebuttal.

RECOMMENDATIONS

Q. What are Staff's recommendations for the Commission?

A. Staff recommends the Commission order Spire Missouri to use the depreciation rates attached to this testimony in Schedule MB-d2.

Q. Does this conclude your direct testimony?

A. Yes, it does.

[6] Data Request No. 0238, Response on 3/12/25.

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 Rate Increase for Natural Gas Service Provided in the Company's Missouri Service Areas	))))	Case No. GR-2025-0107

AFFIDAVIT OF MALACHI BOWMAN

STATE OF MISSOURI)
) ss.
COUNTY OF COLE)

COMES NOW MALACHI BOWMAN and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing *Direct Testimony of Malachi Bowman*; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

MALACHI BOWMAN

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 21st day of April 2025.

D. SUZIE MANKIN
Notary Public - Notary Seal
State of Missouri
Commissioned for Cole County
My Commission Expires: April 04, 2029
Commission Number: 12412070

Notary Public

CREDENTIALS AND CASE PARTICIPATION OF MALACHI BOWMAN

PRESENT POSITION:

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

EDUCATIONAL BACKGROUND AND WORK EXPERIENCE:

I received my Bachelors of Science degree in Mechanical Engineering from the University of Kansas in 2020. I was employed as a Sales Engineer in the commercial heating, ventilation, & air conditioning (HVAC) industry from 2022-2024. I have been employed by the Commission since May of 2024 as an Associate Engineer.

TESTIMONY FILED:

Case Number	Utility	Testimony	Issue
ER-2021-0312	Empire District Electric Company	Staff Report	Renewable Energy Purchase Plan
EO-2024-0300	Evergy Missouri West	Staff Report	Renewable Energy Standard Compliance Report
EO-2024-0231	Union Electric Company	Staff Report	Renewable Energy Standard Compliance Plan
WR-2024-0343	Holtgrewe Farms Water Company	Staff Report	Rate Case
EA-2024-0237	Ameren Missouri	Staff Report	Application for Certificate
EO-2025-0019	Ameren Missouri and Co-Mo Electric Cooperative	Staff Report	Change of Supplier
WR-2024-0320	Missouri American Water	Direct, Rebuttal Testimony	Depreciation
GR-2024-0369	Ameren Missouri	Direct, Rebuttal Testimony	Depreciation

Spire Missouri (Gas)				
Schedule of Depreciation Rates				
GR-2025-0107				
	Depreciable Plant	**Average Service Life**	**Net Salvage**	**Depreciation Rate**
	Production Plant			
*304	Land and Land Rights - Mfg Gas	0.00	0.00%	0.00%
305	Structures and Improvements	65.00	-15.00%	1.77%
307	Other Power Equipment	50.00	-5.00%	2.10%
**311	Propane Equipment	30.00	-5.00%	2.62%
**311.1	Propane Stg Cavern	75.00	-5.00%	1.40%
	Underground Gas Storage			
*350.1	Land - UG Storage	0.00	0.00%	0.00%
350.2	Rights of Way	80.00	0.00%	1.25%
351.2	Compressor Station Structure	55.00	-10.00%	2.00%
351.4	Other Structures	55.00	-10.00%	2.00%
352	Wells	75.00	-20.00%	1.60%
352.1	Storage Leaseholds	90.00	0.00%	1.11%
352.2	Reservoirs	90.00	0.00%	1.11%
352.3	Non-Recoverable Gas	90.00	0.00%	1.11%
352.4	Wells - Oil & Vent Gas	55.00	-20.00%	2.18%
353	Lines	80.00	-25.00%	1.56%
354	Compressor Station Equipment	55.00	-10.00%	2.00%
355	Meas. & Reg. Equipment	55.00	-10.00%	2.00%
356	Purification Equipment	50.00	-15.00%	2.30%
357	Other Equipment	30.00	-5.00%	3.50%

Spire Missouri (Gas)				
Schedule of Depreciation Rates				
GR-2025-0107				
	Depreciable Plant	**Average Service Life**	**Net Salvage**	**Depreciation Rate**
	Other Storage			
*360	Land and Land Rights	0.00	0.00%	0.00%
*361	Stuctures & Improvements	0.00	0.00%	0.00%
	Transmission Plant			
*365.2	Rights of Way - Transmission	0.00	0.00%	0.00%
*367	Mains - Transmission	80.00	15.00%	2.00%
371.7	Other Equipment	50.00	-5.00%	2.10%
	Distribution Plant			
*374	Land - Dist Plant	0.00	0.00%	0.00%
374.2	Land Rights	75.00	0.00%	1.33%
375.1	Structures and Improvements - Meas & Reg	50.00	-20.00%	2.40%
375.2	Structures and Improvements - Svc Centers	50.00	-20.00%	2.40%
375.21	Structures and Improvements - Leased Property	50.00	0.00%	0.00%
375.3	Structures and Improvements - Garages	50.00	-20.00%	2.40%
375.41	Structures and Improvements - Leased Property	50.00	-20.00%	2.40%
375.7	Structures and Improvements -MN	50.00	-20.00%	2.40%
375	Structures and Improvements	50.00	-20.00%	2.40%
376.1	Steel Mains	80.00	-60.00%	2.00%
376.21	Cast Iron Mains - East	65.00	-150.00%	19.07%
376.22	Cast Iron Mains - West	65.00	-150.00%	11.28%

Spire Missouri (Gas)				
Schedule of Depreciation Rates				
GR-2025-0107				
	Depreciable Plant	**Average Service Life**	**Net Salvage**	**Depreciation Rate**
376.3	Plastic Mains	60.00	-40.00%	2.33%
378	Meas & Reg Station Equipment	35.00	-40.00%	4.00%
379	City Meas & Reg Station Equipment	40.00	-20.00%	3.00%
380.1	Steel Services	39.00	-110.00%	5.38%
380.2	Plastic & Copper Services	40.00	-80.00%	4.50%
381	Meters	32.00	3.00%	3.03%
381.1	Ultrasonic Meters	20.00	0.00%	5.00%
382	Meter Installations - West	60.00	-2.00%	1.70%
382.1	Ultrasonic Meter Installation	20.00	0.00%	5.00%
383	House Regulators	50.00	0.00%	2.00%
385	Comm & Ind Meas & Reg Eqpt	37.00	-15.00%	3.11%
386	Other Prop-Cust Premises	15.00	0.00%	0.00%
387	Other Equipment	50.00	-10.00%	2.20%
	General Plant			
389	Land	0.00	0.00%	0.00%
390.1	Structures - Leased	0.00	0.00%	0.00%
390.2	Structures and Improvements	35.00	0.00%	2.86%
390.3	Structures - Leased - St Charles	0.00	0.00%	0.00%
*390.7	Structures - Gen Plant - Monat	40.00	0.00%	2.73%
390.71	Structures - Leased - Monat	0.00	0.00%	0.00%
390.81	Structures - Leased - Franklin County	0.00	0.00%	0.00%
391	Office Furniture & Equipment	20.00	0.00%	5.00%
391.1	Data Processing Systems	15.00	0.00%	6.67%

Spire Missouri (Gas)				
Schedule of Depreciation Rates				
GR-2025-0107				
	Depreciable Plant	**Average Service Life**	**Net Salvage**	**Depreciation Rate**
391.2	Mechanical Office Equipment	5.00	0.00%	12.00%
391.3	Data Processing Software	10.00	0.00%	10.00%
*391.31	Software-Oct 2012 Forward	5.00	0.00%	9.89%
*391.4	Data processing systems	5.00	0.00%	9.89%
*391.5	Enterprise Software - EIMS	0.00	0.00%	0.00%
391.95	Enterprise Software	10.00	0.00%	10.00%
391.96	Enterprise Hardware	10.00	0.00%	10.00%
392.1	Transportation Eqpt - Cars	7.00	20.00%	11.43%
392.2	Transportation Eqpt-Trucks	11.00	15.00%	7.73%
393	Stores Equipment	30.00	0.00%	3.33%
394	Tools, Shop & Garage Equipment	25.00	0.00%	4.00%
*394.5	Equipment-CNG Fuel Stations	0.00	0.00%	3.62%
395	Laboratory Equipment	20.00	0.00%	5.00%
396	Power Operated Equipment	13.00	20.00%	6.15%
*396.1	Power Operated Equipment - Trucks	14.00	15.00%	6.07%
*397	Communication Equipment	5.00	0.00%	5.81%
397.1	Communication Equipment	15.00	0.00%	6.67%
397.2	Communication Equipment	7.50	0.00%	0.00%
398	Miscellaneous Equipment	20.00	0.00%	5.00%

(*) Denotes an account which was not studied by Ameren Missouri so Staff is recommending currently ordered rates

(**) Currently ordered rates were recommended but Spire indicates that retirement will occur by May 31, 2025. If so, Staff will update its recommended depreciation rates to 0%.