

Exhibit No. 503

Exhibit No.:
Issues: Depreciation
Witness: Brian C. Andrews
Type of Exhibit: Direct Testimony
Sponsoring Party: Missouri Industrial Energy Consumers
Case No.: ER-2021-0240
Date Testimony Prepared: September 3, 2021

**BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI**

_____)
In the Matter of Union Electric Company)
d/b/a Ameren Missouri's Tariffs to Adjust) **Case No. ER-2021-0240**
Its Revenues for Electric Service.)
_____)

Direct Testimony and Schedules of

Brian C. Andrews

On behalf of

Missouri Industrial Energy Consumers

September 3, 2021



**BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI**

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


Case No. ER-2021-0240

STATE OF MISSOURI)
)
COUNTY OF ST. LOUIS) SS

Affidavit of Brian C. Andrews

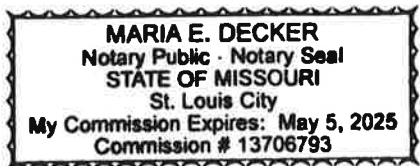
Brian C. Andrews, being first duly sworn, on his oath states:

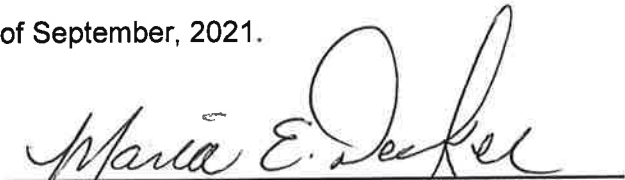
1. My name is Brian C. Andrews. I am a consultant with Brubaker & Associates, Inc., having its principal place of business at 16690 Swingley Ridge Road, Suite 140, Chesterfield, Missouri 63017. We have been retained by the Missouri Industrial Energy Consumers in this proceeding on their behalf.
2. Attached hereto and made a part hereof for all purposes are my direct testimony and schedules which were prepared in written form for introduction into evidence in Missouri Public Service Commission Case No. ER-2021-0240.
3. I hereby swear and affirm that the testimony and schedules are true and correct and that they show the matters and things that they purport to show.



Brian C. Andrews

Subscribed and sworn to before me this 3rd day of September, 2021.





Notary Public

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

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Direct Testimony of Brian C. Andrews

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**BEFORE THE PUBLIC SERVICE COMMISSION
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d/b/a Ameren Missouri's Tariffs to Adjust)	
Its Revenues for Electric Service.)	Case No. ER-2021-0240
)	

Direct Testimony of Brian C. Andrews

1 **Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

2 A Brian C. Andrews. My business address is 16690 Swingley Ridge Road, Suite 140,
3 Chesterfield, MO 63017.

4 **Q WHAT IS YOUR OCCUPATION?**

5 A I am a consultant in the field of public utility regulation and an Associate of Brubaker &
6 Associates, Inc. ("BAI"), energy, economic and regulatory consultants.

7

8 **Q PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.**

9 A This information is included in Appendix A to this testimony.

10 **Q DO YOU BELONG TO ANY PROFESSIONAL SOCIETIES?**

11 A Yes. I am a member and a past President of the Society of Depreciation Professionals
12 ("SDP").

13 **Q PLEASE DESCRIBE THE SOCIETY OF DEPRECIATION PROFESSIONALS.**

14 A SDP is a national society that was organized to recognize the professional field of
15 depreciation analysis and individuals contributing to this field; to promote the
16 professional development and professional ethics of those practitioners in the field of

1 depreciation; to collect and exchange information about depreciation and analysis; and
2 to promote a national forum of programs and publications concerning depreciation.
3 More information on SDP can be found on its website, www.depr.org.

4 **Q DO YOU HOLD ANY CERTIFICATIONS AS A DEPRECIATION EXPERT?**

5 A Yes. I have been awarded the designation of Certified Depreciation Professional
6 (“CDP”) by the SDP. This certification is based upon my education, experience, and
7 successful completion of the CDP Exam.

8 **Q ON WHOSE BEHALF ARE YOU APPEARING IN THIS PROCEEDING?**

9 A This testimony is presented on behalf of the Missouri Industrial Energy Consumers
10 (“MIEC”), a non-profit corporation that represents the interest of large customers in
11 Missouri utility matters. These companies purchase substantial quantities of electricity
12 from Ameren Missouri, and the outcome of this proceeding will have an impact on their
13 cost of electricity.

14 **Q HAVE YOU TESTIFIED BEFORE THE MISSOURI PUBLIC SERVICE COMMISSION
15 IN PRIOR PROCEEDINGS?**

16 A Yes. I have previously testified before the Missouri Public Service Commission
17 (“Commission” or “MPSC”) regarding Ameren Missouri’s net base fuel costs in Case
18 No. ER-2014-0258 and regarding Ameren Missouri’s depreciation rates in Case
19 No. ER-2019-0335. Also, I have provided expert witness testimony in 46 regulatory
20 proceedings in 16 states. I have provided a list of these other proceedings in
21 Schedule BCA-1.

1 **INTRODUCTION AND SUMMARY**

2 **Q WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

3 A My direct testimony will provide MIEC's proposed depreciation rates for Ameren
4 Missouri's nuclear production plant accounts. I will demonstrate that Ameren Missouri
5 intends to operate the Callaway Nuclear Power Plant ("Callaway") through 2050, and
6 recommend not increasing the depreciation rates above those currently approved for
7 Callaway. My silence with respect to other aspects of Ameren's depreciation study
8 should not be construed as an endorsement.

9 **Q HOW IS YOUR DIRECT TESTIMONY STRUCTURED?**

10 A First, I will present an overview of book depreciation concepts. This includes a
11 description of the purpose of book depreciation as well as a brief overview of how
12 depreciation rates are determined in a depreciation study.

13 Next, I discuss my recommendations with respect to Callaway. Specifically, I
14 will recommend no change to the currently approved depreciation rates for Callaway.

15 Last, I present proposed depreciation rates that I recommend the Commission
16 approve in this proceeding.

17 **Q PLEASE SUMMARIZE YOUR CONCLUSIONS AND RECOMMENDATIONS.**

18 A The depreciation rates proposed by Ameren Missouri result in excessive depreciation
19 expense to be paid by Ameren Missouri's customers. I recommend that the currently
20 approved depreciation rates for Callaway remain in effect, as Ameren Missouri has
21 stated it intends to operate this plant past 2050. The nuclear production plant
22 depreciation rates that will accomplish this result are shown in Schedule BCA-2. These

1 nuclear production plant depreciation rates will reduce Ameren Missouri's proposed
2 2020 depreciation expense by \$8.3 million.

3 **BOOK DEPRECIATION CONCEPTS**

4 **Q PLEASE EXPLAIN THE PURPOSE OF BOOK DEPRECIATION ACCOUNTING.**

5 A Book depreciation is the recognition in a utility's income statement of the consumption
6 or use of assets to provide utility service. Book depreciation is recorded as an expense
7 and is included in the ratemaking formula to calculate the utility's overall revenue
8 requirement.

9 The basic underlying principle of utility depreciation accounting is
10 intergenerational equity, where the customers/ratepayers who benefit from the
11 service of assets pay all the costs for those assets during the benefit period, which
12 is over the life of those assets.¹ This concept of intergenerational equity can be
13 achieved through depreciation by allocating costs to customers in a systematic and
14 rational manner that is consistent with the period of time in which customers receive
15 the service value.²

16 Book depreciation provides for the recovery of the original cost of the utility's
17 assets that are currently providing service. Book depreciation expense is not intended
18 to provide for replacement of the existing assets, but provides for capital recovery or
19 return of existing investment. Generally, this capital recovery occurs over the average
20 service life of the investment or assets. As a result, it is critical that appropriate average
21 service lives be used to develop the depreciation rates so no generation of ratepayers
22 is disadvantaged.

¹Edison Electric Institute, Introduction to Depreciation for Public Utilities and Other Industries, April 2013, page viii.

²*Id.* at 22.

1 In addition to capital recovery, depreciation rates also reflect recovery of net
2 salvage. Net salvage is simply the scrap or reuse value less the removal cost of the
3 asset being depreciated. Accordingly, a utility will also recover the net salvage costs
4 over the useful life of the asset.

5 **Q ARE THERE ANY DEFINITIONS OF DEPRECIATION ACCOUNTING THAT ARE**
6 **UTILIZED FOR RATEMAKING PURPOSES?**

7 A Yes. One of the most quoted definitions of depreciation accounting is the one
8 contained in the Code of Federal Regulations (Uniform System of Accounts):

9 “Depreciation, as applied to depreciable electric plant, means the loss
10 in service value not restored by current maintenance, incurred in
11 connection with the consumption or prospective retirement of electric
12 plant in the course of service from causes which are known to be in
13 current operation and against which the utility is not protected by
14 insurance. Among the causes to be given consideration are wear and
15 tear, decay, action of the elements, inadequacy, obsolescence, changes
16 in the art, changes in demand and requirements of public authorities.”³

17 Effectively, depreciation accounting provides for the recovery of the original cost of an
18 asset, adjusted for net salvage, over its useful life.

19 **Q HOW DO DEPRECIATION RATES AFFECT A UTILITY’S REVENUE**
20 **REQUIREMENT?**

21 A Depreciation expense is typically one of the largest single line items in a utility’s overall
22 revenue requirement. When a utility updates its depreciation rates, it is effectively
23 updating the amount of capital that is returned to it each year for investments that have
24 been made to provide utility service. The depreciation rates are calculated in a
25 depreciation study. The resulting depreciation rates are then applied to test year plant

³Code of Federal Regulations, Title 18, Chapter 1, Subchapter C, Part 101.

1 balances to determine the depreciation expense component of the utility revenue
2 requirement.

3 **Q HOW ARE DEPRECIATION RATES DETERMINED?**

4 A Depreciation rates are determined in a depreciation study using a depreciation system.
5 There are three components, each with a number of variations, used to determine a
6 depreciation system, which is then used to estimate depreciation rates. The three basic
7 components of a depreciation system are: (1) methods, (2) grouping procedures, and
8 (3) techniques. The choice of a depreciation system can significantly affect the
9 resulting depreciation rates, thus the revenue requirement.

10 The depreciation study results in depreciation rates that should recover all
11 unrecovered plant investment and net salvage costs over the remaining lives of the
12 accounts studied.

13 **Q IN YOUR EXPERIENCE, WHAT DEPRECIATION SYSTEM IS MOST COMMONLY**
14 **UTILIZED TO DETERMINE UTILITY DEPRECIATION RATES FOR RATEMAKING**
15 **PURPOSES?**

16 A The most common depreciation system is one that consists of the straight line method,
17 the average life group procedure, and the remaining life technique. This is the same
18 depreciation system used by Mr. Spanos to calculate Ameren Missouri's depreciation
19 rates.⁴

⁴Spanos Direct Testimony at page 6, lines 5-9.

1 Q HOW DO AMEREN MISSOURI'S PROPOSED DEPRECIATION RATES IMPACT ITS
2 ANNUAL DEPRECIATION EXPENSE?

3 A Ameren Missouri's proposed depreciation rates would result in an annual increase to
4 its depreciation expense of approximately \$97.9 million. I provide the summary of this
5 increase by functional group in Table 1.

TABLE 1

Comparison of Ameren Missouri's Current and Proposed Depreciation Rates and Accruals
Plant Balances as of 12/31/2020

<u>Function</u>	<u>Current</u>		<u>Proposed</u>		<u>Difference</u>	
	<u>Rates</u>	<u>Proforma Expense</u>	<u>Rates</u>	<u>Expense</u>	<u>Rates</u>	<u>Expense</u>
Steam	3.67	\$176,394,927	5.63	\$270,522,338	1.96	\$ 94,127,411
Nuclear	2.34	79,682,689	2.58	87,947,221	0.24	8,264,532
Hydraulic	2.23	12,462,721	2.57	14,336,995	0.34	1,874,274
Other	2.71	51,354,855	2.41	45,665,005	-0.30	(5,689,850)
Transmission	2.73	38,866,458	2.54	36,179,795	-0.19	(2,686,663)
Distribution	2.99	201,838,382	3.07	206,932,909	0.08	5,094,527
General	6.13	50,888,653	5.76	47,772,933	-0.37	(3,115,720)
Total	3.11	\$611,488,685		\$709,357,196		\$ 97,868,511

Source: Spanos Direct Testimony, pg. 2

6 **MIEC'S PROPOSED DEPRECIATION ADJUSTMENTS**

7 Q WHAT ARE MIEC'S PROPOSED ADJUSTMENTS TO AMEREN MISSOURI'S
8 DEPRECIATION RATES?

9 A I propose is to make no change to the currently approved depreciation rates for
10 Callaway. The rates I propose for MPSC approval are presented in Schedule BCA-2.

1 **Q WHAT DOES AMEREN MISSOURI PROPOSE FOR CALLAWAY'S DEPRECIATION**
2 **RATES?**

3 A Ameren Missouri proposes to increase the depreciation expense for Callaway by
4 approximately \$8.3 million annually. Mr. Spanos states that the cause of this increase
5 is due to the utilization of shorter interim survivor curves and additional capital
6 investment with a shorter overall remaining life to recover the costs.⁵

7 **Q WHAT IS THE CURRENTLY ASSUMED RETIREMENT DATE FOR CALLAWAY?**

8 A Ameren's depreciation study shows that the probable retirement year for Callaway is
9 2044. This is consistent with the current NRC operating license for Callaway.

10 **Q HAS AMEREN MISSOURI INDICATED THAT IT INTENDS TO OPERATE**
11 **CALLAWAY LATER THAN 2044?**

12 A Yes. Ameren's 2020 Integrated Resource Plan ("IRP") is based on the assumption that
13 the operating license for the Callaway nuclear facility is extended beyond 2050,
14 ensuring its ability to continue providing carbon-free electric energy around the clock.⁶

15 **Q IF THE CALLAWAY DEPRECIATION RATES WERE CALCULATED ASSUMING A**
16 **2050 RETIREMENT DATE, WHAT WOULD THE IMPACT BE?**

17 A In Schedule BCA-3, I present a calculation of Callaway's depreciation rates assuming
18 a 2050 retirement date. These depreciation rates produce a total depreciation expense
19 for Callaway of \$71.5 million, which is \$16.4 million less than those being proposed by
20 Ameren Missouri in this proceeding and \$8.1 million less than the depreciation expense
21 calculated with currently approved depreciation rates.

⁵Direct testimony of John J. Spanos at page 3, lines 11-13.

⁶Ameren Missouri's 2020 IRP at page 4.

1 **Q ARE YOU RECOMMENDING THAT THE CALLAWAY DEPRECIATION RATES**
2 **PRESENTED IN SCHEDULE BCA-3 BE APPROVED BY THE COMMISSION?**

3 A No. These depreciation rates are simply a demonstration. It is likely that Ameren
4 Missouri will file for an operating license extension for Callaway, to be consistent with
5 its IRP. Rather than allow Ameren Missouri to increase its depreciation rates for
6 Callaway now and burden customers with excessive rates, I am recommending that no
7 change to the currently approved depreciation rates be allowed. I have demonstrated
8 that Ameren Missouri intends to operate Callaway beyond 2050, far longer than the
9 2044 date assumed in its depreciation study. Callaway's' depreciation rates assuming
10 a 2050 retirement date would produce a \$16.4 million decrease relative to Ameren
11 Missouri's proposal. At this time, it is most appropriate to maintain the currently
12 approved depreciation rates for Callaway.

13 **Q WHICH NUCLEAR PRODUCTION PLANT DEPRECIATION RATES ARE YOU**
14 **REQUESTING THE COMMISSION APPROVE IN THE PROCEEDING?**

15 A I recommend the Commission approve the nuclear production plant depreciation rates
16 that are presented in Schedule BCA-2. These proposed rates would allow for no
17 change to the currently approved depreciation rates for Callaway. In Schedule BCA-4,
18 I show that MIEC's proposed depreciation rates for Callaway would result in a reduction
19 to Ameren Missouri's proposed depreciation expense of \$8.3 million.

20 **Q DOES THAT CONCLUDE YOUR DIRECT TESTIMONY?**

21 A Yes, it does.

Qualifications of Brian C. Andrews

1 **Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

2 A Brian C. Andrews. My business address is 16690 Swingley Ridge Road, Suite 140,
3 Chesterfield, MO 63017.

4 **Q PLEASE STATE YOUR OCCUPATION.**

5 A I am a Senior Consultant in the field of public utility regulation with the firm of Brubaker
6 & Associates, Inc. (“BAI”), energy, economic and regulatory consultants.

7 **Q PLEASE STATE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL
8 EMPLOYMENT EXPERIENCE.**

9 A I received a Bachelor of Science Degree in Electrical Engineering from the Washington
10 University in St. Louis/University of Missouri - St. Louis Joint Engineering Program. I
11 have also received a Master of Science Degree in Applied Economics from Georgia
12 Southern University.

13 I have attended training seminars on multiple topics including class cost of
14 service, depreciation, power risk analysis, production cost modeling, cost-estimation
15 for transmission projects, transmission line routing, MISO load serving entity
16 fundamentals and more.

17 I am a member and the current President of the Society of Depreciation
18 Professionals. I have been awarded the designation of Certified Depreciation
19 Professional (“CDP”) by the Society of Depreciation Professionals. I am also a certified
20 Engineer Intern in the State of Missouri.

**Brian C. Andrews
Appendix A
Page 1**

1 As a Senior Consultant at BAI, and as a Consultant, Associate Consultant and
2 Assistant Engineer before that, I have been involved with several regulated and
3 competitive electric service issues. These have included book depreciation, fuel and
4 purchased power cost, transmission planning, transmission line routing, resource
5 planning including renewable portfolio standards compliance, electric price forecasting,
6 class cost of service, power procurement, and rate design. This has involved use of
7 power flow, production cost, cost of service, and various other analyses and models to
8 address these issues, utilizing, but not limited to, various programs such as Strategist,
9 RealTime, PSS/E, MatLab, R Studio, ArcGIS, Excel, and the United States Department
10 of Energy/Bonneville Power Administration's Corona and Field Effects ("CAFÉ")
11 Program. In addition, I have received extensive training on the PLEXOS Integrated
12 Energy Model and the EnCompass Power Planning Software. I have provided
13 testimony on many of these issues before the Public Service Commissions in Arizona,
14 Arkansas, Florida, Illinois, Indiana, Kansas, Michigan, Minnesota, Missouri, Montana,
15 New Mexico, Oklahoma, and Texas.

16 BAI was formed in April 1995. BAI provides consulting services in the
17 economic, technical, accounting, and financial aspects of public utility rates and in the
18 acquisition of utility and energy services through RFPs and negotiations, in both
19 regulated and unregulated markets. Our clients include large industrial and institutional
20 customers, some utilities and, on occasion, state regulatory agencies. We also prepare
21 special studies and reports, forecasts, surveys and siting studies, and present seminars
22 on utility-related issues.

23 In general, we are engaged in energy and regulatory consulting, economic
24 analysis and contract negotiation. In addition to our main office in St. Louis, the firm
25 also has branch offices in Phoenix, Arizona and Corpus Christi, Texas.

Brian C. Andrews
Appendix A
Page 2

Proceedings in Which
Brian C. Andrews Filed Testimony

<u>Date Filed</u>	<u>State</u>	<u>Docket No.</u>	<u>Utility</u>	<u>Subjects</u>	<u>On Behalf Of</u>
7/21/2021	LA	U-35441	SOUTHWESTERN ELECTRIC POWER COMPANY	Depreciation Expense	Federal Executive Agencies
7/12/2021	MI	U-20963	CONSUMERS ENERGY COMPANY	Class Cost of Service / Rate Design / Revenue Allocation	Association of Businesses Advocating Tariff Equity
5/3/2021	TX	51568	CENTERPOINT ENERGY HOUSTON ELECTRIC, LLC	Transmission Routing	Danish Fields Solar, LLC
3/31/2021	IN	45468	VECTREN NORTH	Depreciation Expense	Vectren Industrial Group
3/5/2021	KY	2020-00349	KENTUCKY UTILITIES COMPANY	Depreciation Expense	United States Department of Defense and all other Federal Executive Agencies
2/19/2021	TX	51023	CITY OF SAN ANTONIO	Transmission Routing	Lisa Chandler, Clinton R. Chandler, and Chip and Pamela Putnam
2/19/2021	IN	45447	SOUTHERN INDIANA GAS AND ELECTRIC COMPANY D/B/A VECTREN SOUTH	Depreciation Expense	Vectren Industrial Group
1/8/2021	TX	50830	GUADALUPE VALLEY ELECTRIC COOPERATIVE, INC.	Transmission Routing	Alford Farms, LTD, James H. Alford, Mary Chella Alford Gordon, Amanda Alford Urban and Robert L. Urban, Pfeiffer Revocable Trust and James and Mary Rummage
12/14/2020	TX	50812	RAYBURN COUNTRY ELECTRIC COOPERATIVE, INC.	Transmission Line Routing	PACCAR, Inc.
10/23/2020	TX	50410	WIND ENERGY TRANSMISSION TEXAS, LLC AND ONCOR ELECTRIC DELIVERY COMPANY, LLC	Transmission Routing	The Lorin S. McDowell III Trust #3027, The Fredonia C. McDowell Trust #2193, The Rosemary McDowell Trust, Lorin S. McDowell III, The County Road 125 Intervenors, and The BMWB Coalition
9/14/2020	TX	50545	AEP TEXAS INC.	Transmission Routing	Davidson Ranch, Ltd., NG Cummings Ranch, Briscoe Ranch Inc., and El Pescado Minerals, Ltd.
8/25/2020	IL	20-0393	COMMONWEALTH EDISON COMPANY	Depreciation Expense	Illinois Industrial Energy Consumers & Citizen's Utility Board
8/17/2020	DC	1162	WASHINGTON GAS LIGHT COMPANY	Depreciation Expense	Office of the People's Counsel for the District of Columbia
12/4/2019	MO	ER-2019-0335	AMEREN MISSOURI	Depreciation Expense	Missouri Industrial Energy Consumers
11/26/2019	TX	49523	LCRA TRANSMISSION SERVICES CORPORATION	Transmission Line Routing	Zorritos, LLC and Fronie Shelton
11/12/2019	MI	U-20359	INDIANA MICHIGAN POWER COMPANY	Depreciation Expense	Association of Businesses Advocating Tariff Equity
10/30/2019	IN	45253	DUKE ENERGY INDIANA, LLC	Depreciation Expense	The Duke Industrial Group
9/24/2019	AR	19-008-U	SOUTHWESTERN ELECTRIC POWER COMPANY	Depreciation Expense	The Office of the Arkansas Attorney General Leslie Rutledge
8/21/2019	MI	U-20471	DTE ELECTRIC COMPANY	Integrated Resource Plan	Association of Businesses Advocating Tariff Equity
8/20/2019	IN	45235	INDIANA MICHIGAN POWER COMPANY	Depreciation Rates / Study / Expense	The I&M Industrial Group
4/22/2019	OK	PUD 201800140	OKLAHOMA GAS AND ELECTRIC COMPANY	Rate of Return / Capital Structure	Federal Executive Agencies
3/22/2019	TX	48625	SHARYLAND UTILITIES, L.P. AND LUBBOCK POWER AND LIGHT	Transmission Routes	Southwestern Public Service Company, BMWB Coalition, Kelly Mills, Stacey Mills and 246 Land LLC & Fox Dairy, LTD, James E. Laney, Gloyna's, Roque, Klatt, Delung, Ray, Tomsu, Browing, and Wuthrich
3/20/2019	TX	48629	CENTERPOINT ENERGY HOUSTON ELECTRIC, LLC	Transmission Routes	CBH Farms, Ltd.
2/12/2019	MT	D2018.2.12	NORTHWESTERN ENERGY	Depreciation Expense	Federal Executive Agencies and Montana Large Customer Group
11/28/2018	MI	U-20162	DTE ELECTRIC COMPANY	Nuclear Surcharge	Association of Businesses Advocating Tariff Equity
8/3/2018	IL	18-0463	AMEREN ILLINOIS COMPANY D/B/A AMEREN ILLINOIS	Depreciation Expense	Illinois Industrial Energy Consumers, Citizens Utility Board and Federal Executive Agencies
6/22/2018	KS	18-WSEE-328-RTS	WESTAR ENERGY, INC. AND KANSAS GAS AND ELECTRIC COMPANY	Class Cost of Service / Rate Design / Revenue Allocation	Kansas Industrial Consumers Group, Inc.
5/24/2018	IN	45029	INDIANAPOLIS POWER & LIGHT COMPANY	Depreciation Expense	IPL Industrial Group
5/2/2018	OK	PUD 201700496	OKLAHOMA GAS AND ELECTRIC COMPANY	Depreciation Expense	Federal Executive Agencies
3/16/2018	MN	E015/AI-17-568	MINNESOTA POWER	Resource Planning	Large Power Intervenors
11/7/2017	IN	44967	INDIANA MICHIGAN POWER COMPANY	Depreciation Expense	Indiana Michigan Industrial Group
10/12/2017	MI	U-18370	INDIANA MICHIGAN POWER COMPANY	Depreciation Expense	Association of Businesses Advocating Tariff Equity
9/18/2017	MI	U-18150	DTE ELECTRIC COMPANY	Depreciation Expense	Association of Businesses Advocating Tariff Equity
6/2/2017	MI	U-18195	CONSUMERS ENERGY COMPANY / DTE ELECTRIC COMPANY	Depreciation Expense	Association of Businesses Advocating Tariff Equity
3/1/2017	TX	46234	AEP TEXAS NORTH COMPANY & ELECTRIC TRANSMISSION TEXAS, LLC	Transmission Line Routing	McAnelly Ranch, LP, Garrett Roddie, Leroy Keese and Robert F. Zesch
1/13/2017	FL	160186-EI / 160170-EI	GULF POWER COMPANY	Depreciation Expense	Federal Executive Agencies
12/21/2016	AZ	E-01345A-16-0036	ARIZONA PUBLIC SERVICE COMPANY	Depreciation Expense	Federal Executive Agencies
10/24/2016	TX	45866	LCRA TRANSMISSION SERVICES CORPORATION	Transmission Line Routing	Land and Home Owners of CR 175, Meritage Homes of Texas, LLC, Stewart Crossing Homeowner Association and Trails of Shady Oak Residential Community, Inc.
7/7/2016	FL	160021-EI	FLORIDA POWER & LIGHT COMPANY	Depreciation Expense	Federal Executive Agencies
3/21/2016	OK	PUD 201500273	OKLAHOMA GAS AND ELECTRIC COMPANY	Depreciation Expense	Federal Executive Agencies
2/2/2016	TX	44837	AEP TEXAS CENTRAL COMPANY	Transmission Line Routing	Coastal Prairie Alliance
1/29/2016	NM	15-00261-UT	PUBLIC SERVICE COMPANY OF NEW MEXICO	Depreciation Expense	New Mexico Industrial Energy Consumers
1/22/2016	IN	44688	NORTHERN INDIANA PUBLIC SERVICE COMPANY	Depreciation Expense	NIPSCO Industrial Group
10/27/2015	AR	98-349-C	C&L ELECTRIC COOPERATIVE CORPORATION	Interim Rates; Final Rate Agreement	Little Rock District, U.S. Army Corps of Engineers

Proceedings in Which
Brian C. Andrews Filed Testimony

<u>Date Filed</u>	<u>State</u>	<u>Docket No.</u>	<u>Utility</u>	<u>Subjects</u>	<u>On Behalf Of</u>
7/9/2015	KS	15-WSEE-115-RTS	WESTAR ENERGY, INC. AND KANSAS GAS AND ELECTRIC COMPANY	Cost of Service; Rate Design	Kansas Industrial Consumers Group, Inc.; Occidental Chemical Corporation; CCPS Transportation, LLC; Spirit AeroSystems, Inc.; Coffeyville Resources Refining & Marketing, LLC; The Goodyear Tire & Rubber Company; Unified School District #259 and Kansas Association of School Boards
12/5/2014	MO	ER-2014-0258	UNION ELECTRIC COMPANY d/b/a AMEREN MISSOURI	Net Fuel Cost; Net Base Energy Cost	Missouri Industrial Energy Consumers

AMEREN MISSOURI
Case No. ER-2021-0240
MIEC Proposed Nuclear Production Depreciation Rates and Accruals

LINE NO.	ACCOUNT	MIEC PROPOSED ANNUAL ACCRUAL		
		AMOUNT	RATE	
NUCLEAR PRODUCTION PLANT				
CALLAWAY NUCLEAR PRODUCTION PLANT				
(1)	321.00	STRUCTURES AND IMPROVEMENTS	13,425,869	1.37
(2)	322.00	REACTOR PLANT EQUIPMENT	34,193,186	2.51
(3)	323.00	TURBOGENERATOR UNITS	13,574,322	2.45
(4)	324.00	ACCESSORY ELECTRIC EQUIPMENT	4,829,302	1.57
(5)	325.00	MISCELLANEOUS POWER PLANT EQUIPMENT	8,466,317	5.32
(6)	325.21	MISCELLANEOUS POWER PLANT EQUIPMENT- OFFICE FURNITURE	896,106	5.00
(7)	325.22	MISCELLANEOUS POWER PLANT EQUIPMENT- OFFICE EQUIPMENT	289,727	6.67
(8)	325.23	MISCELLANEOUS POWER PLANT EQUIPMENT - COMPUTERS	4,007,860	20.00
(9)		TOTAL NUCLEAR PRODUCTION PLANT	79,682,689	

AMEREN MISSOURI
Case No. ER-2021-0240
Demonstration of Depreciation Calculations for Callaway Retiring in 2050

LINE NO.	ACCOUNT	PROBABLE RETIREMENT DATE	SURVIVOR CURVE	NET SALVAGE PERCENT	ORIGINAL COST AS OF DECEMBER 31, 2018	ALLOCATED BOOK RESERVE	FUTURE ACCRUALS	CALCULATED ANNUAL ACCRUAL		COMPOSITE REMAINING LIFE	
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)=(8)/(5)	(10)
CALLAWAY NUCLEAR PRODUCTION PLANT - 2044 Retirement Date											
(1)	321.00	STRUCTURES AND IMPROVEMENTS	10-2044	90-R2	(1)	979,990,440	633,156,488	356,633,856	15,673,340	1.60	22.75
(2)	322.00	REACTOR PLANT EQUIPMENT	10-2044	55-S0.5	(3)	1,362,278,343	617,737,311	785,409,382	37,993,562	2.79	20.67
(3)	323.00	TURBOGENERATOR UNITS	10-2044	50-S0.5	(4)	554,053,954	281,206,127	295,009,985	15,018,534	2.71	19.64
(4)	324.00	ACCESSORY ELECTRIC EQUIPMENT	10-2044	75-R2	(1)	307,598,842	155,306,188	155,368,642	6,886,123	2.24	22.56
(5)	325.00	MISCELLANEOUS POWER PLANT EQUIPMENT	10-2044	40-L0	0	159,141,300	40,151,248	118,990,052	6,505,663	4.09	18.29
(6)	325.21	MISCELLANEOUS POWER PLANT EQUIPMENT- OFFICE FURNITURE		20-SQ	0	17,922,119	4,505,834	13,416,285	975,227	5.44	13.76
(7)	325.22	MISCELLANEOUS POWER PLANT EQUIPMENT- OFFICE EQUIPMENT		15-SQ	0	4,343,733	2,032,918	2,310,815	329,036	7.57	7.02
(8)	325.23	MISCELLANEOUS POWER PLANT EQUIPMENT - COMPUTERS		5-SQ	0	20,039,301	6,859,127	13,180,174	4,565,736	22.78	2.89
(9)		TOTAL NUCLEAR PRODUCTION PLANT				3,405,368,030	1,740,955,241	1,740,319,191	87,947,221	2.58	19.79
CALLAWAY NUCLEAR PRODUCTION PLANT - 2050 Retirement Date											
(10)	321.00	STRUCTURES AND IMPROVEMENTS	10-2050	90-R2	(1)	979,990,440	633,156,488	356,633,856	12,538,672	1.28	28.44
(11)	322.00	REACTOR PLANT EQUIPMENT	10-2050	55-S0.5	(3)	1,362,278,343	617,737,311	785,409,382	30,394,850	2.23	25.84
(12)	323.00	TURBOGENERATOR UNITS	10-2050	50-S0.5	(4)	554,053,954	281,206,127	295,009,985	12,014,827	2.17	24.55
(13)	324.00	ACCESSORY ELECTRIC EQUIPMENT	10-2050	75-R2	(1)	307,598,842	155,306,188	155,368,642	5,508,898	1.79	28.20
(14)	325.00	MISCELLANEOUS POWER PLANT EQUIPMENT	10-2050	40-L0	0	159,141,300	40,151,248	118,990,052	5,204,530	3.27	22.86
(15)	325.21	MISCELLANEOUS POWER PLANT EQUIPMENT- OFFICE FURNITURE		20-SQ	0	17,922,119	4,505,834	13,416,285	975,227	5.44	13.76
(16)	325.22	MISCELLANEOUS POWER PLANT EQUIPMENT- OFFICE EQUIPMENT		15-SQ	0	4,343,733	2,032,918	2,310,815	329,036	7.57	7.02
(17)	325.23	MISCELLANEOUS POWER PLANT EQUIPMENT - COMPUTERS		5-SQ	0	20,039,301	6,859,127	13,180,174	4,565,736	22.78	2.89
(18)		TOTAL NUCLEAR PRODUCTION PLANT				3,405,368,030	1,740,955,241	1,740,319,191	71,531,777	2.10	24.33
CALLAWAY NUCLEAR PRODUCTION PLANT - Difference											
(19)	321.00	STRUCTURES AND IMPROVEMENTS	+ 6 years	0	0	0	0	0	(3,134,668)	(0.32)	5.69
(20)	322.00	REACTOR PLANT EQUIPMENT	+ 6 years	0	0	0	0	0	(7,598,712)	(0.56)	5.17
(21)	323.00	TURBOGENERATOR UNITS	+ 6 years	0	0	0	0	0	(3,003,707)	(0.54)	4.91
(22)	324.00	ACCESSORY ELECTRIC EQUIPMENT	+ 6 years	0	0	0	0	0	(1,377,225)	(0.45)	5.64
(23)	325.00	MISCELLANEOUS POWER PLANT EQUIPMENT	+ 6 years	0	0	0	0	0	(1,301,133)	(0.82)	4.57
(24)	325.21	MISCELLANEOUS POWER PLANT EQUIPMENT- OFFICE FURNITURE		0	0	0	0	0	0	0.00	0.00
(25)	325.22	MISCELLANEOUS POWER PLANT EQUIPMENT- OFFICE EQUIPMENT		0	0	0	0	0	0	0.00	0.00
(26)	325.23	MISCELLANEOUS POWER PLANT EQUIPMENT - COMPUTERS		0	0	0	0	0	0	0.00	0.00
(27)		TOTAL NUCLEAR PRODUCTION PLANT				0	0	0	(16,415,444)	(0.48)	4.54

Note: The remaining lives in the 2050 retirement scenario were calculated by multiplying the remaining lives in the 2044 retirement scenario by 1.25.

AMEREN MISSOURI
Case No. ER-2021-0240
Comparison of Proposed MIEC and Ameren Missouri Depreciation Rates and Accruals

LINE NO.	ACCOUNT	AMEREN PROPOSED ANNUAL ACCRUAL		MIEC PROPOSED ANNUAL ACCRUAL		DELTA ANNUAL ACCRUAL		
		AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	
NUCLEAR PRODUCTION PLANT								
CALLAWAY NUCLEAR PRODUCTION PLANT								
(1)	321.00	STRUCTURES AND IMPROVEMENTS	15,673,340	1.60	13,425,869	1.37	2,247,471	0.23
(2)	322.00	REACTOR PLANT EQUIPMENT	37,993,562	2.79	34,193,186	2.51	3,800,376	0.28
(3)	323.00	TURBOGENERATOR UNITS	15,018,534	2.71	13,574,322	2.45	1,444,212	0.26
(4)	324.00	ACCESSORY ELECTRIC EQUIPMENT	6,886,123	2.24	4,829,302	1.57	2,056,821	0.67
(5)	325.00	MISCELLANEOUS POWER PLANT EQUIPMENT	6,505,663	4.09	8,466,317	5.32	(1,960,654)	(1.23)
(6)	325.21	MISCELLANEOUS POWER PLANT EQUIPMENT- OFFICE FURNITURE	975,227	5.44	896,106	5.00	79,121	0.44
(7)	325.22	MISCELLANEOUS POWER PLANT EQUIPMENT- OFFICE EQUIPMENT	329,036	7.57	289,727	6.67	39,309	0.90
(8)	325.23	MISCELLANEOUS POWER PLANT EQUIPMENT - COMPUTERS	4,565,736	22.78	4,007,860	20.00	557,876	2.78
(9)		TOTAL NUCLEAR PRODUCTION PLANT	87,947,221		79,682,689		8,264,532	