

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

In the Matter of the Application of Union)
Electric Company d/b/a Ameren Missouri for)
Approval of Decommissioning Cost Estimate) **File No. EO-2023-0448**
for Callaway Energy and Funding Level of)
Nuclear Decommissioning Trust Fund)

STAFF RECOMMENDATION

COMES NOW the Staff (“Staff”) of the Missouri Public Service Commission, and for its *Staff Recommendation* in this matter, Staff respectfully states:

1. On December 1, 2024, Union Electric Company d/b/a Ameren Missouri (“Ameren Missouri” or “Company”) filed its application (“Application”), pursuant to Commission Rule 20 CSR 4240-20.070(4), requesting approval of its triennial filing of cost estimates for Callaway decommissioning, including the Independent Fuel Storage Installation (“ISFSI”), and approval of the funding level of the Nuclear Decommissioning Trust Fund (“Fund”). Ameren Missouri subsequently filed an amended application on March 4, 2024.

2. The United States Nuclear Regulatory Commission (“NRC”) establishes minimum amounts necessary for licensees to provide reasonable assurance that funds will be available for the decommissioning process under 10 CFR 50.75(a) (2002). Federal regulations also subject decommissioning funding to the jurisdiction of state public utility commissions.

3. Section 392.292, RSMo (2016) requires that “the amounts collected from ratepayers and paid into such trust funds will be neither greater nor lesser than the amounts necessary to carry out the purposes of the trusts.”

4. As explained in more detail in Staff's Memorandum, attached and incorporated hereto as Attachment A, Staff recommends that the Commission approve the Application, as amended by Ameren Missouri on March 4, 2024, subject to the following conditions:

- a. Ameren Missouri will file the proper decommissioning trust fund annual contribution, along with evidence and testimony in support thereof, in its next rate case for ratemaking purposes;
- b. The annual contribution of \$6,758,605 should not be included in the Company's current cost of service for ratemaking purposes.

WHEREFORE, Staff recommends that the Commission approve the Application as amended on March 4, 2024, subject to the conditions put forward by Staff, and grant such other and further relief as is just in the circumstances.

Respectfully Submitted,

/s/ Travis J. Pringle

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CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing was served by electronic mail, or First Class United States Postal Mail, postage prepaid, on this 3rd day of June, 2024, to all parties and/or counsel of record.

/s/ Travis J. Pringle

MEMORANDUM

TO: Missouri Public Service Commission Official Case File
File No. EO-2023-0448, Union Electric Company, d/b/a Ameren Missouri

FROM: Randall T. Jennings, Senior Utility Regulatory Auditor

/s/ Seoung Joun Won 06-03-24
Financial Analysis Dept. / Date

SUBJECT: Staff Recommendation Concerning the Application of Union Electric Company, d/b/a Ameren Missouri, for Acceptance of Its Triennial Filing of Cost Estimates for Callaway Energy Center Decommissioning, Including the Independent Spent Fuel Storage Installation, and Approval of the Funding Level of the Nuclear Decommissioning Trust Fund.

DATE: June 3, 2024

FINDING OF FACTS:

1. Applicant:

Union Electric Company, d/b/a Ameren Missouri.

2. Nuclear Power Plant:

The Callaway Energy Center.

3. Decommissioning Costs:

The total cost to decommission the Callaway Energy Center and the Independent Spent Fuel Storage Installation (“ISFSI”), employing the DECON alternative, is \$1,097,947,000 in 2023 dollars.¹ Of this total, \$1,085,651,000 is attributable to plant decommissioning and \$12,296,000 is attributable to ISFSI decommissioning.

4. Funding Level: Continuation of the funding level of its nuclear decommissioning trust fund at the current \$6,758,605 annual amount, with \$6,082,745 allocated to plant decommissioning and \$675,860 allocated to ISFSI decommissioning.

5. Certificate of Corporate Good Standing:

Yes.

¹ DECON refers to a decontamination process used during the decommissioning of nuclear facilities, which is the process of safely shutting down and dismantling a nuclear facility at the end of its operational life. For the definition of DECON, please see Page viii of xxi in Attachment 3 of the Amended Application.

6. Cost Study:

TLG Services, Inc. (“TLG”) prepared *Decommissioning Cost Analysis for the Callaway Energy Center* (“2023 Study”), as Attachment 3, under the direction of Ameren Missouri. TLG has prepared the decommissioning cost estimates of the Callaway Energy Center (“Callaway” or “Plant”) since 1993.

7. Funding Adequacy:

Willis Towers Watson (“WTW”) developed a funding adequacy model using 5,000 stochastic modeling scenarios, as outlined in the summary of Amended Attachment 4. The stochastic model analysis in this case represents the first instance WTW’s model has been filed with a state commission and had only been previously used by utility companies to evaluate the probability of having sufficient funding at the time of decommissioning.²

8. Operating Life:

60-year.

9. License Expiration:

October 18, 2044.

10. Jurisdictional Allocator:

Missouri 100%.

11. Investment Fee:

Annual 15 basis points.

12. Income Tax Rate:

Composite Rate 20% (Federal 20%, State 0%).³

13. Asset Allocation:

The allocation of 65% equities and 35% bonds will be maintained until the fund begins to de-risk in 2040. At that point, the total projected 5-year forecast will be shifted to 50% cash and 50% fixed income investments.

² Staff Data Request No. 0021.1.

³ Paragraph 28, the Amended Application.

COMMENTS:

Introduction

Union Electric Company, doing business as Ameren Missouri (“Ameren Missouri,” “Company,” or “Applicant”) is a Missouri corporation with its principal office and place of business located at One Ameren Plaza, 1901 Chouteau Avenue, Saint Louis, Missouri 63103. The Applicant provides electric and gas utility services in portions of Missouri as a public utility under the jurisdiction of the Missouri Public Service Commission (the “Commission”).⁴ Ameren Missouri supplies electric service to 1.2 million customers and natural gas service to 0.1 million customers in a 24,000-square-mile area in central and eastern Missouri, including the Greater St. Louis area.⁵ “Ameren Missouri is the owner and operator of Callaway, a nuclear generating unit, and the ISFSI, a spent fuel storage installation at the Plant.”⁶

On December 1, 2023, Ameren Missouri submitted its application (the “Application”) requesting acceptance of its triennial filing of cost estimates for Callaway decommissioning, including the ISFSI, and approval of the funding level of the Nuclear Decommissioning Trust Fund (the “Fund”). On March 4, 2024, an Amended Application was filed, which included an updated Certificate of Corporate Good Standing as Attachment 1, TLG’s 2023 Cost Study as Attachment 3, and WTW’s funding adequacy model analysis as Amended Final Attachment 4.

Background

Under federal law, the U.S. Nuclear Regulatory Commission (“NRC”) establishes minimum amounts necessary for licensees to provide reasonable assurance that funds will be available for the decommissioning process.⁷ However, federal regulations also provide that ‘Funding for the decommissioning of power reactors may also be subject to the regulation of Federal or State Government agencies (e.g., the Federal Energy Regulatory Commission (“FERC”) and State Public Utility Commissions) that have jurisdiction over rate regulations.’⁸ The NRC’s federal regulations are in addition to, and not a substitution for, other requirements, and are not intended to be used by themselves or by other agencies to establish rates.⁹

The NRC defines the term “decommission” as follows in 10 C.F.R. §50.2 and limits decommissioning to the radiological part of the facility:

Decommission means to remove (as a facility) safely from service and reduce residual radioactivity to a level that permits release of the property for unstructured use and termination of license.

⁴ Paragraph 4, the Application.

⁵ S&P Capital IQ Pro.

⁶ Paragraph 4, the Amended Application.

⁷ 10 CFR 50.75(a) (2022); [§ 50.75 Reporting And Recordkeeping For Decommissioning Planning. | NRC.gov.](#)

⁸ Ibid.

⁹ Ibid.

This Commission defines “decommissioning” and “decommissioning costs” as follows in 20 CSR 4240-20.070:

(1) As used in this rule, decommissioning means those activities undertaken in connection with a nuclear generating unit’s retirement from service to ensure that the final removal, disposal, entombment or other disposition of the unit and of any radioactive components and materials associated with the unit, are accomplished in compliance with all applicable laws, and to ensure that the final disposition does not pose any undue threat to the public health and safety. Decommissioning includes the removal and disposal of the structures, systems and components of a nuclear generating unit at the time of decommissioning.

(2) As used in this rule, decommissioning costs means all reasonable costs and expenses incurred in connection with decommissioning, including all expenses to be incurred in connection with the preparation for decommissioning, including, but not limited to, engineering and other planning expenses; and to be incurred after the actual decommissioning occurs, including, but not limited to, physical security and radiation monitoring expenses, less proceeds of insurance, salvage or resale of machinery, construction equipment or apparatus the cost of which was charged as a decommissioning expense.

In addition, 20 CSR 4240-20.070(4) establishes the frequency of filings with the Commission of information regarding the decommissioning trust fund, stating in pertinent part:

Every three (3) years, utilities with decommissioning trust funds shall perform and file with the commission cost studies detailing the utilities’ latest cost estimates for decommissioning their nuclear generating unit(s) along with the funding levels necessary to defray these decommissioning costs. These studies shall be filed along with appropriate tariff(s) effectuating the change in rates necessary to accomplish the funding required. In addition, the commission, at any time for just cause, may require a utility to file an updated decommissioning cost study, funding requirement, and associated tariff(s).

Filing History

Ameren Missouri has made its triennial filings on a timely basis since Callaway went into operation on December 19, 1984. In Ameren Missouri’s Case Nos. EO-85-17 and ER-85-160, Ameren Missouri and the Staff stipulated that the decommissioning cost of Callaway was \$120 million in 1983 dollars. As a result, the Company’s Missouri retail jurisdictional annual trust fund payment requirement was set at \$2.9 million.¹⁰ In Case No. EO-91-300, which was Ameren Missouri’s first filing pursuant to 20 CSR 4240-20.070, a *Unanimous Stipulation and Agreement* was accepted by the Commission which identified the cost in 1990 dollars to immediately decommission Callaway as if it had completed 40 years of service. This cost was determined to

¹⁰ Order Approving Stipulation and Agreement, August 21, 1992, EO-91-300, Page 3.

be \$347 million and set the Company's Missouri retail jurisdiction annual trust fund accrual and payment requirement at \$6,214,184.¹¹ The increase in the cost estimate was due principally to the uncertainties existing at the time with the disposal of radioactive material.

Subsequent filings were made in Case Nos. EO-94-81, EO-97-86, EO-2000-205, and EO-2003-083, in which the Commission accepted *Unanimous Stipulation and Agreements* that identified the costs in 1993, 1996, 1999 and 2002 dollars, respectively, to immediately decommission Callaway as if it had completed 40-years of service. These costs were identified as \$371,511,680; \$419,975,000; \$509,451,856; and \$515,339,000, respectively. In each of the four triennial decommissioning cost study cases the Company's Missouri retail jurisdiction annual trust fund accrual and payment requirement remained at \$6,214,184, as that amount was determined to be adequate for the funding of decommissioning expenses.

In Case No. EO-2004-0108, the Commission ordered an increase in Ameren Missouri's annual Missouri decommissioning expense and contribution amount from \$6,214,184 to \$6,486,378 to reflect the increased liability for decommissioning costs assumed by Missouri ratepayers as a result of the MetroEast Property Transfer.¹² In Case No. EO-2004-0108, and subsequently, Case Nos. EO-2006-0098, and EO-2009-0081, a methodology was utilized by which Missouri ratepayers were responsible for less than 100% of Ameren Missouri's decommissioning liability.

In Case No. EO-2006-0098, a *Non-Unanimous Stipulation and Agreement* was accepted by the Commission which identified the costs in 2005 dollars to immediately decommission Callaway, as if it had completed 40 years of service, as being \$586,515,200. The Company's Missouri retail jurisdiction annual trust fund accrual and payment requirement remained at \$6,486,378, as that amount was determined to be adequate for the funding of future decommissioning expenses.¹³ In Case No. EO-2009-0081, the payment requirement remained the same after a *Unanimous Stipulation and Agreement* was accepted by the Commission which identified the costs in 2008 dollars as being \$693,907,000 (which is 18.3% higher than the 2005 estimate of \$586,515,200 and represents approximately a 5.76% annualized escalation rate over the 3-year period).¹⁴

The 2011 Cost Study estimated the decommissioning cost for the DECON alternative to be \$754,498,000 in 2011 dollars, which was 8.7% higher than the 2008 estimate of \$693,907,000 (Case No. EO-2009-0081).¹⁵ Ameren Missouri's economic analysis found an annual contribution of \$6,758,605 to the nuclear decommissioning trust fund to be reasonable.¹⁶

¹¹ *Order Approving Stipulation and Agreement*, August 21, 1992, EO-91-300.

¹² *Report and Order on Rehearing* in Case No. EO-2004-0108 contains a typographical error that transposed the second and third digits in the annual contribution amount to the Missouri jurisdictional subaccount. (See 13 Mo.P.S.C.3d at 297 and 304 compared to 13 Mo.P.S.C.3d at 296). Because this error has an insignificant impact on trust fund funding, Ameren Missouri used this actual ordered amount as its present annual contribution amount.

¹³ *Non-Unanimous Stipulation and Agreement*, September 21, 2012, EO-2006-0098, page 6.

¹⁴ *Unanimous Stipulation and Agreement*, April 23, 2009, EO-2009-0081, page 6.

¹⁵ August 2011 *TLG Decommissioning Cost Analysis for the Callaway Energy Center*, Attachment 1, The Application.

¹⁶ Ameren Missouri Cost Study, Attachment 2, The Application.

In File No. ER-2011-0028, Ameren Missouri commenced a methodology of the Missouri jurisdictional demand allocator for Callaway being increased to 100% from the previous allocator of 98.38% used in Case No. EO-2009-0081; the annual accrual increased to \$6,758,605. Callaway was treated as allocated 100% to the Missouri retail jurisdiction; municipal customers, sales, and costs were treated as off-system customers, sales, and costs. The Staff followed this methodology in the subsequent Ameren Missouri general rate increase case.¹⁷ The \$6,758,605 of annual decommissioning expense accrual was included in the determination of Ameren Missouri retail customer rates approved by the Commission and the Missouri jurisdictional demand allocator was reflected as 100%.¹⁸

On August 15, 2014, Ameren Missouri filed, in Case No. EE-2015-0046, a request for a seven (7) month extension of time to file its 2014 TLG Decommissioning Cost Study to no later than April 1, 2015, rather than September 1, 2014, due to its license extension request that was pending before the Nuclear Regulatory Commission (“NRC”) and the potential impact of the request upon the necessary funding level of its decommissioning trust. The Staff recommended that the Commission grant Ameren Missouri its request for a variance from the Commission’s rule. The Commission issued an order on March 4, 2015 granting Ameren Missouri’s request for an extension of time to file pending decommissioning cost analysis. On April 1, 2015, Ameren Missouri filed in Case No. EO-2015-0253 its Application, a 2014 TLG “Decommissioning Cost Analysis for the Callaway Energy Center,” not including the cost of decommissioning the ISFSI, and Ameren Missouri’s analysis of the required funding level under a 2044 operating license expiration date.

The following display provides the parameters of the EO-2015-0253 filing as well as the Company’s two subsequent filings, along with the dates of the corresponding Commission orders approving each case’s *Non-Unanimous Stipulation and Agreement* setting the annual contribution amount:

Application Filing Date	Case No.	License Expiration	Total Decommission Cost	Year Dollars	Agreed Total Annual Contribution	Commission Approval Date
04/01/2015	EO-2015-0253	2044	\$ 864,734,000	2014	\$ 6,758,605	04/06/2016
09/01/2017	EO-2018-0051	2044	\$ 943,465,000	2017	\$ 6,758,605	01/23/2018
11/05/2020	EO-2021-0050	2044	\$ 1,046,835,000	2020	\$ 6,758,605	02/24/2021

Decommissioning Cost Study

Ameren Missouri’s current analysis of the cost to decommission Callaway is an update of the study that the Company initially performed in 1993. Ameren Missouri contracted with TLG to perform the site-specific cost study to determine the estimated cost for decommissioning Callaway.

¹⁷ Case No. ER-2012-0166.

¹⁸ Ibid.

According to the Application, TLG is an industry leader in nuclear power plant decontamination and decommissioning planning, cost estimating, and project field supervision and has prepared and updated decommissioning cost estimates for the vast majority of nuclear generation units in the country. TLG has also provided engineering and field services for contaminated facilities including estimates of decommissioning costs for nuclear generating units since 1982. TLG is the company that prepared Callaway's decommissioning cost estimates filed with and approved by the Commission in 1993, 1999, 2002, 2005, 2008, 2011, 2015, 2018, and 2020, as well as the ISFSI decommissioning cost estimates in 2015, 2018, and 2020.

Staff does not find any major concerns on the 2023 cost study prepared by TLG. According to the 2023 cost study, the total decommissioning cost estimate is \$1,097,947,000 in 2023 dollars based on TLG's projected cost to decommission the Plant and the ISFSI using the DECON alternative process, with \$1,085,651,000 allocated to Plant decommissioning and \$12,296,000 allocated to ISFSI decommissioning.¹⁹ This estimate assumes a 60-year plant operating life and reflects the use of off-site, low-level radioactive waste processing to minimize the volume designated for controlled disposal.²⁰ Out of this total, in Case No. EO-2021-0050, TLG estimated the total cost as \$1,046,835,000, with \$1,036,260,000 attributed to Plant decommissioning and \$10,575,000 to ISFSI decommissioning.²¹ The 2023 amount represents an overall increase of 4.88% (or 1.63% annually).

Funding Adequacy Analysis

On March 4, 2024, Ameren Missouri submitted the Amended Application including WTW's funding adequacy model that evaluates the current funding under various economic and market assumptions and a summary of this model's findings included in the Amended Attachment 4.²² WTW's analyses determined the probability that the current annual funding amount of \$6,758,605 would result in sufficient funds being available for the decommissioning of Callaway under 5,000 stochastic modeling scenarios incorporating various market and economic assumptions.²³ Ameren Missouri states that WTW's analysis results in nearly 67% of the 5,000 modeling scenarios having sufficient funds available for decommissioning Callaway under the DECON method starting in 2044.²⁴

This is the first time the Applicant has used a stochastic model for the funding adequacy analysis in an Ameren Missouri nuclear decommissioning case. In the past cases, the funding adequacy was tested by a model with predetermined assumptions providing the "best available" information on which to estimate an appropriate annual contribution amount agreed by Staff and Ameren Missouri. The old model relies heavily on the assumptions set forth in Case No. EO-91-300, as well as the decommissioning cost estimates provided by TLG. The calculation of an annual decommissioning expense and contribution amount is sensitive to varying forecasts of future

¹⁹ Paragraph 10, The Amended Application.

²⁰ Ibid.

²¹ Page 4, Staff Recommendation, EO-2021-0050.

²² Paragraph 12, The Amended Application.

²³ Paragraph 14, The Amended Application.

²⁴ Paragraph 22, The Amended Application.

decommissioning inflation and investment returns. Forecasted nominal investment returns are dependent upon future investment policy and on forecasts of real returns on bond investments, equity premiums over and above bond investment returns, and on general inflation levels.

While Staff cannot fully audit the 5,000 scenarios analysis because it is not available, Staff does not have any concerns with the credibility of WTW or its use of a stochastic model. In addition, Staff agrees with Ameren Missouri that the current funding amount of \$6,758,605 would provide sufficient funds for the decommissioning of Callaway. However, the stochastic model also produced a median result of a surplus of \$141 million, or 13% of the current liability in 2023 dollars.²⁵ In Section 393.292, RSMo (2016) it states that “the amounts collected from ratepayers and paid into such trust funds will be neither greater nor lesser than the amounts necessary to carry out the purposes of the trusts.” Therefore, it is uncertain whether the current decommissioning fund level is appropriate to utilize for the ratemaking purposes of Ameren Missouri. As required by 20 CSR 4240-20.070(4), the next update will be filed around December 2026, at which time the decommissioning fund will be examined again for the appropriate funding level.

Ameren Missouri insisted that, when compared to other WTW clients’ analyses of decommissioning funds, WTW’s analysis of Callaway, resulting in an adequate or overfunding possibility of 67%, compares favorably with the peer universe of 31 other nuclear units analyzed by WTW who had a median probability of 73% successfully funding their decommissioning costs.²⁶ However, this does not assure that the proposed trust fund will be sufficient for the eventual decommissioning of Callaway with no surplus funds remaining after the payment of all decommissioning costs. Furthermore, Ameren Missouri confirmed that among the 5,000 simulations, the median value for the stochastic model is a \$141 million surplus, which represents 13% of the estimated total cost of \$1,097,947,000.²⁷ In addition, WTW noted that the stochastic model used to support Ameren Missouri’s filing has not been formally filed with any other state commissions in support of a rate hearing.²⁸

Lack of Staff Analysis to Confirm

Staff has not performed an analysis of the cost to decommission Callaway. Staff does not have the data necessary to either support or challenge the cost estimate to decommission Callaway, nor can it endorse the decommissioning cost amount provided by Ameren Missouri. Staff did not find any evidence that the Commission should reject that the cost of decommissioning Callaway is approximately \$1,097,947,000 in 2023 dollars.

The Company believes that the \$6,758,605 annual contribution should provide a sufficient fund to decommission Callaway at the expiration of its current operating license in 2044. However, Staff has not performed an analysis of the current annual contribution cost estimate to determine its

²⁵ Staff Data Request No. 0024.1s1.

²⁶ Paragraph 22, The Amended Application.

²⁷ Staff Data Request No. 0024.1s1.

²⁸ Staff Data Request No. 0021.1.

validity. According to Ameren Missouri, the model used by WTW is a proprietary model and not able to be provided in any manner for replication by the Staff.²⁹ Staff does not have the evidence as per Section 393.292, RSMo (2016), supporting that “the amounts collected from ratepayers and paid into such trust funds will be neither greater nor lesser than the amounts necessary to carry out the purposes of the trusts.” Therefore, Staff cannot recommend approval of Ameren Missouri’s amount for purposes of calculating the annual contribution.

Cost of service

The annual contribution is expected to be included in the Company’s current cost of service for ratemaking purposes. As part of the cost of service calculation, the annual funding level of \$6,758,605 will be included as a component if the Commission approves the Application without conditions. Based on its own findings, Staff determines it is inappropriate to maintain the funding level of the decommissioning trust fund at its current annual level without additional evidence from the Company that continuing the current annual level will not result in a deficit or surplus upon the completion of Callaway’s decommissioning.

Staff Recommendation

Staff recommends that the Commission approve the Application submitted by Ameren Missouri in this case subject to the following conditions:

- (1) Ameren Missouri will file the proper decommissioning trust fund annual contribution, along with evidence and testimony in support thereof, in its next rate case for ratemaking purposes.
- (2) The annual contribution of \$6,758,605 should not be included in the Company’s current cost of service for ratemaking purposes.

²⁹ Staff Data Request No. 0013.2.

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of the Application of Union)
Electric Company d/b/a Ameren Missouri for) File No. EO-2023-0448
Approval of Decommissioning Cost Estimate)
for Callaway Energy and Funding Level of)
Nuclear Decommissioning Trust Fund)

AFFIDAVIT OF RANDALL T. JENNINGS

STATE OF MISSOURI)
) ss.
COUNTY OF COLE)

COMES NOW RANDALL T. JENNINGS and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing *Staff Recommendation* in memorandum form; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.



RANDALL T. JENNINGS

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 3rd day of June 2024.

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