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File No.: ER-2019-0335
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MISSOURI PUBLIC SERVICE COMMISSION

FILE NO. ER-2019-0335

DIRECT TESTIMONY

OF

DARRYL T. SAGEL

ON

BEHALF OF

UNION ELECTRIC COMPANY

D/B/A AMEREN MISSOURI

**St. Louis, Missouri
July 2019**

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DIRECT TESTIMONY

OF

DARRYL T. SAGEL

FILE NO. ER-2019-0335

I. INTRODUCTION

1

Q. Please state your name and business address.

2

3 A. My name is Darryl T. Sagel. My business address is One Ameren Plaza,
4 1901 Chouteau Avenue, St. Louis, Missouri 63103.

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

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6 A. I am employed by Ameren Services Company ("Ameren Services"), a
7 wholly-owned subsidiary of Ameren Corporation ("Ameren"), as Vice President and
8 Treasurer. I also serve as Vice President and Treasurer of Union Electric Company d/b/a
9 Ameren Missouri ("Ameren Missouri" or "Company"). Ameren Services provides various
10 corporate support services to Ameren's subsidiaries, including Ameren Missouri, such as
11 accounting, legal, financial, and treasury services.

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Q. What are your current job duties and responsibilities?

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13 A. As Treasurer, I am responsible for all areas of the treasury functional area,
14 including corporate finance, cash and investment management, insurance, credit risk
15 management, investor services, and corporate development. Within the areas of corporate
16 finance, I am responsible for, among other things, managing Ameren's and its subsidiaries'
17 capital raising and capital structure, including their short-term and long-term financing
18 activities, such as debt and equity issuances and credit facility arrangements. I am also
19 responsible for monitoring and managing Ameren's and its subsidiaries' liquidity positions,

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1 key credit metrics, and debt agreement compliance, overseeing relationships with credit
2 rating agencies and banks, and monitoring capital markets for key developments, emerging
3 risks, and opportunities, among other corporate finance-related activities.

4 **Q. Please describe your educational and professional background.**

5 A. See my Statement of Qualifications, attached as Appendix A to my direct
6 testimony.

7 **II. PURPOSE AND SUMMARY OF TESTIMONY**

8 **Q. What is the purpose of your direct testimony?**

9 A. The purpose of my direct testimony is to recommend a reasonable capital
10 structure for Ameren Missouri for ratemaking purposes and an appropriate overall fair rate
11 of return for the Company's electric utility business. The capital structure that I recommend
12 is based on Ameren Missouri's forecasted debt, preferred stock, and common stock
13 balances as of December 31, 2019. The actual balances as of that date will be provided
14 with the true-up data. My direct testimony reflects, for informational purposes, Ameren
15 Missouri's actual capital structure as of December 31, 2018, the end of the proposed test
16 year. In recommending a fair overall rate of return, I consider Ameren Missouri's
17 embedded cost of long-term debt, its embedded cost of preferred stock, and the fair return
18 on equity recommended by Ameren Missouri witness Robert B. Hevert in his direct
19 testimony in this case.

1 **Q. Are you sponsoring any schedules in connection with your direct**
2 **testimony?**

3 A. Yes, I am sponsoring and have attached to my testimony the following
4 schedules, which have been prepared as of or for the twelve months ending December 31,
5 2019, as appropriate:

- 6 • Schedule DTS-D1 – Capital Structure/Weighted Average Cost of Capital
- 7 • Schedule DTS-D2 – Embedded Cost of Long-Term Debt
- 8 • Schedule DTS-D3 – Cost of Short-Term Debt
- 9 • Schedule DTS-D4 – Embedded Cost of Preferred Stock

10 **III. RATE OF RETURN AND COST OF CAPITAL CONSIDERATIONS**

11 **Q. What is the relationship between allowed rate of return and cost of**
12 **capital in the context of utility ratemaking?**

13 A. Under a traditional regulatory model, the interests of customers and a
14 utility's shareholders may be considered "balanced" when the Missouri Public Service
15 Commission ("Commission") authorizes a rate of return on rate base equal to the utility's
16 cost of capital. If the authorized rate of return is less than the utility's overall cost of capital,
17 the financial strength and stability of the utility could degrade, making it difficult for the
18 utility to raise necessary capital on a timely basis, at a reasonable cost, and under reasonable
19 terms. Ultimately, the utility's inability to raise sufficient capital would impair service
20 quality, or the increased cost of capital incurred by a financially-weakened utility would
21 result in increased rates. Customer interests are best served when the Commission-
22 authorized rate of return is set equal to the utility's overall cost of capital.

1 **Q. Please define weighted average cost of capital.**

2 A. Weighted average cost of capital equals the sum of the costs of the
3 components of an entity's capital structure weighted by the relative contribution of each
4 capital source to the entity's total capitalization.

5 **Q. How did you calculate the weighted average cost of capital for Ameren**
6 **Missouri?**

7 A. As reflected in Schedule DTS-D1, I calculated Ameren Missouri's weighted
8 average cost of capital by: (1) multiplying the relative weighting or proportion of each
9 component of Ameren Missouri's capital structure by the cost of that component; and, then
10 (2) summing the weighted cost of each capital component.

11 **Q. What is the primary standard for determining a fair rate of return?**

12 A. According to the landmark *Bluefield* and *Hope* U.S. Supreme Court
13 decisions,¹ a utility's rates must be set at a level that allows the utility to generate revenues
14 sufficient to: (1) maintain the financial integrity of its existing invested capital,
15 (2) maintain its creditworthiness, and (3) attract sufficient capital on competitive terms to
16 continue to provide a source of funds for continued investment and enable the company to
17 meet the needs of its customers. When a utility is allowed to earn its cost of capital, it is
18 generally afforded a reasonable opportunity to accomplish these objectives.

¹ *Bluefield Water Works & Improvement Co. v. Public Service Commission of West Virginia*, 262 U.S. 679 (1923) and *Federal Power Commission v. Hope Natural Gas Company*, 320 U.S. 591 (1944).

1 **Q. From a finance perspective, why is it important that the Missouri**
2 **Public Service Commission allow Ameren Missouri the opportunity to earn its cost of**
3 **capital?**

4 A. By earning its cost of capital, Ameren Missouri will generate strong cash
5 flows and maintain the financial strength and stability necessary to, among other things,
6 attract investment to finance the business and provide reliable, high quality service to its
7 customers at a reasonable cost. Strong cash flows and overall financial health allow the
8 Company to offer an attractive and competitive, risk-adjusted return to equity investors and
9 also to maintain strong credit metrics and investment grade credit ratings. Those strong
10 metrics and ratings, as discussed further below, afford the Company ongoing access to debt
11 capital at a reasonable cost and under reasonable terms and conditions.

12 **IV. CAPITAL STRUCTURE AND CREDIT RATINGS, GENERALLY**

13 **Q. What is a utility capital structure?**

14 A. Capital structure refers to the mix of debt and equity capital that a utility,
15 such as Ameren Missouri, uses to finance its assets. Because they must support long-lived
16 assets, utility capital structures tend to include long-term securities, generally a
17 combination of common equity and long-term debt. However, there are other forms of
18 capital, such as preferred equity (which has both equity-like and debt-like elements), that
19 also may be a component of a utility's capital structure.

20 **Q. How do you believe the reasonableness of a public utility's capital**
21 **structure should be evaluated?**

22 A. In evaluating the reasonableness of a public utility's capital structure, one
23 should determine whether the capital structure is consistent with the financial strength

1 necessary for the utility to access the capital markets under reasonable terms under most
2 economic conditions, and if so, whether the cost of capital resulting from such a structure
3 is reasonable. While debt, relative to equity, is generally a less expensive form of capital
4 due in part to the tax deductibility of interest expense, heightened leverage can increase a
5 firm's probability of default and the related costs of financial distress. Beyond a certain
6 point, dependence on debt as a source of capital increases the risk associated with a utility's
7 cash flow, which correspondingly increases a utility's overall cost of capital.

8 **Q. Does Ameren Missouri seek to maintain a certain capital structure?**

9 A. Yes. Ameren Missouri's capital structure is composed of debt, preferred
10 stock, and common equity. Ameren Missouri specifically and continuously maintains the
11 balance of debt and equity in its capital structure to minimize its overall cost of capital and,
12 at the same time, maintains financial strength and stability. Maintaining financial strength
13 and stability includes supporting strong credit metrics and securing investment grade credit
14 ratings that will allow the Company to attract new capital at a reasonable cost and on
15 reasonable terms, and ensure that Ameren Missouri has access to the capital markets under
16 varying economic conditions.

17 **Q. Why is it necessary for Ameren Missouri to attract new capital?**

18 A. As a public utility, Ameren Missouri is required to continuously provide
19 safe and adequate service to its customers. Ameren Missouri needs substantial capital to
20 do this. It is essential that Ameren Missouri be able to attract the capital necessary to meet
21 these significant service and investment commitments.

22 **Q. Why is it necessary that Ameren Missouri be able to access the capital**
23 **markets during all economic conditions?**

1 A. Ameren Missouri's service commitments to its customers do not cease in
2 an economic downturn. Ameren Missouri must be able to attract the capital necessary to
3 meet those commitments under varying economic conditions, including periods of market
4 distress, when access to the capital markets may be severely limited for weaker-rated
5 issuers.

6 **Q. How does a balanced capital structure help ensure Ameren Missouri's**
7 **access to the capital it needs at a reasonable cost and during market fluctuations?**

8 A. Capital structure is one metric that credit rating agencies evaluate when
9 assessing an issuer's credit profile and assigning a credit rating. A balanced capital
10 structure signals a certain degree of financial health and mitigates the risk of financial
11 distress. Capital structure also influences other credit metrics on which credit ratings are
12 based. Credit ratings, in turn, are used by investors to evaluate the creditworthiness of an
13 issuer and make investment decisions.

14 **Q. What is a credit rating?**

15 A. A credit rating is an evaluation by a credit rating agency of a company's
16 ability to meet its financial obligations in a timely manner. It reflects the opinion of the
17 rating agency of the overall creditworthiness of the company based on the company's
18 relevant business and financial risks. A credit rating can be specific to a particular security
19 or to a particular securities issuer.

20 **Q. Why do credit ratings matter?**

21 A. Credit ratings have a significant effect on a company's ability to attract debt
22 capital, and in extreme cases, whether the company can access debt capital at all. Credit
23 ratings also impact the pricing and contractual terms at which a company may issue debt

1 securities. This affects the cost of capital and, in Ameren Missouri's case, the rates
2 customers must pay for utility service. In general, a stronger credit rating typically enables
3 a utility to obtain debt capital at a lower cost, to the benefit of customers.

4 **Q. How are credit ratings determined?**

5 A. The two primary credit rating agencies are Standard and Poor's Ratings
6 Services ("S&P") and Moody's Investor Services ("Moody's"). In assessing a company's
7 ability to meet its financial obligations, S&P and Moody's generally - but each to varying
8 degrees - consider both qualitative factors affecting the company's business risk and
9 quantitative factors affecting its financial risk.

10 **Q. How do a company's credit metrics affect its credit ratings?**

11 A. Credit metrics factor significantly into the credit rating agencies'
12 evaluations of a company's credit profile and the rating agencies' assignment of credit
13 ratings. The credit rating agencies generally deem strong credit metrics necessary to
14 maintain investment grade credit ratings.

15 **Q. What is an "investment grade" credit rating?**

16 A. An investment grade credit rating is a rating of BBB- or stronger from S&P
17 or a rating of Baa3 or stronger from Moody's. An investment grade credit rating implies a
18 certain degree of financial strength and stability and reasonable assurance of an issuer's
19 ability to satisfy its debt obligations. Investment grade credit ratings, therefore, tend to
20 attract capital to a company. For Ameren Missouri, investment grade credit ratings provide
21 reasonable assurance that it will be able to access the capital markets on a timely basis, at
22 a reasonable cost, and under reasonable terms and conditions. Again, for Ameren Missouri,
23 ongoing access to the debt capital markets benefits its customers by supporting its service

1 obligations, and lower debt costs achievable with investment grade credit ratings contribute
2 to lower utility rates.

3 **Q. Does Ameren Missouri target investment grade issuer credit ratings**
4 **when it maintains its capital structure?**

5 A. Yes. As explained, access to sufficient capital is critical to Ameren
6 Missouri's financial health and stability and, in turn, to the service that its customers
7 receive and the rates customers pay for that service. Therefore, in my opinion, Ameren
8 Missouri's issuer credit ratings should be securely investment grade (at least two notches
9 stronger than S&P's and Moody's weakest investment grade issuer credit rating) to
10 continue to support the financial integrity of the utility and ensure its access to necessary
11 capital at a reasonable cost and on reasonable terms in both strong and weak markets.

12 **Q. What are Ameren Missouri's current issuer credit ratings?**

13 A. Currently, Ameren Missouri's issuer credit ratings at Moody's and S&P are
14 Baa1 and BBB+, respectively. Both credit rating agencies report stable outlooks for
15 Ameren Missouri's credit ratings.

16 **Q. Do you consider Ameren Missouri's current issuer credit ratings to be**
17 **securely investment grade?**

18 A. Yes.

19 **V. AMEREN MISSOURI'S ACTUAL & FORECASTED CAPITAL STRUCTURE**

20 **Q. What was Ameren Missouri's capital structure as of December 31,**
21 **2018, the end of the proposed test year in this case?**

22 A. Table 1 shows Ameren Missouri's actual capital structure as of December
23 31, 2018:

Table 1

As of December 31, 2018

	Balance	%
Long-term debt	\$ 3,670,685,626	46.46%
Short-term debt	\$ -	0.00%
Preferred stock	\$ 81,827,509	1.04%
Common equity	\$ 4,148,988,496	52.51%
Total	\$ 7,901,501,631	100.00%

1 **Q. What capital structure are you recommending in this case?**

2 A. I recommend that Ameren Missouri's actual capital structure as of the
3 recommended true-up date of December 31, 2019, be used in this case.

4 **Q. How do you expect Ameren Missouri's capital structure to change**
5 **when the balances are trued-up through December 31, 2019?**

6 A. Based on current projections, I expect Ameren Missouri's capital structure
7 as of the December 31, 2019 true-up date to be as follows in Table 2:

Table 2

	As of December 31, 2018		Projected as of December 31, 2019	
	Balance	%	Balance	%
Long-term debt	\$ 3,670,685,626	46.46%	\$ 3,884,667,302	47.10%
Short-term debt	\$ -	0.00%	\$ -	0.00%
Preferred stock	\$ 81,827,509	1.04%	\$ 81,827,509	0.99%
Common equity	\$ 4,148,988,496	52.51%	\$ 4,281,625,197	51.91%
Total	\$ 7,901,501,631	100.00%	\$ 8,248,120,008	100.00%

8 Note that the equity percentage as of December 31, 2019, is expected to be 51.91%,
9 compared to the equity percentage at December 31, 2018, of 52.51%.

1 **Q. How does the recommended capital structure compare to the**
2 **Company's capital structure in recent years?**

3 A. Ameren Missouri's proposed capital structure is consistent with recent years
4 as its common equity ratio for ratemaking purposes of 51.91% is within the 51.81% -
5 52.51% range of such ratios between the years ended 2016 and 2018.

6 **Q. What constitutes a healthy capital structure for a regulated utility?**

7 A. Again, a healthy capital structure for a regulated utility is one that results in
8 a reasonable balance between the overall cost of capital and the expected costs of financial
9 distress.

10 **Q. Why do you believe that the capital structure recommended in your**
11 **testimony is appropriate?**

12 A. The capital structure recommended in my testimony reflects a reasonable
13 balance between cost of capital and financial strength and stability. It allows Ameren
14 Missouri to take advantage of the lower costs of debt financing without elevating the risk
15 of default and the related costs of financial distress to an unreasonable level that would
16 impair the creditworthiness and financial integrity of the Company.

17 **VI. BALANCE AND EMBEDDED COST OF LONG-TERM DEBT**

18 **Q. How was the balance of long-term debt determined?**

19 A. The long-term debt balance of \$3,884,667,302 reflected in the proposed
20 Ameren Missouri capital structure represents the projected total carrying value of the
21 Company's long-term debt as of December 31, 2019. As detailed in Schedule DTS-D2, the
22 carrying value of long-term debt was computed using the net proceeds method, which
23 adjusts the face amount of long-term debt to properly account for unamortized discounts

1 and premiums, long-term debt issuance expenses, and any gains or losses incurred in
2 connection with long-term debt redemptions.

3 **Q. Did you make any adjustments to Ameren Missouri's actual long-term**
4 **debt balance in determining the long-term debt balance proposed in this proceeding?**

5 A. I did not include in the proposed long-term debt balance the Company's
6 obligations under capital leases related to the Chapter 100 financing of its Peno Creek (City
7 of Bowling Green) and Audrain County gas-fired generating facilities. These transactions
8 and related capital leases did not generate any proceeds, nor were they a source of new
9 capital for the Company. This treatment is consistent with that reflected in the Company's
10 previous rate case orders.

11 **Q. How was the embedded cost of long-term debt determined?**

12 A. As reflected in Schedule DTS-D2, the embedded cost of long-term debt of
13 4.57% was computed by dividing forecasted annualized interest expense as of December
14 31, 2019, by the forecasted long-term debt carrying value as of such date.

15 Included in Ameren Missouri's forecasted long-term debt balance as of December
16 31, 2019, are multiple series of environmental improvement bonds, aggregating to \$207.5
17 million of total outstanding principal balance as of such date, that have been in a variable
18 rate mode whereby rates are reset by a Dutch auction process every 35 days. Ameren
19 Missouri is currently in the process of remarketing these bonds, under which the interest
20 rate mode on the bonds will change to a fixed rate for the remaining life of the instruments.
21 The actual interest rates and expenses on these bonds, as well as all other elements of the
22 embedded cost related to all of the Company's other long-term debt, will be updated as part
23 of the true-up.

1 issuance, including discounts, premiums, expenses, and any losses incurred in connection
2 with redeeming prior preferred stock series. Unlike similar costs incurred in connection
3 with the issuance and redemption of long-term debt, these expenses are not amortized over
4 the life of the security due to the perpetual nature of preferred stock. Nonetheless, it is
5 important and appropriate to consider these costs in order to accurately quantify the true
6 economic cost of Ameren Missouri's preferred stock and establish a fair overall rate of
7 return for the Company.

8 **IX. BALANCE AND COST OF COMMON EQUITY**

9 **Q. How was the balance of Ameren Missouri's common equity**
10 **determined?**

11 A. The common equity balance of \$4,281,625,197 reflected in Ameren
12 Missouri's proposed capital structure reflects Ameren Missouri's forecasted book value of
13 common equity as of December 31, 2019. Common equity is generally reflected net of
14 accumulated other comprehensive income ("AOCI"), but AOCI is projected to be zero as
15 of December 31, 2019.

16 **Q. How was the cost of common equity determined?**

17 A. In his testimony in this case, Mr. Hevert states that the cost of common
18 equity capital for Ameren Missouri's integrated electric operations is currently within the
19 range of 9.8% to 10.6% and recommends that the Commission allow Ameren Missouri the
20 opportunity to earn a return on common equity of 9.95%. As a consequence, in forecasting
21 Ameren Missouri's overall weighted average cost of capital for its electric business, I have
22 assumed a cost of common equity of 9.95%, and Ameren Missouri requests that the
23 Commission approve a return on common equity of 9.95% in this case.

1

X. FAIR RATE OF RETURN

2

Q. What do you propose is a fair overall rate of return for Ameren

3

Missouri in this case?

4

A. I believe a return of 7.359%, which is equivalent to Ameren Missouri's

5

forecasted weighted average cost of capital as of December 31, 2019, is fair and reasonable.

6

The calculation of the Company's forecasted weighted average cost of capital, considering

7

the debt, preferred stock, and common equity balances and costs set forth above, is

8

reflected in Schedule DTS-D1.

9

Q. Does this conclude your direct testimony?

10

A. Yes, it does.

APPENDIX A

STATEMENT OF QUALIFICATIONS

DARRYL T. SAGEL

1 My name is Darryl T. Sagel. My business address is One Ameren Plaza, 1901
2 Chouteau Avenue, St. Louis, Missouri, 63103. I am employed by Ameren Services
3 Company as Vice President and Treasurer. As Treasurer, I am responsible for all areas of
4 the treasury functional area of Ameren Corporation and its subsidiaries, including
5 corporate finance, cash and investment management, insurance, credit risk management,
6 investor services and corporate development. Within the areas of corporate finance, I am
7 responsible for, among other things, managing Ameren Corporation's and its subsidiaries'
8 capital raising initiatives and capital structure, including their short-term and long-term
9 financing activities, such as debt and equity issuances and credit facility arrangements. I
10 am also responsible for monitoring and managing Ameren's and its subsidiaries' liquidity
11 positions, key credit metrics, and debt agreement compliance, overseeing relationships
12 with credit rating agencies and banks, and monitoring capital markets for key
13 developments, emerging risks, and opportunities, among other corporate finance-related
14 activities.

15 I received my Bachelor of Arts degree in Quantitative Economics in 1994 from
16 Stanford University.

17 I have more than 25 years of experience in various finance and strategy roles. Upon
18 graduating from college in 1994, I joined the Investment Research Department at Goldman
19 Sachs, & Co. based in New York City, where I aided in the research coverage of
20 approximately 100 domestic and international electric and gas utility companies. In 1996,

1 I transferred to Goldman Sachs' Investment Banking Division, within which I advised
2 energy and utility clients in the U.S. and internationally in raising capital and structuring
3 merger and acquisition (M&A) transactions. In 2000, I took a position at Morgan Stanley
4 & Co., working within the company's Mergers & Acquisitions group and focusing
5 predominantly on assisting global power and utilities clients on M&A-related matters.
6 After over three years on the Morgan Stanley investment banking platform, in 2003, I
7 moved to Lazard Freres & Co. (Lazard), where I continued to originate and execute
8 financial advisory assignments for a broad range of domestic and international power and
9 utility companies and alternative energy companies. For several years during my tenure, I
10 was a Partner and co-head of Lazard's North American Power & Utilities practice. In 2010,
11 I left Lazard to join Rothschild Inc. to head its North American Power & Utilities group.
12 In total, I amassed over 18 years of experience as an investment banker covering the broad
13 power & utilities sector, working on a wide array of transformative and incremental M&A
14 transactions, corporate restructurings and capital raising initiatives. In mid-2012, I joined
15 Ameren Services as Director of Corporate Development, overseeing the company's M&A
16 functional area, as well as originating and executing direct investment and corporate
17 partnership opportunities. I was promoted to Assistant Vice President, Corporate
18 Development in 2016 and again promoted to Vice President, Corporate Development in
19 2017. In July 2018, I inherited oversight of all of Ameren's treasury functions and my title
20 changed to Vice President and Treasurer.

**Union Electric Company d/b/a Ameren Missouri
Capital Structure / Weighted Average Cost of Capital**

at 12/31/2019:

CAPITAL COMPONENT	AMOUNT	PERCENT OF TOTAL	COST	WEIGHTED COST
Long-Term Debt	\$3,884,667,302	47.098%	4.572%	2.153%
Short-Term Debt	\$0	0.000%	0.000%	0.000%
Preferred Stock	\$81,827,509	0.992%	4.180%	0.041%
Common Equity	\$4,281,625,197	51.910%	9.950%	5.165%
TOTAL	\$8,248,120,008	100.000%		7.359%

**Union Electric Company d/b/a Ameren Missouri
Embedded Cost of Long-Term Debt**

at December 31, 2019

SERIES C1	COUPON (a) C2	ISSUED C3	MATURITY C4	PRINCIPAL C5	FACE AMOUNT OUTSTANDING C6	UNAMORTIZED BALANCES			CARRYING VALUE C10	ANNUALIZED COUPON INT.(b) C11	ANNUALIZED AMORTIZATION			ANNUALIZED EXPENSE C15	EMBEDDED COST C16
						DISC/(PREM) C7	ISSUE EXP. C8	LOSS C9			DISC/(PREM) C12	ISSUE EXP C13	LOSS C14		
Senior Secured Notes	5.000%	27-Jan-05	01-Feb-20	\$85,000,000	\$85,000,000	\$3,740	\$3,971			\$4,250,000	\$44,880	\$47,652			
Senior Secured Notes	3.500%	04-Apr-14	15-Apr-24	\$350,000,000	\$350,000,000	\$26,775	\$1,235,628			\$12,250,000	\$6,300	\$290,736			
Senior Secured Notes	2.950%	15-Jun-17	15-Jun-27	\$400,000,000	\$400,000,000	\$973,890	\$2,520,000			\$11,800,000	\$129,852	\$336,000			
First Mortgage Bonds	5.450%	15-Oct-93	01-Oct-28	\$44,000,000	\$5,000	\$9	\$18			\$273	\$1	\$2			
First Mortgage Bonds	3.500%	06-Mar-19	15-Mar-29	\$450,000,000	\$450,000,000	\$351,263	\$3,328,958			\$15,750,000	\$38,250	\$362,500			
Senior Secured Notes	5.500%	10-Mar-03	15-Mar-34	\$184,000,000	\$184,000,000	\$942,210	\$826,956			\$10,120,000	\$66,120	\$58,032			
Senior Secured Notes	5.300%	21-Jul-05	01-Aug-37	\$300,000,000	\$300,000,000	\$558,728	\$1,638,415			\$15,900,000	\$31,776	\$93,180			
Senior Secured Notes	8.450%	20-Mar-09	15-Mar-39	\$350,000,000	\$350,000,000	\$747,747	\$2,230,767			\$29,575,000	\$38,844	\$115,884			
Senior Secured Notes	3.900%	11-Sep-12	15-Sep-42	\$485,000,000	\$485,000,000	\$1,934,478	\$3,664,479			\$18,915,000	\$85,032	\$161,076			
Senior Secured Notes	3.650%	06-Apr-15	15-Apr-45	\$250,000,000	\$250,000,000	\$496,617	\$2,353,098			\$9,125,000	\$19,668	\$93,192			
Senior Secured Notes	3.650%	23-Jun-16	15-Apr-45	\$150,000,000	\$150,000,000	\$657,207	\$1,543,482			\$5,475,000	\$26,028	\$61,128			
First Mortgage Bonds	4.000%	06-Apr-18	01-Apr-48	\$425,000,000	\$425,000,000	\$1,732,629	\$4,269,366			\$17,000,000	\$61,332	\$151,128			
First Mortgage Bonds	4.300%	15-Oct-19	15-Oct-49	\$340,000,000	\$340,000,000	\$0	\$3,748,785			\$14,620,000		\$125,833			
Environmental Improvement, Series 1992	2.640%	01-Dec-92	01-Dec-22	\$47,500,000	\$47,500,000		\$63,595			\$1,330,000		\$21,804			
Environmental Improvement, Series 1998 ABC	3.601%	04-Sep-98	01-Sep-33	\$160,000,000	\$160,000,000		\$757,844			\$6,098,000		\$55,452			
TOTAL LONG-TERM DEBT				\$4,020,500,000	\$3,976,505,000	\$8,425,293	\$28,185,362	\$55,227,043	\$3,884,667,302	\$172,208,273	\$548,083	\$1,973,599	\$2,877,804	\$177,607,759	4.572%

Carrying Value = Face Amount Outstanding less Unamortized Discount, Issuance Expenses, and Loss on Reacquired Debt

$$C10 = C6 - C7 - C8 - C9$$

Annualized Expense = Annual Coupon Interest plus Annual Amortization of Discount, Issuance Expenses, and Loss on Reacquired Debt

$$C15 = C11 + C12 + C13 + C14$$

Embedded Cost = Annualized Expense divided by Carrying Value

$$C16 = C15 / C10$$

(a) Coupon rate for variable rate auction securities reflects prevailing rates as of 4/10/19 and includes ongoing broker dealer fees.

(b) Annualized coupon interest (C11) includes annual bond insurance premiums, where applicable.

Note: Highlighted series reflects current estimates.

**Union Electric Company d/b/a Ameren Missouri
Cost of Short-term Debt**

MONTH C1	BALANCE OF SHORT-TERM DEBT (a) C2	BALANCE OF TOTAL CWIP C3	BALANCE OF CWIP ACCRUING AFUDC (b) C4	NET AMOUNT OUTSTANDING C5	INTEREST RATE C6
January 2019	\$197,125,528	\$501,196,633	\$505,503,381	\$0	--
February	\$495,025,000	\$676,676,459	\$703,743,517	\$0	--
March	\$54,750,000	\$728,512,483	\$757,652,982	\$0	--
April	\$179,895,173	\$789,450,223	\$821,028,232	\$0	--
May	\$230,652,804	\$628,507,432	\$653,647,729	\$0	--
June	\$342,182,335	\$531,464,673	\$552,723,260	\$0	--
July	\$237,912,472	\$553,002,460	\$575,122,558	\$0	--
August	\$95,815,289	\$584,438,197	\$607,815,725	\$0	--
September	\$262,729,632	\$624,975,992	\$649,975,032	\$0	--
October	\$84,699,176	\$661,282,559	\$687,733,861	\$0	--
November	\$62,728,636	\$606,397,916	\$630,653,833	\$0	--
December	\$154,096,065	\$507,060,118	\$527,342,523	\$0	--
AVERAGE	\$203,956,004	\$625,991,366	\$649,600,010	\$0	--

C5 Net Amount Outstanding = Balance of Short-Term Debt less Balance of CWIP Accruing AFUDC

C5 = C2 - C4

(a) Short-term debt amounts are net of cash and short-term investments. Negative amounts are excluded.

(b) CWIP accruing AFUDC is estimated to be 104% of CWIP for the months February through December 2019.

Note: Shaded figures reflects current estimates.

**Union Electric Company d/b/a Ameren Missouri
Embedded Cost of Preferred Stock**

at December 31, 2019

SERIES, TYPE, PAR C1	DIVIDEND C2	ISSUED C3	MATURITY C4	SHARES OUTSTANDING C5	PAR ISSUED/ OUTSTANDING C6	PREMIUM C7	ISSUANCE EXPENSE/DISCOUNT C8	NET PROCEEDS C9	ANNUAL DIVIDEND C10	EMBEDDED COST C11
\$3.50 Series, Perpetual, \$100 par	\$3.500	01-May-46	-	130,000	\$13,000,000	(\$910,000)	\$252,772	\$13,657,228	\$455,000	
\$3.70 Series, Perpetual, \$100 par	\$3.700	01-Oct-45	-	40,000	\$4,000,000	(\$70,000)	\$69,396	\$4,000,604	\$148,000	
\$4.00 Series, Perpetual, \$100 par	\$4.000	01-Nov-49	-	150,000	\$15,000,000	(\$384,000)	\$326,896	\$15,057,104	\$600,000	
\$4.30 Series, Perpetual, \$100 par	\$4.300	01-Jul-46	-	40,000	\$4,000,000			\$4,000,000	\$172,000	
\$4.50 Series, Perpetual, \$100 par	\$4.500	01-May-41	-	213,595	\$21,359,500	(\$825,000)	\$440,294	\$21,744,206	\$961,178	
\$4.56 Series, Perpetual, \$100 par	\$4.560	01-Nov-63	-	200,000	\$20,000,000	(\$266,000)	\$297,633	\$19,968,367	\$912,000	
\$4.75 Series, Perpetual, \$100 par	\$4.750	01-Oct-49	-	20,000	\$2,000,000			\$2,000,000	\$95,000	
\$5.50 Series, Perpetual, \$100 par	\$5.500	01-Oct-41	-	14,000	\$1,400,000			\$1,400,000	\$77,000	
TOTAL PREFERRED STOCK					\$80,759,500	(\$2,455,000)	\$1,386,991	\$81,827,509	\$3,420,178	4.180%

issuance expenses, discount/premium, and any loss incurred in acquiring/redeeming prior series are not amortized due to the perpetual nature of the company's preferred stock

Net Proceeds = Par Value Outstanding plus Premium less Issuance Expense and Discount

$$C9 = C6 + C7 - C8$$

Embedded Cost = Annual Dividend divided by Net Proceeds

$$C11 = C10 / C9$$