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Witness: *Seoung Joun Won, PhD*
Sponsoring Party: *MoPSC Staff*
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MISSOURI PUBLIC SERVICE COMMISSION
FINANCIAL AND BUSINESS ANALYSIS DIVISION
FINANCIAL ANALYSIS DEPARTMENT

SURREBUTTAL TESTIMONY

OF

SEOUNG JOUN WON, PhD

**THE EMPIRE DISTRICT ELECTRIC COMPANY,
d/b/a LIBERTY**

CASE NO. ER-2021-0312

Jefferson City, Missouri
January 2022

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SURREBUTTAL TESTIMONY**

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SEOUNG JOUN WON, PhD

**THE EMPIRE DISTRICT ELECTRIC COMPANY,
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1 valuation analysis on merger and acquisitions, etc. Please refer to Schedule SJW-s1, attached
2 to this Surrebuttal Testimony, for a list of my filed testimony with the Commission.

3 Q. On behalf of whom are you testifying in this proceeding?

4 A. I am testifying in this Surrebuttal Testimony before the Commission on behalf
5 of the Missouri Public Service Commission Staff (“Staff”).

6 Q. Are you familiar with his testimonies that Mr. Peter Chari previously submitted
7 in this case on behalf of the Staff?

8 A. Yes, I am. Mr. Chari is no longer employed at the Commission as of
9 January 2022. I am adopting the portion of Staff’s Cost of Service Report that were
10 authored by Mr. Chari and filed on October 29, 2021, and his Rebuttal Testimony filed on
11 December 20, 2021.

12 Q. What is the purpose of your surrebuttal testimony?

13 A. The purpose of my surrebuttal testimony is to respond to the rebuttal testimonies
14 of John J. Reed and David Murray. Mr. Reed sponsored testimony on behalf of The Empire
15 District Electric Company, d/b/a Liberty (“Empire” or the “Company”), an indirect,
16 wholly-owned subsidiary of Algonquin Power & Utilities Corp. (“APUC”), and Mr. Murray
17 sponsored testimony on behalf of the Office of the Public Counsel (“OPC”). Mr. Reed
18 responded to the authorized return on equity (“ROE”) recommendation that Staff witness,
19 Peter Chari, sponsored in the Staff’s Cost of Service Report (“COS Report”). Mr. Murray
20 responded to the authorized ROE and capital structure that Staff witness, Peter Chari, sponsored
21 in the Staff Report.

22 **I. EXECUTIVE SUMMARY**

23 Q. What is Staff’s main area of disagreement with Mr. Reed’s rebuttal testimony?

1 A. Staff disagrees with Mr. Reed’s assertion that Staff does not rely on its cost
2 of equity (“COE”) analyses to support its authorized ROE recommendation for Empire.
3 Mr. Reed alleges that Staff “essentially disregards the results of his ROE estimation
4 methodologies when he [Peter Chari] establishes a recommended range for Empire from
5 9.25 percent to 9.70 percent”.

6 Q. What are Staff’s main area of disagreements with Mr. Murray’s rebuttal
7 testimony?

8 A. Staff maintains its disagreement with Mr. Murray’s position that current market
9 conditions do not support increasing authorized ROE from the 9.25% that the Commission set
10 for Empire in its 2019 rate case to 9.50% recommended by the Staff. Mr. Murray’s new
11 recommended capital structure does not change Staff’s finding that Empire’s book capital
12 structure is the more economical capital structure to use to set Empire’s ROR in this proceeding.

13 **II. CORRECTION**

14 Q. Is there anything you need to correct in Staff’s COS Report and Mr. Chari’s
15 rebuttal testimony?

16 A. Yes. Staff would like to correct its inconsistent statements in the COS Report
17 and Mr. Chari’s rebuttal testimony which made reference to Staff’s recommended ROE range
18 of reasonableness as 9.25% to 9.70% and 9.25% and 9.80%, respectively. Staff’s correct range
19 of reasonableness for its recommended ROE is 9.25% to 9.75%, as indicated in Staff’s
20 Schedule PC-11 in Appendix 2 of Staff’s COS Report.

21 **III. RESPONSE TO MR. REED’S REBUTTAL TESTIMONY**

22 Q. Please explain your disagreement with Mr. Reed’s position that Staff’s ROE
23 recommendation is not based on the results of its ROE estimation models.

1 A. Mr. Reed’s position is a complete misrepresentation of how Staff conducted its
2 COE analysis, and in turn recommended its authorized ROE. While Mr. Reed appears to
3 correctly state that Staff conducted its ROE analysis through a comparative analysis method,
4 he baselessly charges that Staff’s ROE recommendation is not based on the results of its COE
5 estimation models. As Staff witness, Peter Chari, stated in Staff’s COS Report and his Rebuttal
6 Testimony, Staff’s recommendation was based on its COE analysis that showed that COE
7 increased by 42 basis points (“bps”) between the period of the Empire’s last rate case, Case No.
8 ER-2019-0374, and the current rate case. To arrive at the conclusion that COE increased by up
9 to 42 bps, Staff relied on the current COE estimates (8.30%) of its constant-growth discounted
10 cash flow (“DCF”) model which shows that COE is up to 42 bps higher than the DCF COE
11 (7.88%) estimate in the Empire 2019 rate case. One wonders why Mr. Reed would conclude
12 that Staff did not rely on the results of its COE models even with this clear evidence to the
13 contrary. Mr. Reed’s conclusion that Staff did not rely on its analyses seems to be based on the
14 fact that Staff’s DCF COE estimates are much less than its recommended authorized ROE. It is
15 Staff’s position that COE estimates do not need to be the same as authorized ROE, as COE and
16 authorized ROE are two different concepts. In its analysis, Staff distinguishes between COE
17 and authorized ROE. COE is a market-determined value, whereas authorized ROE is a
18 commission-determined value. Objectively, estimated COEs have recently been much lower
19 than authorized ROEs, with some COE estimates being around 7%. While Staff does not delve
20 into the reasons why COEs have been much lower than prevailing authorized ROEs, Staff’s
21 comparative analysis methodology appropriately informs the Commission of the changes in
22 COE since the Commission’s last authorized ROE, as a way to determine a fair and reasonable
23 authorized ROE for Empire. In his rebuttal testimony, Mr. Reed does not challenge the validity

1 of Staff’s comparative analysis methodology; Mr. Reed only raises issues with certain specific
2 aspects of Staff’s analysis. The following are the specific issues that Mr. Reed raises with
3 Staff’s analysis:

- 4 1) Staff’s two-step DCF does not follow current FERC methodology;
- 5 2) Inputs to the DCF model;
- 6 3) Inconsistency of Staff’s comparative analysis methodologies; and,
- 7 4) Authorized ROE comparison.

8 Q. Mr. Reed alleges that Mr. Chari’s ‘Two-Step DCF’ analysis does not follow
9 the Federal Energy Regulatory Commission’s (“FERC”) current methodology.¹ Is this a
10 valid allegation?

11 A. No. While Staff acknowledges Mr. Reed’s concern that Staff’s DCF model does
12 not exactly follow the FERC’s current two-step DCF methodology, Staff has not claimed that
13 its constant-growth DCF model is the same as the FERC’s two-step DCF model in every
14 respect. Staff’s position on the constant-growth DCF model is that exclusive use of short-term
15 analysts’ growth rates in the DCF model is inappropriate.

16 Dr. Roger A. Morin, in his book *New Regulatory Finance* posits, “It is useful to
17 remember that eventually all company growth rates, especially utility service growth rates,
18 converge to a level consistent with the growth rate of the aggregate economy [gross domestic
19 product (“GDP”) growth rate].”² Until its order in Opinion 569-A in May 2020,
20 FERC recommended adjusting DCF growth rates by combining analysts’ estimated

¹ On page 30, John J. Reed’s Rebuttal Testimony.

² On page 302, Roger A. Morin, *New Regulatory Finance*.

1 earnings per share (“EPS”) with long-term GDP growth rates at two-thirds analysts’ EPS plus
2 one-third long-term GDP growth rates.

3 It is interesting that Mr. Reed does not dispute Staff’s position that analysts’ estimated
4 EPS growth rates are not appropriate for use exclusively in the constant-growth DCF model.
5 Mr. Reed did not adjust the short-term EPS growth rates he used in his constant-growth DCF
6 model to reflect the perpetual assumption in the constant-growth DCF model. Not adjusting
7 the short-term growth rates for the perpetual assumption in the constant-growth DCF model
8 caused Mr. Reed’s DCF COE estimates to be unreasonably high.

9 Q. Mr. Reed claims to correct Mr. Chari’s DCF results to reflect the FERC’s current
10 approach on DCF growth rates, to show how Staff’s comparative analysis would be different.³
11 Do you agree with Mr. Reed’s corrections?

12 A. No. Firstly, Mr. Reed cites incorrect COE estimates from the Empire rate case
13 for comparison with the current rate case COE estimates. The correct COE estimate, as stated
14 in Staff’s COS Report, for the Empire 2019 rate case, is 7.88%, not 7.74% as cited by Mr. Reed.
15 To maintain consistency with the current DCF model, Staff recalculated its 2019 DCF COE
16 estimates using the same approach used in the current rate case to estimate growth rates and the
17 result is a 42 bps, not 75 bps, increase in the COE from the Empire 2019 rate case to the current
18 rate case.

19 Secondly, as Staff already stated, the approach to estimating growth rates does not
20 necessarily need to be identical to FERC’s approach. Even if Staff had adopted the current
21 FERC approach of using 80% short-term analysts’ growth rates plus 20% long-term GDP

³ On pages 30-31, John J. Reed’s Rebuttal Testimony.

1 growth rates, Staff's analysis would have shown exactly the same result, that COE increased
2 by 42 bps since the period of the Empire 2019 rate case analysis.

3 Just as with Staff's original analysis using two-thirds (2/3) multiplied by analysts'
4 short-term growth estimates plus one-third (1/3) multiplied by long-term GDP growth rate
5 estimate, the current FERC approach using 80% and 20% weights for short-term analysts'
6 growth estimates and long-term GDP growth estimates, respectively, to estimate DCF model
7 growth rates indicates that COE increased by 42 bps.⁴

8 Q. Mr. Reed argues that Mr. Chari's current COE estimate cannot be compared to
9 the COE estimate from the Empire 2019 rate case because the DCF models used in the two
10 cases are inconsistent.⁵ How does Staff respond?

11 A. It is incorrect to say that Staff's COE model from the Empire 2019 rate case is
12 inconsistent with the current rate case COE model. As Staff has already pointed out, to maintain
13 consistency, Staff recalculated the Empire 2019 rate case COE using the same approach used
14 in the current rate case. Note that Staff's recalculated COE estimate for the Empire 2019 rate
15 case is 7.88%, not the 7.74% that Mr. Reed cited.⁶

16 Q. Mr. Reed takes issue with Mr. Chari's partial adjustment of the Commission's
17 current 9.25% authorized ROE for purposes of recommending an ROE for Empire in this case,
18 charging that the partial adjustment is inconsistent with how Staff adjusted the ROE in the
19 Empire 2019 rate case.⁷ How does Staff respond?

20 A. Due to unstable and fast changing economic conditions characterized by
21 uncertainty about inflation, it is reasonable to increase the authorized ROE by only 25 bps

⁴ On page 5, Staff COS Report.

⁵ On page 32, John J. Reed's Rebuttal Testimony.

⁶ On page 5, Staff COS Report.

⁷ On page 6, John J. Reed's Rebuttal Testimony.

1 instead of the full COE change of 42 bps. It is Staff's position that the current fast changing
2 economic conditions will likely settle down to a lower COE change within the range of
3 Staff's reasonable estimates of up to 42 bps. There is nothing in Staff's past ROE adjustments
4 that suggest that the only way to adjust the Commission's authorized ROE is by the full
5 amount of the calculated COE change, as Mr. Reed seems to suggest. What Staff did is akin,
6 although for different reasons, to what Mr. Reed did when he recommended an authorized ROE
7 range of 9.50% to 10.40%, even though his COE estimates ranged from as low as 8.32% to as
8 high as 12.55%.⁸

9 Q. Mr. Reed suggests that Mr. Chari's COE estimates are low because the dividend
10 yields and growth rates used in Staff's DCF model are too low.⁹ Is he correct?

11 A. No. Staff's dividend yields are consistent with the current market conditions
12 characterized by high stock prices. In a situation where stock prices rise higher than dividends,
13 the result is lower dividend yield, which consequently result in lower COE, all else the same.
14 Mr. Reed's argument that current high stock prices are not reflective of the expectation that
15 interest rates are going to rise and consequently cause stock prices to fall, run contrary to the
16 efficient market hypothesis ("EMH") theory. EMH theory states that market share prices are
17 reflective of all the publicly available information. It is therefore reasonable to assume that the
18 current dividend yields and growth rates are reflective of all the publicly available information,
19 including the expectation of rising interest rates.

20 On growth rates, Mr. Reed's argument that the long-term GDP growth rate used by Staff
21 in its DCF growth rate is too low is baseless. Staff used long-term GDP growth rate estimates

⁸ On page 5, John J. Reed's Direct Testimony.

⁹ On page 33, John J. Reed's Rebuttal Testimony.

1 from reputable sources such as the Congressional Budget Office (“CBO”), the Federal Reserve
2 (“Fed”), and the U.S. Energy Information Administration (“EIA”). The reasonable long-term
3 GDP growth rate is 3.83%, which is the average of estimates from the three aforementioned
4 sources.¹⁰ Staff’s 3.83% long-term GDP growth rate contrasts with Mr. Reed’s unreasonably
5 high long-term GDP growth rate of 5.49%.

6 Q. Mr. Reed argues that Staff should have considered only vertically-integrated
7 electric utilities, not all electric utilities, when testing the reasonableness of Staff’s authorized
8 ROE recommendation.¹¹ What is Staff’s response?

9 A. Staff acknowledges Mr. Reed’s concern; however, Staff does not think that it
10 would make a material difference whether Staff considered all the authorized electric
11 utilities or just the vertically-integrated utilities. In fact, Staff provided granular data on this
12 point in its rebuttal testimony. Staff’s recommended authorized ROE of 9.50% is only 16 bps
13 lower than the national average for vertically-integrated utilities, in the 12 months ending
14 October 31, 2021, authorized ROE of 9.66%. Mr. Reed’s recommended authorized ROE
15 of 10.00% is 34 bps higher than the national average for vertically-integrated utilities in the
16 same period.

17 **IV. RESPONSE TO MR. MURRAY’S REBUTTAL TESTIMONY**

18 Q. Has Mr. Murray provided any new information to cause Staff to change its ROE
19 recommendation?

20 A. No. Mr. Murray essentially repeated his position that because utility cost of
21 capital has been in a declining trend over the long term, there is no reason to increase Empire’s

¹⁰ On page 9, Staff COS Report.

¹¹ On page 38, John J. Reed’s Rebuttal Testimony.

1 authorized ROE higher than the 9.25% that the Commission set in the Empire 2019 rate case.¹²
2 Staff finds Mr. Murray's position unreasonable because he conveniently chooses to analyze the
3 changes in cost of capital within a broad and undefined timeframe. While it may be true that
4 cost of capital has, overall, been in a declining trend over the long term, it is indisputable that
5 capital market conditions since the Empire 2019 rate case indicate higher COEs and
6 consequently, higher authorized ROEs. As Staff explained in its rebuttal testimony,
7 Mr. Murray's analysis showed that cost of capital increased since the Empire 2019 rate case.¹³
8 Since Mr. Murray acknowledges that it is appropriate to consider the Commission's allowed
9 ROE of 9.25% in the Empire 2019 rate case, it should mean that the relevant period to examine
10 COE change is the period since the Empire's 2019 rate case, not the broad and undefined period
11 that Mr. Murray has in his mind.¹⁴

12 Q. Does Mr. Murray change his capital structure recommendation in his rebuttal
13 testimony?

14 A. Yes. In his direct testimony, Mr. Murray recommended a capital structure
15 composed of 47.50% common equity and 52.50% long-term debt.¹⁵ Mr. Murray now
16 recommends a capital structure composed of 48.25% common equity and 51.75% long-term
17 debt.¹⁶

18 Q. Does Mr. Murray offer an explanation as to why he changed his capital structure
19 recommendation?

¹² On page 2, David Murray's Rebuttal Testimony.

¹³ On page 15, Peter Chari's Rebuttal Testimony.

¹⁴ On page 41, David Murray's Rebuttal Testimony.

¹⁵ On page 4, David Murray's Direct Testimony.

¹⁶ On page 6, David Murray's Rebuttal Testimony.

1 A. Not clearly. Although Mr. Murray claims that his changed capital structure
2 recommendation was a result of the updated capital structure information that he considered as
3 of the update date of June 30, 2021, there is nothing in the new capital structure information
4 that seems to be the basis of Mr. Murray's change in capital structure recommendation.
5 Mr. Murray provided updated information that indicated that Liberty Utilities, Co.'s ("LUCo")
6 equity ratio changed from 44.11% as of September 30, 2019, to 51.50% as of March 31, 2021,
7 and then to 47.28% as of June 30, 2021. Mr. Murray also provided updated information on
8 Empire's per book capital structure indicating that Empire's capital structure varied widely,
9 from 45% to 60%, over the test year period and update period. It is important to note that even
10 though Mr. Murray increased his equity ratio recommendation from 47.50% to 48.25%, he
11 maintains that LUCo's capital structure is still the appropriate capital structure to use for
12 Empire's ratemaking purposes. Staff disagrees that LUCo's capital structure is the appropriate
13 capital structure for setting Empire's ROR because LUCo's capital structure is not the most
14 economical capital structure.

15 It looks like Mr. Murray's new recommended capital structure is based on the average
16 of 47.50%, his direct testimony recommendation, and 49.00%, which is what Mr. Murray
17 believes to be the upper limit of what Empire's equity ratio should be.¹⁷

18 Q. Mr. Murray claims that Empire's equity ratio should be limited to 49% because,
19 based on Condition 4 of the merger Case No. EM-2016-0213, any equity ratio higher than 49%
20 is uneconomical.¹⁸ Does Staff agree?

¹⁷ $48.25\% = (47.50\% + 49.00\%) / 2$.

¹⁸ On page 6, David Murray's Rebuttal Testimony.

1 A. No. Staff's interpretation of Condition 4 of the merger Case No. EM-2016-0213
2 differs from Mr. Murray's interpretation. Condition 4 of the merger Case No. EM-2016-0213
3 says that Empire shall not seek a higher cost of capital as a result of APUC's acquisition of
4 Empire. Cost of capital is not affected only by the equity ratio; various other factors such as
5 cost of debt, cost of equity, and general economic conditions affect cost of capital. It is rather
6 convenient for Mr. Murray to pinpoint the equity ratio as the sole cause of change in cost of
7 capital. Condition 4 of the merger Case No. EM-2016-0213 should be considered in relation to
8 Condition 5, which states that, as quoted by Mr. Murray, if the entities on which Empire relies
9 for financing have a more economical capital structure than Empire's sponsored capital
10 structure, then APUC shall provide evidence as to its recommendation is justified. Essentially,
11 Condition 5 of the merger Case No. EM-2016-0213 provided for using the most economical
12 capital structure, among the entities that Empire relies on for financing, for Empire's
13 ratemaking. Mr. Murray's recommended capital structure for Empire's ratemaking in the
14 Empire 2019 rate case was guided by this condition. Mr. Murray, in the Empire 2019 rate case,
15 chose the appropriate capital structure for Empire's ratemaking based on which capital structure
16 among APUC, LUCo, and Empire had the lowest equity ratio. It is curious that Mr. Murray
17 decided to abandon the approach he used in the Empire 2019 rate case to recommend Empire's
18 capital structure in this proceeding.

19 Q. Has Staff changed its capital structure recommendation?

20 A. No. Staff maintains its recommendation of a capital structure, as of March 31,
21 2021, composed of 52.44% common equity and 47.56% long-term debt. Empire recommends
22 the same capital structure for ratemaking in this proceeding. Empire has provided new
23 information showing a capital structure with 52.77% common equity and 47.33% long-term

1 debt, as of June 30, 2021. Empire has not explicitly recommended using the June 30, 2021,
2 capital structure in this case. However, if Empire explicitly requests that this capital structure
3 be used for ratemaking, Staff is not opposed to it.

4 **V. CONCLUSION**

5 Q. Please summarize the conclusions of your surrebuttal testimony.

6 A. Mr. Reed and Staff disagree over the appropriate ROE for Empire. Mr. Reed
7 recommends an authorized ROE of 10.00%. Staff recommends an authorized ROE of 9.50%.
8 Mr. Reed's belief that the COE and the authorized ROE are equivalent defies basic financial
9 logic and, more importantly, market evidence. Staff disagrees with Mr. Murray's recommended
10 ROE of 9.00% for Empire. Staff maintains that because COE increased since the Empire 2019
11 rate case, authorized ROE should be increased by 25 bps. Staff maintains its position that the
12 most economical capital structure is Empire's per book capital structure. Staff rejects both
13 Mr. Murray's direct and rebuttal testimonies' capital structures as inappropriate for
14 Empire's ratemaking.

15 Q. Does this conclude your testimony?

16 A. Yes.

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI


In the Matter of the Request of The Empire)
District Electric Company d/b/a Liberty for) Case No. ER-2021-0312
Authority to File Tariffs Increasing Rates for)
Electric Service Provided to Customers in its)
Missouri Service Area)

AFFIDAVIT OF SEOUNG JOUN WON, PhD

STATE OF MISSOURI)
) ss.
COUNTY OF COLE)

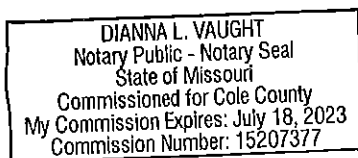
COMES NOW SEOUNG JOUN WON, PhD, and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing *Surrebuttal Testimony of Seoung Joun Won, PhD*; and that the same is true and correct according to his best knowledge and belief.

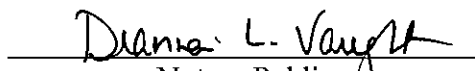
Further the Affiant sayeth not.


SEOUNG JOUN WON, PhD

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 13th day of December, 2021.




Notary Public

Credentials and Background of

Seoung Joun Won, PhD

I am currently employed as a Regulatory Compliance Manager in the Financial Analysis Department of the Financial and Business Analysis Division of the Missouri Public Service Commission. I have been employed at the Missouri Public Service Commission since May 2010.

I received my Bachelor of Arts, Master of Arts, and Doctor of Philosophy in Mathematics from Yonsei University and my Bachelor of Business Administration in Financial Accounting from Seoul Digital University in Seoul, South Korea, and earned my Doctor of Philosophy in Economics from the University of Missouri - Columbia. Also, I passed several certificate examinations for Finance Specialist in South Korea such as Accounting Management, Financial Risk Manager, Enterprise Resource Planning Accounting Consultant, Derivatives Investment Advisor, Securities Investment Advisor, and Financial Planner.

Prior to joining the Commission, I taught both undergraduate and graduate level mathematics at the Korean Air Force Academy and Yonsei University for 13 years. I served as the director of the Education and Technology Research Center in NeoEdu for 5 years. Before starting my current position at the Missouri Public Service Commission, I had served as a regulatory economist in Tariff/Rate Design Department.

My current duties at the Commission include financial analysis of rate of return and cost of equity, valuation analysis on merger and acquisition, due diligence review and supporting economic and statistical analysis.

List of Previous Testimony Filed

Seoung Joun Won, PhD

<u>Case Number</u>	<u>Company</u>	<u>Issue</u>
WF-2022-0066	Missouri American Water Company	Financing
GR-2021-0241	Union Electric Co., d/b/a Ameren Missouri	Rate of Return, Capital Structure
WF-2021-0131	Raytown Water Company	Financing Authority
GR-2021-0108	Spire Missouri, Inc.	Rate of Return, Capital Structure
EA-2021-0087	Ameren Transmission Company of Illinois	Financial Feasibility
EA-2020-0371	Union Electric Co., d/b/a Ameren Missouri	Financial Ability
SR-2020-0345	Missouri American Water Company	Rate of Return, Capital Structure
WR-2020-0344	Missouri American Water Company	Rate of Return, Capital Structure
EF-2020-0301	Evergy Missouri Metro	Financing Authority
WR-2020-0264	Raytown Water Company	Rate of Return, Capital Structure
WR-2020-0053	Confluence Rivers Utility Operating Company, Inc.	Rate of Return, Capital Structure
HM-2020-0039	Veolia Energy Kansas City, Inc. AIP Project Franklin Bidco	Merger and Acquisition
EO-2019-0133	KCP&L Greater Missouri Operations Company, Evergy Metro	Business Process Efficiency
EO-2019-0132	Kansas City Power & Light Company, Evergy Metro	Business Process Efficiency
GO-2019-0059	Spire West, Spire Missouri, Inc.	Weather Variables
GO-2019-0058	Spire East., Spire Missouri, Inc.	Weather Variables

cont'd List of Previous Testimony Filed

Seoung Joun Won, PhD

<u>Case Number</u>	<u>Company</u>	<u>Issue</u>
ER-2018-0146	KCP&L Greater Missouri Operations Co.	Weather & Normalization, Net System Input
ER-2018-0145	Kansas City Power & Light Co.	Weather & Normalization, Net System Input
GR-2018-0013	Liberty Utilities (Midstates Natural Gas) Corp.	Weather Variables
GR-2017-0216	Missouri Gas Energy (Laclede), Spire Missouri, Inc.	Weather Variables
GR-2017-0215	Laclede Gas Co., Spire Missouri, Inc.	Weather Variables
ER-2016-0285	Kansas City Power & Light Co.	Weather & Normalization, Net System Input
ER-2016-0179	Union Electric Co., d/b/a Ameren Missouri	Weather & Normalization, Net System Input
ER-2016-0156	KCP&L Greater Missouri Operations Co.	Weather & Normalization, Net System Input
ER-2016-0023	Empire District Electric Co.	Weather & Normalization, Net System Input
ER-2014-0370	Kansas City Power & Light Co	Weather & Normalization, Net System Input
ER-2014-0351	Empire District Electric Co.	Weather & Normalization, Net System Input
ER-2014-0258	Union Electric Co., d/b/a Ameren Missouri	Weather & Normalization, Net System Input
EC-2014-0223	Noranda Aluminum, Inc., et al, Complaint v. Union Electric Co., d/b/a Ameren Missouri	Weather Variables
GR-2014-0152	Liberty Utilities (Midstates Natural Gas) Corp.	Weather Variables
GR-2014-0086	Summit Natural Gas of Missouri, Inc.	Weather Variables
HR-2014-0066	Veolia Energy Kansas City, Inc.	Weather Variables, Revenue

cont'd List of Previous Testimony Filed

Seoung Joun Won, PhD

<u>Case Number</u>	<u>Company</u>	<u>Issue</u>
GR-2013-0171	Laclede Gas Co.	Weather Variables
ER-2012-0345	Empire District Electric Co.	Weather Variables, Revenue
ER-2012-0175	KCP&L Greater Missouri Operations Co.	Weather Variables
ER-2012-0174	Kansas City Power & Light Co.	Weather Variables
ER-2012-0166	Union Electric Co., d/b/a Ameren Missouri	Weather Variables, Revenue
HR-2011-0241	Veolia Energy Kansas City, Inc.	Weather Variables
ER-2011-0028	Union Electric Co., d/b/a Ameren Missouri	Weather Variables, Revenue
ER-2011-0004	Empire District Electric Co.	Weather Variables, Revenue
GR-2010-0363	Union Electric Co., d/b/a Ameren Missouri	Weather Variables
ER-2010-0356	KCP&L Greater Missouri Operations Co.	Weather Variables
ER-2010-0355	Kansas City Power & Light Co.	Weather Variables, Revenue

Work Related Publication

Won, Seoung Joun, X. Henry Wang, and Henry E. Warren. "Climate normals and weather normalization for utility regulation." *Energy Economics* (2016).