Exhibit No. 58

Ameren Missouri – Exhibit 58
Ann E. Bulkley
Rebuttal Testimony (Gas)
File Nos. ER-2021-0240 & GR-2021-0241

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MISSOURI PUBLIC SERVICE COMMISSION

FILE NO. GR-2021-0241

REBUTTAL TESTIMONY

OF

ANN E. BULKLEY

ON BEHALF OF

AMEREN MISSOURI

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REBUTTAL TESTIMONY

OF

ANN E. BULKLEY

FILE NO. GR-2021-0241

I. INTRODUCTION AND PURPOSE

Q. Please state your name and business address.

A. My name is Ann E. Bulkley. I am Senior Vice President of Concentric Energy Advisors, Inc. ("Concentric"). My business address is 293 Boston Post Road West, Suite 500, Marlborough, Massachusetts 01752.

Q. On whose behalf are you submitting this testimony?

A. I am submitting this testimony on behalf of Ameren Missouri ("the "Company"), a wholly-owned subsidiary of Ameren Corporation ("Ameren").

Q. Did you previously provide Direct Testimony in this proceeding?

A. Yes. I submitted Direct Testimony regarding the appropriate Return on Equity ("ROE") for Ameren Missouri in this proceeding on March 31, 2021.

Q. What is the purpose of your Rebuttal Testimony?

A. The purpose of my Rebuttal Testimony is to respond to the Cost of Service Report of the Missouri Public Service Commission Staff ("Staff") and, in particular, the section sponsored by Staff witness Seoung Joun Won relating to the authorized return on equity ("ROE") and capital structure, and to the Direct Testimony of David Murray on behalf of the Missouri Office of Public Counsel ("OPC")

I have not attempted to respond to every argument made by Staff and the OPC witnesses. The fact that I may not have responded to any particular argument or statement made by either the Staff or OPC witnesses does not indicate my agreement with that argument or statement.

Q. Are you sponsoring any schedules as part of your Rebuttal Testimony?

A. Yes, I am sponsoring Schedule AEB-R1, Attachments 1 through 13 to support my Rebuttal Testimony, which were prepared by me or under my direction.

Q. Have you updated the ROE analyses you presented in your Direct Testimony to reflect current market conditions?

A. Yes, as discussed in more detail in Section V, I have updated my ROE analyses based on market data through August 31, 2021. These results provide additional support for the Company's requested ROE of 9.80 percent. In addition, while the analytical results of ROE estimation models provide a starting point, I continue to base my recommendation on consideration of not only the results of multiple cost of equity models, but also other factors, including capital market conditions, the capital attraction and comparable return standards, and Company-specific risks.

Q. How is the remainder of your Rebuttal Testimony organized?

A. The remainder of my Rebuttal Testimony is organized as follows:

- In Section II, I provide a summary and overview of my Rebuttal Testimony and the important factors to be considered in establishing the ROE for Ameren Missouri.
- In Section III, I respond to the capital structure recommendation of Mr. Murray.

- In Section IV, I discuss how the cost of capital recommendations of Dr. Won and Mr. Murray compare with the authorized returns for natural gas utilities in other jurisdictions.
- In Section V, I update my ROE analysis based on market data as of August 31, 2021.
- In Section VI, I respond to Dr. Won's and Mr. Murray's testimony regarding capital market conditions and the implications for Ameren Missouri's cost of equity.
- In Section VII, I respond to Staff witness Dr. Won's ROE analyses and recommendations.
- In Section VIII, I respond to OPC witness Mr. Murray's ROE analyses and recommendations.
- Finally, in Section IX, I summarize my conclusions and recommendations.

II. SUMMARY AND OVERVIEW

Q. What factors should be considered in evaluating the results of ROE models and establishing the authorized ROE?

A. The primary factors that should be considered are: (i) the importance of investors' actual return requirements and the critical role of judgment in selecting the appropriate ROE; (ii) the importance of providing a return that is comparable to returns on alternative investments with commensurate risk; (iii) the need for a return that supports a utility's ability to attract needed capital at reasonable terms; and (iv) the effect of current and expected capital market conditions.

Q. What are your key conclusions and recommendations regarding the appropriate ROE and capital structure for Ameren Missouri in this proceeding?

A. My key conclusions are as follows:

1. Although Dr. Won and Mr. Murray devote many pages of testimony to discussing the results of their various ROE estimation models and attempting to explain why those models are producing reasonable results under current market conditions, they essentially discard their flawed analyses in favor of less drastic recommendations that are not supported by their own ROE estimation models.

2. Dr. Won developed his recommendation of 9.50 percent by adjusting downward the ROE of 9.80 percent authorized for Spire Missouri in Case Nos. GR-2017-0215 and GR-2017-0216 by 30 basis points to reflect the fact that his Two-Step DCF analysis decreased 30 basis points between 2017 and 2021. Dr. Won believes that this analysis shows that the cost of equity has decreased since 2017. However, this conclusion is solely based on the assumptions Dr. Won has selected to calculate his Two-Step DCF analysis. When reasonable adjustments are made to Dr. Won's Two-Step DCF analysis, his DCF results show that the cost of equity has increased since Spire Missouri's 2017 rate case. For example, had Dr. Won relied on projected earnings growth rates as the estimate of short-term growth, his proxy group average DCF result for 2021 would be 9.53 percent as compared to 8.38 percent for 2017.

3. A comparison of Dr. Won's DCF and CAPM analyses in the current proceeding for Ameren Missouri to those presented by Staff in Spire Missouri's 2017 rate case also shows that the cost of equity has increased since 2017.

4. The critical flaw in Dr. Won's comparison of the Two-Step DCF analysis in 2017 and 2021 is that the Commission did not base the authorized ROE for Spire Missouri in 2017 on Staff's DCF analysis. Instead, the Commission considered the recommendations of the ROE witnesses in the proceeding, authorized ROEs

and capital market conditions.[1] There is no evidence the Commission developed a relationship between the ROE authorized for Spire Missouri and Staff's DCF estimate which is the basis of Dr. Won's comparison. Therefore, it is impossible to credibly apply a "comparative analysis" to adjust the ROE range from Spire Missouri's 2017 case. As a result, Dr. Won's recommendation should be rejected.

5. Mr. Murray's Multi-Stage DCF analysis relies on a long-term growth rate range of 2.50 percent to 3.50 percent; however, current valuations of utilities are based in part on the sustainability of current projections of earnings growth. Since Mr. Murray's long-term growth rate range of 2.5 percent to 3.5 percent is much lower than current earnings growth projections, the assumption implies much lower natural gas utility valuations than the stock prices he relies on to calculate his Multi-Stage DCF analysis. This results in Mr. Murray's Multi-Stage DCF analysis producing cost of equity estimates that are unreasonably low.

6. While I do not agree with the specification of Mr. Murray's Constant Growth DCF model in Spire Missouri's 2017 rate case, if Mr. Murray had relied on that model in the current proceeding for Ameren Missouri, where he included a much higher long-term growth rate range of 4.20 percent to 5.00 percent, he would have concluded that the cost of equity has increased since Spire Missouri's 2017 rate case. In Spire Missouri's 2017 rate case, testifying on behalf of Staff, Mr. Murray recommended an ROE of 9.50 percent.

7. The economy is in the recovery phase of the business cycle which means improving economic growth and increasing inflation and interest rates. Dr. Won,

[1] *In the Matter of Laclede Gas Company's Request to increase its Revenues for Gas Service*, File No. GR-2017-0215 and File No. GR-2017-0216, Report and Order (Feb. 21, 2018), at 32.

Mr. Murray and I are in agreement that utility share prices are inversely related to the yields on long-term government bonds. Therefore, since interest rates are expected to increase over the near-term, investors expect the utility sector to underperform the broader market. As a result, the DCF results presented by Dr. Won and Mr. Murray, which rely on current share prices, are likely understating the cost of equity during the period that Ameren Missouri's rates will be in effect.

8. Updated market-based data for the proxy group companies as of August 31, 2021 supports a range of ROEs for Ameren Missouri between 9.65 percent to 10.40 percent and within that range the Company's requested ROE of 9.80 percent.

9. Recently authorized equity ratios for natural gas utilities support the Company's proposed capital structure of 51.93 percent common equity, 47.34 percent long-term debt and 0.73 percent preferred equity.

10. Mr. Murray's conclusion that Ameren Missouri can increase its leverage due to the Company's use of PISA to recover electric capital expenditure costs is inappropriate. First, Ameren Missouri utilizes PISA for its electric operations while in this proceeding the capital structure is being determined for Ameren Missouri's natural gas operations. Therefore, PISA should have no effect on the capital structure for the natural gas operations of Ameren Missouri. Second, it is reasonable to evaluate the capital structure of Ameren Missouri based on the capital structures of the companies in the proxy group and an assessment of the relative risk of Ameren Missouri to the proxy group. However, Mr. Murray has not considered the capital structures of the proxy group, nor has he determined if Ameren Missouri has greater or less risk when compared to the proxy group. It is not reasonable to adjust the capital structure of Ameren Missouri on the sole basis that the Company has a capital cost recovery mechanism.

III. CAPITAL STRUCTURE

Q. Please summarize the Staff position with respect to the capital structure that should be applied to Ameren Missouri in this case.

A. Staff proposes to use Ameren Missouri's stand-alone capital structure as of June 30, 2021, of 50.32 percent common equity, 48.92 percent long-term debt and 0.75 percent preferred equity.[2] Staff recommends the stand-alone capital structure for Ameren Missouri because the capital structure policies of the Company have not changed from the prior case. Specifically, Staff noted the following four reasons for the use of the stand-alone capital structure for Ameren Missouri: 1) Ameren is not the primary source of long-term and short-term debt financing for Ameren Missouri; 2) Credit rating agencies rate the credit quality of Ameren Missouri on a stand-alone basis; 3) Ameren Missouri's debt is secured by the assets of the Company and not Ameren; and 4) the business risks of Ameren and Ameren Missouri are similar indicating that both can incur similar levels of financial risk.[3]

Q. Please summarize OPC's position with respect to the appropriate capital structure for Ameren Missouri.

A. OPC witness Murray proposes that Ameren Missouri's capital structure be composed of 45 percent common equity, 54.18 percent long-term debt and 0.82 percent preferred equity.[4] Mr. Murray's recommendation is based on the capital structure target for the consolidated operations of Ameren over the long-term.[5] According to Mr. Murray, the use of the consolidated capital structure is appropriate because it represents the level of debt

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2 Staff's Cost of Service Report, Appendix 2, Schedule SJW-6.
3 Staff's Cost of Service Report, 26-27.
4 Direct Testimony of David Murray, at 32.
5 Direct Testimony of David Murray, at 32.

that Ameren believes is reasonable for its regulated utilities assets which include Ameren Missouri. Furthermore, Mr. Murray contends a higher debt level is currently appropriate for Ameren Missouri because of the reduction in business risk the Company faces as a result of the Company's use of Plant-in-Service Accounting ("PISA") which allows for the timely recovery of the Company's electric capital expenditures plan between rate cases.[6]

Q. With respect to capital structure, please discuss the options that are most often considered by utility commissions when setting a regulated utility's capital structure for ratemaking purposes.

A. The three options that are most often considered by commissions when setting a regulated utility's capital structure are as follows:

- The operating company's actual (or projected) capital structure per the financial books and records of the company when this capital structure is reflective of the way the company is operated and it is generally consistent with industry norms.
- A hypothetical capital structure can be considered, especially if there are concerns that the actual per books capital structure is not reflective of the optimal capital structure for the company. The hypothetical capital structure can be based on comparable companies (e.g., set within the range of the proxy group) or determined by the Commission based on other risk factors.
- Third, the parent company's consolidated capital structure may be used. This occurs most often when the operating company represents the vast majority of the parent holding company's operations, and therefore the financing for the operating company and the holding company would be similar.

[6] Direct Testimony of David Murray, at 33.

Q. In recent cases, has this Commission considered the use of the stand-alone operating company capital structure versus the holding company's consolidated capital structure that Mr. Murray recommends?

A. Yes, it has. Similar to the current case, in Spire Missouri's 2017 rate case, Mr. Murray, who was the witness for Staff at that time, proposed relying on the consolidated capital structure, and thus using an equity ratio of 45.56 percent.[7] In its decision in that case, the Commission noted that it had formerly relied on the consolidated capital structure for Laclede Gas Company (the Missouri operating company prior to the Spire merger), when the operating company made up almost the entirety of the holding company; but that same capital structure was no longer appropriate in the 2017 case. The Commission explained that, since the merger, the parent company now had five operating utilities in three states in addition to other investments and therefore it was not appropriate to use consolidated capital structure as the utility-specific capital structure.[8]

Q. Does Ameren Missouri's natural gas operations represent the vast majority of Ameren's operations?

A. No. In fact, Ameren Missouri's natural gas operations represented only 2 percent of Ameren's operating revenue in 2020.[9] Furthermore, Mr. Murray acknowledges that Ameren Missouri's natural gas operation do not even represent the vast majority of Ameren Missouri's operations when he states that Ameren Missouri's electric operations

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7 In the Matter of the Laclede Gas Company's Request to Increase its Revenue for Gas Service, Missouri Public Service Commission File No. GR-2017-0215, Amended Report and Order, March 17, 2018 at p. 40.

8 In the Matter of Laclede Gas Company d/b/a Missouri Gas Energy's Request to Increase its Revenues for Gas Service, Missouri Public Service Commission GR-2017-0216, YG-2017-0196, February 21, 2018. 2018 WL 1315107 (Mo.P.S.C.), at 19.

9 Ameren Corporation, 2020 Form 10-K, at 8.

represented 97 percent of Ameren Missouri's total rate base. In addition to the electric and natural gas operations in Missouri, Ameren has natural gas and electric operations in Illinois and a transmission segment that is regulated by FERC. As a result, it is not appropriate to recommend, as Mr. Murray has, the use of Ameren's consolidated capitalization as the utility-specific capital structure for Ameren Missouri's natural gas operations. Furthermore, the use of the Company's actual capital structure is consistent with the Commission's decision in Spire Missouri's 2017 rate case.

Q. Has Staff proposed to use the parent company's consolidated capital structure?

A. No. As noted above, Dr. Won has proposed to use Ameren Missouri's stand-alone capital structure (which, as of June 30, 2021, consisted of 50.32 percent common equity, 48.92 percent long-term debt and 0.75 percent preferred equity – it is my understanding that Ameren Missouri's actual capital structure as of the true-up date in this case will be very close to the Company's projected capital structure as of September 30, 2021 of 51.93 percent common equity, 47.34 percent long-term debt and 0.73 percent preferred equity as shown in the Direct Testimony of Ameren Missouri witness Darryl Sagel).[10] Dr. Won believes that the stand-alone capital structure is appropriate because Ameren Missouri operates as an independent entity with its own credit rating and has debt issuances that are secured by the Company and not Ameren.

Q. Is the Company's capital structure consistent with industry norms and therefore reasonable for ratemaking purposes?

A. Yes, it is for several reasons. First, the Company's capital structure is reflective of the way the Company is operated.[11] Second, I also examined the capital structures that have

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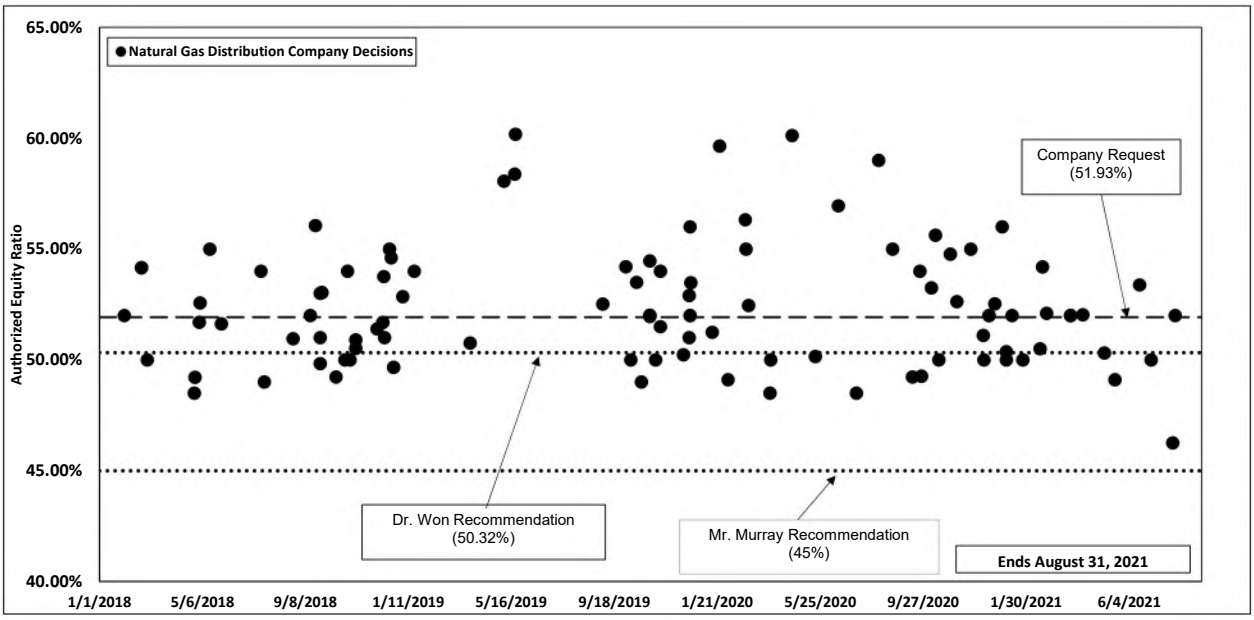
[10] Direct Testimony of Daryl T. Sagel, 11.

[11] Direct Testimony of Daryl T. Sagel, 10-11.

recently been authorized for natural gas utilities. As shown in Figure 1 below, the majority of the recently authorized equity ratios for natural gas utilities are in the range of 50-55 percent. Ameren Missouri's proposed equity ratio of 51.93 percent is well within the range of authorized equity ratios for companies of comparable risk. In contrast, Mr. Murray's proposed equity ratio of 45.00 percent is below every authorized equity ratio over this time period. Consequently, there is no reason to employ a capitalization that is different from the actual capital structure that Ameren Missouri employs to finance its natural gas operations in Missouri.

Figure 1: Average Authorized Equity Ratios for Natural Gas Utilities – January 2018 through August 2021[12]



[12] Source: S&P Capital IQ Pro. Chart excludes jurisdictions that include zero cost items in the capital structure: Arkansas, Indiana, Michigan and Florida.

Q. Do you agree with Mr. Murray that the Company can increase its leverage due to the reduction in business risk associated with Ameren Missouri's use of PISA?

A. No, I do not. The stand-alone principle of ratemaking holds that regulated rates should be based on the risks and benefits of the regulated utility, not its investors, parent or affiliates.[13] Ameren Missouri's electric operations utilize PISA for the timely cost recovery of some capital expenditures between rate cases. However, Ameren Missouri's natural gas operations of which we are determining the ROE and capital structure for in this proceeding does not utilize PISA. Therefore, according to the stand-alone principle, Ameren Missouri's use of PISA for its electric operations should have no effect on the ROE and capital structure that are determined in this proceeding for Ameren Missouri's natural gas operations.

Furthermore, since the stand-alone principle requires that Ameren Missouri's authorized cost of capital be based on the business and financial risk of the Company individually, it is necessary to establish a group of companies that are both publicly traded and comparable to Ameren Missouri in certain fundamental business and financial respects to serve as a "proxy" for determining the ROE and evaluating the Company's proposed capital structure. Therefore, it is not appropriate to conclude that because a company has a cost recovery mechanism that the Company can increase its leverage and therefore its financial risk.

The analysis of the ROE for a regulated utility is based on market data for a proxy group of publicly traded proxy companies that are reasonably comparable to the subject utility. The returns that result from that analysis represent the risk profile of the proxy group as a

[13] New Regulatory Finance, Roger A. Morin Ph.D., Public Utility Reports, 2006, at 215-216.

whole. In order to determine the appropriate return for the subject company, it is necessary to consider the risks of the subject as compared with the proxy group companies. Those risks include business risks and the risk related to the capitalization of the company. If the company is determined to have greater risk than proxy group based on that comparison, then an ROE or equity ratio towards the higher end of the proxy group results may be warranted. An increase in the equity ratio adjusts the risk to equity holders because it reduces the leverage in the company's capital structure.

Q. Does Ameren Missouri have cost recovery mechanisms in place to recover the costs associated with its capital expenditures plan between rate cases?

A. Yes, as discussed in my Direct Testimony, Ameren Missouri has an Infrastructure System Replacement Surcharge ("ISRS") rider for its natural gas operations to recover a portion of the Company's capital investment costs between rate cases.[14]

Q. Did Mr. Murray evaluate his proxy group to determine if the companies included in his proxy group had capital cost recovery mechanisms?

A. No, he did not. Mr. Murray inappropriately concludes that because Ameren Missouri utilizes PISA for its electric operations, the business risk for the Company is reduced indicating the Company could increase its leverage.

Q. Did you conduct any analysis to determine if the companies included in your proxy group had capital cost recovery mechanisms?

A. Yes, I did. As shown in shown in Schedule AEB-D2, Attachment 12, of my Direct Testimony, 84.00 percent of the operating companies of the proxy group have some form of capital cost recovery mechanism and/or are allowed to include CWIP in rate base. Thus,

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[14] Direct Testimony of Ann E. Bulkley, at 65.

the use of ISRS does not reduce the Company's regulatory risk, relative to its peers. Rather, the implementation of ISRS moves the Company closer to the risk profile of the operating utilities of the proxy group companies.

Q. Did you consider any other business risks when evaluating the relative risk of Ameren Missouri to the proxy group?

A. Yes, I did. As discussed in my Direct Testimony, I considered the regulatory risk of the Company which included the review of capital cost recovery mechanisms and the small size of Company as compared to the companies in the proxy group.[15] Ultimately, I concluded that the Company faced increased business risk when compared to the proxy group as a result of: 1) Ameren Missouri's small size; 2) the fact that many of the companies in the proxy group have more timely cost recovery mechanisms than Ameren Missouri has in Missouri and 3) the RRA jurisdictional and S&P credit supportive ranking for Missouri indicates greater risk for Ameren Missouri than the proxy group average.

Q. How does the elevated level of business risk affect Ameren Missouri's capital structure?

A. The increased risk of the Company relative to the proxy group indicates that the Company's equity ratio should be greater than the proxy group average equity ratio. As shown in Schedule DTS-R3 to the Rebuttal Testimony of Company Witness Darryl Sagel, the median authorized equity ratio for the companies contained in my proxy group as of 2020 was 55.00 percent which is greater than the equity ratio proposed by the Company of 51.93 percent. Thus, the Company's proposed equity ratio is conservative when compared to the proxy group considering the business risk of Ameren Missouri.

[15] Direct Testimony of Ann E. Bulkley, at 54-67.

Conversely, the equity ratio proposed by Mr. Murray of 45 percent is well below the average authorized equity ratio for the proxy group and is therefore not reasonable as it would result in a substantial increase in the financial risk of the Company.

IV. OVERVIEW OF RETURN ON EQUITY RECOMMENDATIONS AND COMPARABLE RETURN STANDARD

Q. Please provide an overview of the other ROE witnesses' recommendations in this proceeding.

A. Figure 2 summarizes the results of the ROE analyses presented by the other witnesses in this proceeding and their final recommendations. Staff witness Dr. Won's Two-Step DCF analysis, CAPM analysis and Rule of Thumb analysis indicate a cost of equity from 6.10 percent to 8.73 percent, while OPC witness Mr. Murray's Multi-Stage DCF, CAPM and Rule of Thumb results suggest a cost of equity of 5.75 percent to 7.62 percent. It is interesting that while Dr. Won and Mr. Murray abandon the results of their models when establishing their recommendations, neither of these witnesses reconsider the validity of the inputs and assumptions used in their respective models. Rather, Dr. Won recommends an ROE for Ameren Missouri of 9.50 percent, which is 118 basis points higher than the average results of his Two-Step DCF model and 211 basis points higher than the midpoint results of his CAPM analyses. Similarly, Mr. Murray's ROE recommendation of 9.25 percent is 163 to 247 basis points higher than his Multi-Stage DCF model results and 244 to 285 basis points higher than his CAPM results. Since their ultimate recommendations are not based on their model results, it is apparent that both witnesses do not believe that their models are producing reasonable estimates of the ROE.

Figure 2: Recommended ROE Ranges and Point Estimates of the Other ROE Witnesses

Witness	Dr. Won (Staff)	Mr. Murray (OPC)
Multi-Stage Growth DCF	N/A	All Companies: 7.62% Mostly Pure Play: 7.45%
Multi-Stage (AEE only)	N/A	6.78%-7.12%
Two-Step DCF	6.10%-8.73% Mean: 8.32%	N/A
CAPM	6.43%-8.05%[16]	6.40% - 6.81%
Rule of Thumb	6.26%-8.41%	5.75%
Recommendation	9.50%	9.25%
Difference between recommendation and model results	0.77%-3.40%	1.63%-3.50%

Q. Are authorized returns in other jurisdictions a relevant benchmark to evaluate the reasonableness of the ROE recommendations of Staff and the OPC?

A. Yes. The *Hope* and *Bluefield* cases establish that authorized ROEs be comparable to other investments of commensurate risk. Therefore, the regulatory decisions of other commissions provide a basic test of reasonableness and a benchmark that investors consider in assessing the authorized ROE of one utility against the returns available from other regulated utilities with comparable risk.

[16] The referenced CAPM results are the mean results from Dr. Won's CAPM analyses. In addition, Dr. Won also presents upper and lower bounds of 6.14 percent and 8.64 percent that reflect individual company results within his scenarios. It should be noted however that neither of these results are the high or low observation in the analysis. The highest CAPM result for an individual company in Dr. Won's analysis appears to be 9.01 percent and the lowest is 5.97 percent.

Q. In your opinion, are the equity return recommendations of OPC witness Mr. Murray and Staff witness Dr. Won consistent with the comparable return standard?

A. No, they are not. Both Dr. Won and Mr. Murray claim that one of the economic guidelines they used in determining the cost of equity for Ameren Missouri was the comparable return standard established by the Court in *Hope* and *Bluefield*.[17] While Dr. Won considers the authorized ROEs for natural gas utilities in other jurisdiction across the U.S., he relies on the simple average authorized ROE for 2021 to support his recommended ROE of 9.50 percent.[18] However, he does not consider the range of authorized ROEs nor does he review the authorized ROE data to determine if individual cases should be excluded from the average due to lack of comparability (i.e., authorized ROEs which reflect penalties, authorized ROEs determined using formula rate plans, etc.). Mr. Murray claims he considered "recent allowed ROEs for LDCs" in the development of his recommended range; however, Mr. Murray does not provide any support to indicate that authorized ROEs would support his recommended range of 8.50 percent to 9.50 percent.[19] Further, Mr. Murray sets his return at 9.25 percent and proposes that this ROE be reduced if the Commission were to adopt an equity ratio that is higher than his proposal. Therefore, neither witness has developed an appropriate comparison of their recommendation and the recent ROEs awarded to natural gas utilities across the U.S.

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[17] Staff Cost of Service Report, at 11 and Direct Testimony of David Murray, at 5.

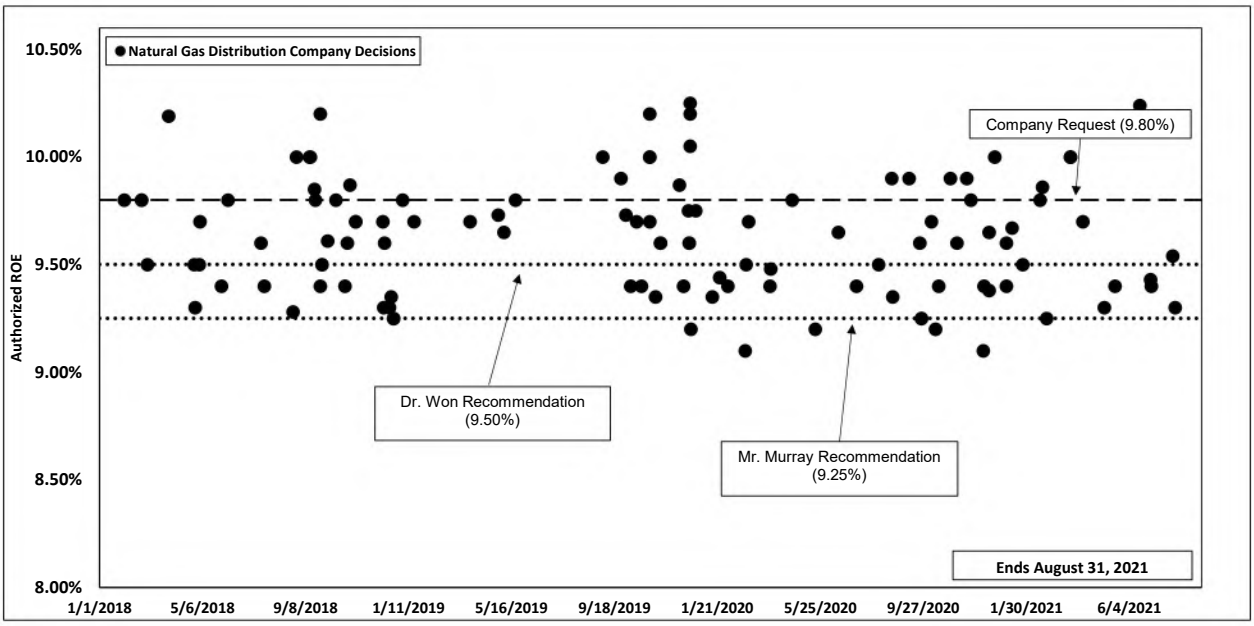
[18] Staff Cost of Service Report, at 25-26.

[19] Direct Testimony of David Murray, at 5.

Q. Have you developed a comparison of the recommended ROEs of Dr. Won and Mr. Murray to the ROEs authorized by other utility regulatory commissions across the U.S.?

A. Yes. Figure 3 shows the authorized returns for natural gas distribution companies in other jurisdictions since January 2018, compared to the return recommended by Dr. Won of 9.50 percent and the 9.25 percent recommendation from Mr. Murray.

Figure 3: U.S. Authorized ROEs – Natural Gas Distribution Companies c[20]



Recent comparable authorized ROEs range from 9.10 percent to 10.25 percent, with an average of 9.63 percent.[21] Figure 3 demonstrates that the low end of Mr. Murray's range, 8.50 percent is well below any return that has been authorized for a natural gas distribution

[20] Source: S&P Capital IQ. Data through August 31, 2021.

[21] The authorized ROEs that are established in New York State, recently set in the range of 8.80 percent to 9.00 percent, are not comparable and should be excluded from the authorize ROE range because the returns are essentially applied state-wide without differentiation between the risk factors of the companies.

company over this time-period. Therefore, Mr. Murray is selecting an ROE from a range that is inconsistent with the comparable return standard.

The majority of authorized returns for gas distribution companies (67 out of 115 decisions) from 2018 through August 2021 have been between 9.60 percent and 10.25 percent. This range is consistent with the Company's requested ROE of 9.80 percent in this proceeding and higher than the ROE recommendations of Dr. Won and Mr. Murray. The recommendations offered by Dr. Won and Mr. Murray are both below the average of comparable authorized ROEs for natural gas utilities over the past three years. This would indicate that both Dr. Won and Mr. Murray believe Ameren Missouri has less risk than other comparable natural gas utilities across the U.S. However, neither Dr. Won nor Mr. Murray provide any evidence to support this conclusion because they do not consider the relative risk of Ameren Missouri. Finally, neither witness has considered their recommendations and recently authorized ROEs in the context of current market conditions. As discussed in more detail in Section VI of my Rebuttal Testimony, in determining the appropriate ROE for Ameren Missouri it is necessary to consider current inflationary pressures and the expectations for rising interest rates over the near-term which will increase the cost of equity for utilities going forward.

Q. Are you aware of any utilities that have experienced a credit downgrade related to the financial effects of a rate case decision?

A. Yes. Credit rating agencies take the authorized ROE into consideration in the overall risk analysis of a company. For example, Moody's downgraded ALLETE, Inc. in 2019 from A3 to Baa1 for reasons that included the less than favorable outcome in Minnesota Power's last rate case in Minnesota. Moody's viewed Minnesota Power's recent rate case decision as credit negative for reasons which included: (1) the below average authorized ROE of 9.25 percent, which resulted in a reduction of approximately $20 million between

the requested and approved revenue requirement; (2) the disallowance of certain expenses such as prepaid pension expenses; and (3) the decision to not adopt the annual rate review mechanism which, if adopted, would have mitigated the effect of industrial customers scaling back production in response to changes in economic conditions.[22]

The credit rating agencies also reacted negatively to the recent rate case decision for Puget Sound Energy ("PSE") in Washington. In July 2020, PSE received a rate determination that included an authorized ROE of 9.40 percent, which represented a 10 basis point decrease in the prior authorized ROE and a common equity ratio of 48.5 percent, resulting in an overall rate of return of 7.39 percent (and an equity rate of 4.559 percent). Each of the rating agencies responded negatively to this decision. FitchRatings downgraded the outlook on PSE and its parent company Puget Energy ("PE") to negative, indicating that the rate order would:

> [s]ignificantly impair PE's consolidated credit metrics, raising FFO leverage to be approximately 6.0x through 2021, exceeding the downgrade guideline ratio of 5.5x. PE and PSE could be downgraded if mitigating actions are not forthcoming or insufficient to strengthen their credit metrics. Sustained lack of constructive regulatory relationship will also be a catalyst for a downgrade.[23]

S&P's ratings outlook for PSE and PE is negative, reflecting expectations that the FFO to debt ratio for PE would be 13 percent. S&P also stated that "[t]he decision is inconsistent with our current assessment and should the company continue to exhibit substantial regulatory lag, we would likely revise our assessment of the company's business risk profile downward."[24] Moody's indicated that the outcome of the rate case was credit

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22 Moody's Investors Service, Credit Opinion: ALLETE, *Inc*. Update following downgrade, at 3 (April 3, 2019).

23 FitchRatings, Rating Action Commentary, "Fitch Affirms Puget Energy and Puget Sound Energy; Outlook Revised to Negative, July 27, 2020.

24 S&P Global Market Intelligence, S&P removes Puget Energy, Puget Sound Energy from CreditWatch, August 24, 2020.

negative, recognizing a below average return on equity that was lower than the prior authorized ROE.[25]

Q. What is your conclusion based on these facts?

A. Based on these facts, Dr. Won's and Mr. Murray's ROE recommendations of 9.50 percent and 9.25 percent, respectively, would not meet the comparable return standard of *Hope* and *Bluefield*.

V. UPDATED RETURN ON EQUITY MARKET DATA

Q. Have you updated your ROE analyses?

A. Yes, I have updated my ROE analyses using market data as of August 31, 2021. As part of updating the analyses for current market conditions, I have also made one modification. I am relying on the Value Line earnings growth rate for Northwest Natural Gas Company ("Northwest Natural") because the one-time financial event that affected the earnings per share data for Northwest Natural in 2017 is no longer included in the estimation of Value Lines earnings growth rate. Therefore, I do not need to calculate an adjusted earnings growth rate as I did in my Direct Testimony to exclude the effect of the one-time event. Figure 4 below (see also Schedule AEB-R1, Attachments 1 through 9 summarizes the results of my updated analyses for the proxy group.

[25] Moody's Investor Service, Puget Sound Energy, Inc. Puget Sound Energy's rate case outcome is credit negative, July 17, 2020.

Figure 4: Summary of Updated Cost of Equity Results

Constant Growth DCF			
	Median Low	Median	Median High
30-Day Average Price	8.65%	10.01%	11.49%
90-Day Average Price	8.60%	9.99%	11.60%
180-Day Average Price	8.75%	10.09%	11.72%
Multi-Stage DCF			
	Median Low	Median	Median High
30-Day Average Price	8.86%	9.47%	9.82%
90-Day Average Price	8.94%	9.42%	9.95%
180-Day Average Price	9.06%	9.58%	10.10%
Capital Asset Pricing Model			
	Current Risk-Free Rate (1.91%)	Q4 2021 – Q4 2022 Projected Risk-Free Rate (2.42%)	2023-2027 Projected Risk-Free Rate (3.50%)
Value Line Beta	13.02%	13.08%	13.22%
Bloomberg Beta	11.98%	12.08%	12.30%
Long-term Avg. Beta	11.03%	11.17%	11.47%
Empirical Capital Asset Pricing Model			
Value Line Beta	13.41%	13.45%	13.55%
Bloomberg Beta	12.63%	12.70%	12.87%
Long-term Avg. Beta	11.91%	12.02%	12.24%
Bond Yield Plus Risk Premium			
	Current Risk-Free Rate (1.91%)	Q4 2021 – Q4 2022 Projected Risk-Free Rate (2.42%)	2023-2027 Projected Risk-Free Rate (3.50%)
Risk Premium Analysis	9.33%	9.55%	10.00%

Q. Do the updated results support the Company's requested ROE of 9.80 percent in this proceeding?

A. Yes. The results of the cost of equity estimation models are generally consistent with the analysis in my Direct Testimony which was performed using market data through January 31, 2021. Therefore, in addition to all of the other factors that I have considered, the updated results reflecting market data through August 31, 2021, provide additional support for my recommended ROE range of 9.65 percent to 10.40 percent and within that range the Company's requested ROE of 9.80 percent.

VI. UPDATED CAPITAL MARKET CONDITIONS

Q. Please summarize the other ROE witnesses' positions on capital market conditions and the implications for the cost of equity.

A. As discussed previously, Dr. Won's ROE recommendation is not based on the results of his models using current market data. Rather, Dr. Won's recommended ROE is based on a comparison of current market conditions with the market conditions that existed when the Commission issued its decision in Spire Missouri's 2017 rate case. Dr. Won compares yields on government bonds, dividend yields and DCF results for the current period to the same market indicators in Spire Missouri's 2017 rate case and concludes that market conditions support decreasing the ROE for Ameren Missouri below the return of 9.80 percent that was authorized for Spire Missouri in 2017.[26]

Similarly, Mr. Murray notes that while the yields on long-term government bonds and utility bonds have increased recently and are close to the levels achieved prior to the pandemic, yields are still at historically low levels indicating that investors still expect authorized ROEs to be reduced.[27] Additionally, Mr. Murray notes that careful interpretation must be made of the recent underperformance of natural gas utilities relative to the broader market. He contends that while natural gas utilities have underperformed recently this is due to the accommodative monetary and fiscal policy which has caused the valuations of the S&P 500 to increase more rapidly than the utility sector. Therefore, the cost of equity for utilities has still decreased, the decrease was not as pronounced as the decrease in the cost of equity for the S&P 500.[28]

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[26] Staff Cost of Service Report, at 16-17.

[27] Direct Testimony of David Murray, at 9-10 and 14.

[28] Direct Testimony of David Murray, at 14.

Q. Do you agree with Dr. Won and Mr. Murray that utility share prices have a strong inverse correlation to changes in the yields of long-term government bonds?

A. Yes, I do. Dr. Won and Mr. Murray have both acknowledged that interest rates and utility share prices are inversely correlated which means, for example, that an increase in interest rates will result in a decline in the share prices of utilities.[29]

Q. What is the significance of the inverse relationship between interest rates and utility share prices in the current market environment?

A. As discussed in my Direct Testimony, the economy is currently in the recovery phase of the business cycle, which is characterized by improving economic growth, increasing inflation and increasing interest rates.[30] If interest rates increase as expected then the share prices of utilities will decline. Therefore, the DCF model, which relies on historical averages of share prices, is likely to understate the cost of equity. For example, Equation [1] below is the Constant Growth DCF model where the first term is the expected dividend yield and the second term is the expected long-term growth rate:

$$k = \frac{D_0(1+g)}{P_0} + g \qquad [1]$$

As shown in Figure 5, a decline in stock prices will increase the dividend yields and thus the estimate of the ROE produced by the Constant Growth DCF model.

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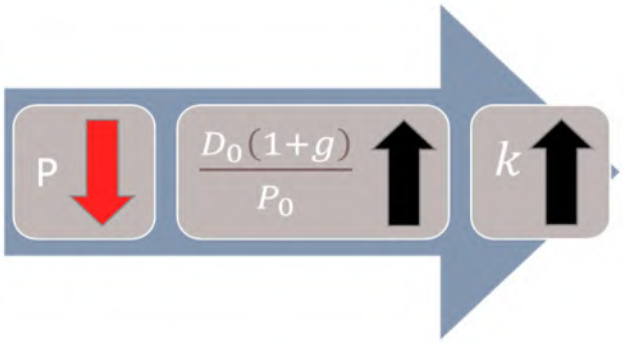
[29] Staff Cost of Service Report, at 16 and Direct Testimony of David Murray, at 10.

[30] Direct Testimony of Ann E. Bulkley, 16-20.

Figure 5: The Effect of a decline in Stock Prices on the Constant Growth DCF model



Q. What have equity analysts said about long-term government bond yields?

A. Several equity analysts have noted that they expect economic conditions to continue to improve and thus the yields on long-term government bonds to continue to increase through the end of 2021 and into 2022. For example, Bloomberg recently noted that forecasters were projecting the yield on the 10-year Treasury Bond will increase to approximately 1.8 percent by the end of 2021.[31] Similarly, strategists at CitiGroup Inc. recently noted that they expect the yield of the 10-year Treasury Bond to increase to 2 percent in 2022.[32]

In terms of equity recommendations considering the expected increase in long-term government bond yields, Federated Hermes prefers cyclical industries such as financials and industrials. When cyclical stocks are favored, historically the utility sector underperforms.

> "We like financials and industrials and materials and small cap and yes, international stocks in that environment," he [Federated Hermes' Steve Chiavarone] said. "But I think the overall equity index will have every ability

[31] Galouchko , Ksenia. "Citi Cuts Tech-Heavy U.S. Stocks on Treasury Yield Surge Call." Bloomberg.com, Bloomberg, 4 Aug. 2021, https://www.bloomberg.com/news/articles/2021-08-04/citi-cuts-tech-heavy-u-s-stocks-on-treasury-yield-surge-call.

[32] *Ibid.*

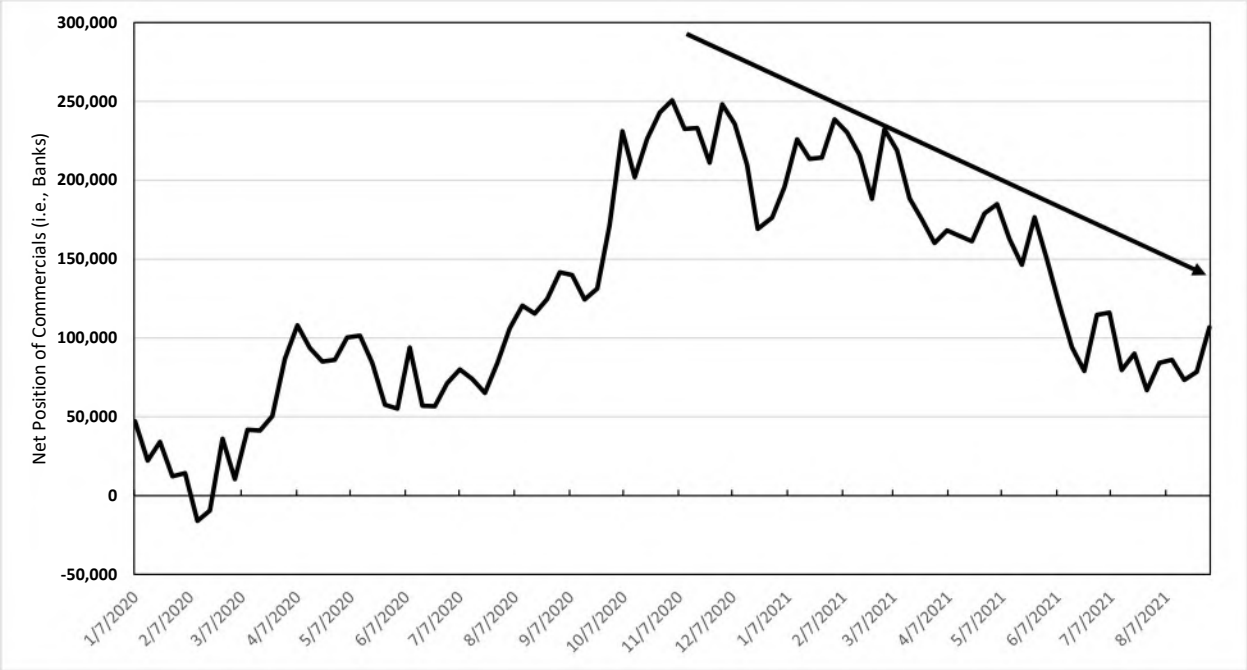
to move higher in that pro-cyclical, higher inflationary environment just like it did last September through April."[33]

Q. Have you considered any additional indicators which may imply long-term interest rates are expected to increase?

A. Yes, I have. I considered the net position of commercials (i.e., banks) in U.S. Treasury Bond futures contracts as reported in the Commitment of Traders ("COT") Report produced by the Commodity Futures Trading Commission ("CFTC"). A net position is defined as the total number of long positions in a futures contract minus the total number of short positions in a futures contract. A long position means that an investor agrees to purchase an asset in the future at a specified price today and therefore profits if the price of the underlying asset increases. Conversely, short position is when an investor agrees to sell an asset at a time in the future at a specified price today and profits if the price of the asset declines. Therefore, if banks are increasing the number of short positions and thus have a declining net position, the banks are assuming that the price of the asset will decline. As shown in Figure 6, the net position of banks in U.S. Treasury Bonds has been decreasing since the end of 2020. Therefore, banks are forecasting a decrease in the price of long-term government bonds and thus the yields (which are inversely related to the price) to increase over the near-term.

[33] Gurdus, Lizzy. "Citi Calls for 10-Year at 2%. Here Are Ways to Play a High-Rate Environment." CNBC, CNBC, 5 Aug. 2021, www.cnbc.com/2021/08/05/citi-calls-for-10-year-at-2percent-here-are-ways-to-play-a-high-rate-environment.html.

Figure 6: Commitment of Traders Report – Net Position of Commercials (i.e., Banks) in U.S. Treasury Bond Futures Contracts[34]



Q. How do equity analysts expect the utilities sector to perform in an increasing interest rate environment?

A. Equity analysts project that utilities are expected to continue to underperform the broader market as interest rates increase. For example, Fidelity recently recommended underweighting the utility sector and ranked the utility sector towards the low-end of its relative strength rankings, which measure each sector's performance relative to the broader market.[35] Moreover, as noted above, Charles Schwab has continued to classify the utility sector as "Underperform".[36] Finally, in its 2021 Midyear Outlook, Well Fargo

[34] Commitment of Traders Report, as of August 31, 2021 - https://www.cftc.gov/MarketReports/CommitmentsofTraders/HistoricalCompressed/index.htm

[35] Fidelity, "Q3 2021 sector scorecard: Real estate, energy, and tech led in Q2 as the recovery gathered steam," July 28, 2021.

[36] Charles Schwab, "Schwab Sector Insights: A view on 11 Equity Sectors," August 19, 2021.

classified the utility sector as "most unfavorable" as economic growth continues to rebound.[37]

The outlook of equity analysts is important because the unfavorable outlook of utilities over the near-term shows that economic growth and increasing interest rates will result in declining valuations of utilities. Therefore, the underperformance of utilities over the near-term will be due to conditions that are unfavorable for the sector and not because accommodative monetary and fiscal policy are causing the S&P 500 to outperform the utility sector as Mr. Murray contends.[38]

Q. Do you agree with Mr. Murray that investors expect authorized ROEs to decline because of the low interest rate environment?

A. No, I do not. The yield on the 30-year Treasury Bond reached a low in August 2020 of 1.32 percent[39]; however, yields have increased to 1.91 percent as of August 31, 2021. Furthermore, the average authorized ROE for natural gas distribution companies was 9.46 percent in 2020.[40] Therefore, the average authorized ROE for natural gas distribution companies was 9.46 percent at the low point of the yield on the 30-year Treasury bond. Since, interest rates have increased since August 2020 and are expected to increase over the near-term as the economy recovers from the COVID-19 pandemic, investors will not expect authorized ROE for natural gas utilities to decline.

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37 Well Fargo Investment Institute, 2021 Midyear Outlook, June 2021.

38 Direct Testimony of David Murray, at 14.

39 Bloomberg Professional, as of August 31, 2021.

40 S&P Capital IQ, "RRA Regulatory Focus – Major Rate Case Decisions – January – June 2021, " July 27, 2021.

Q. Is an increase in regulatory commission approved ROEs consistent with the Mr. Murray's positions regarding capital markets?

A. Yes, it is. For example, Mr. Murray has acknowledged that the share prices of utilities are inversely related with interest rates:

> Therefore, changes in utility stock valuation levels typically have a strong inverse correlation to changes in bond yields, i.e. as bond yields decline, utility stock prices increase.[41]

Therefore, since interest rates are expected to increase over the near-term, the cost of equity for utilities will also increase.

Q. Has Staff witness Mr. Chari concluded that the authorized ROE should increase in Case No. ER-2021-0240 for Ameren Missouri's electric operations?

A. Yes, he has. Using the constant growth DCF model, Mr. Chari estimated a cost of equity of 8.29 percent[42] for Ameren Missouri's electric operations which is much lower than the average authorized ROE for electric utilities that he cites of 9.43 percent in 2020 and 9.44 percent in 2021.[43] To develop his recommendation for Ameren Missouri, he compared the DCF result at the time of the 2019 rate case for Empire District Electric Company to the current DCF result for Ameren Missouri's electric operations. Since the DCF result increased 55 basis points, Mr. Chari concluded that the authorized ROE for Ameren Missouri's electric operations should increase from the 9.25 percent ROE that was authorized for Empire District Electric Company.[44] Therefore, even though his cost of equity estimates were well below the authorized ROE of 9.25 percent for Empire District Electric Company, Mr. Chari still concluded that the authorized ROE for Ameren Missouri's

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41 Direct Testimony of David Murray, at 10.

42 Case No. ER-2021-0240, Staff Cost of Service Report, at Schedule PC-9-1.

43 Case No. ER-2021-0240, Staff Cost of Service Report, at 28.

44 Case No. ER-2021-0240, Staff Cost of Service Report, at 8-9.

electric operations should be greater than 9.25 percent because the cost of equity has increased since 2019.

Q. How would an increase in interest rates affect the comparison of Dr. Won's current DCF results to the DCF results he calculated as of the time of Spire Missouri's 2017 rate case?

A. While Dr. Won acknowledges that the utility sector has underperformed the broader market since March 2020 and that the dividend yields of utilities have increased since 2017, he ultimately concludes that the cost of equity has decreased because his current proxy group average DCF result is lower than the average DCF result as of 2017.[45] However, as noted above, Dr. Won also has noted that the share prices of utilities are inversely related to interest rates.[46] Since investors expect interest rates to increase over the near-term, the share prices of the companies included in Dr. Won's proxy group are likely to decline. As shown in Figure 5, a decline in share prices would increase the dividend yields and thus the estimate of the cost of equity from the DCF model. Therefore, Dr. Won's current estimate of the cost of equity from his DCF model is likely understating the cost of equity during the period that Ameren Missouri's rate will be in effect. By relying on current market data, Dr. Won has incorrectly concluded that the cost of equity has decreased since Spire Missouri's 2017 rate case.

Q. What are your conclusions regarding the effect of capital market conditions on the cost of equity for Ameren Missouri?

A. There are a few important conclusions regarding the effect of capital market conditions for Ameren Missouri:

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[45] Staff Cost of Service Report, at 17.

[46] Staff Cost of Service Report, at 17.

1. The share prices of utilities are inversely related with the interest rates. Investors expect interest rates to increase over the near-term which will likely result in a decline in the share prices of utilities. A decline in share prices will increase the dividend yield and thus the cost of equity estimate of the DCF model. Therefore, current DCF results are likely understating the cost of equity during the period that Ameren Missouri's rates will be in effect.

2. Market conditions have affected the results of the ROE estimation models requiring consideration of the results of multiple models and exercised judgment.

3. While the ROE estimation models use some historical data (i.e., stock prices and dividends in the DCF model, and bond yields in the CAPM), based on the expectation that interest rates will increase, I believe it is also appropriate to consider near-term projections in the ROE estimation models.

4. Dr. Won's current DCF results are likely understating the cost of equity during the period that Ameren Missouri's rates will be in effect due to the expectation that interest rates will increase. Therefore, it is not reasonable for Dr. Won to compare his current DCF result to his DCF results as of 2017. Because the effect of increasing interest rates was not considered, this comparison results in the incorrect conclusion that the cost of equity has decreased since Spire Missouri's 2017 rate case.

5. Mr. Murray's assumption that the cost of equity is lower than authorized ROEs causes him to inappropriately conclude that the authorized ROE should decline even though interest rates have increased since August 2020 and are expected to increase over the near term.

VII. STAFF WITNESS DR. SEOUNG JOUN WON'S ROE ANALYSIS

Q. Please provide an overview of Dr. Won's ROE analyses.

A. Dr. Won develops multiple methodologies including the DCF, CAPM and Rule of Thumb methodologies and estimates a range of results from each methodology. Figure 7 summarizes the results of Dr. Won's ROE estimation methodologies and compares his ROE results to the ROE results that were filed by Staff in the 2017 case for Spire Missouri.

Figure 7:Comparison of Dr. Won's ROE Results to Staff's Estimation in Spire Missouri's 2017 case

Methodology	Staff 2017 Case Range	Dr. Won's Range
Two-Step DCF[47]	N/A	6.10%-8.73% Mean: 8.32%
Constant Growth DCF[48]	6.70%-7.70% Mean: 7.30%	N/A
CAPM[49]	6.08%-7.14%	6.14%-8.64%
Rule of Thumb[50]	7.02%-8.39%	6.26%-8.41%
Recently Authorized ROEs for Natural Gas Utilities[51]	2016 Fully Litigated: 9.61% 2016 All: 9.54%	2021 Fully Litigated: 9.60% 2021 Settled: 9.48% 2021 All: 9.52%

47 Staff Cost of Service Report, at 21.

48 Case No. GR-2017-0215, Staff Cost of Service Report, September 2017, at Schedule 10

49 Staff Cost of Service Report, at 23 and Case No. GR-2017-0215, Staff Cost of Service Report, September 2017, at 43.

50 Staff Cost of Service Report, at 24 and Case No. GR-2017-0215, Staff Cost of Service Report, September 2017, at 44.

51 Staff Cost of Service Report, at 26 and Case No. GR-2017-0215, Staff Cost of Service Report, September 2017, at 44-45.

Q. Is Dr. Won's ROE recommendation based on the results of his ROE estimation models?

A. No, it is not. Dr. Won essentially disregards the results of the majority of his ROE estimation methodologies and establishes his ROE recommendation based entirely on the results of his "comparative analysis", calculating ROEs using the Two-Step DCF model and current data as compared with the ROE resulting from a Two-Step DCF model using data from 2017 and looking at recently authorized ROEs for natural gas utilities. In the case of the 2017 data, Dr. Won attempted to measure a difference in the ROE from 2017 to the current time-period using his Two-Step DCF model results. He develops his recommendation in this case by relying on the authorized ROE of 9.80 percent from Spire Missouri's 2017 case and adjusting the authorized ROE to reflect the result of his comparison of the current and 2017 Two-Step DCF results. Specifically, Dr. Won assumes that the cost of equity has decreased 30-basis points and therefore recommends a 9.50 percent ROE for Ameren Missouri.

Q. What are the principal areas of disagreement with the methodologies that Dr. Won uses as the basis for his modeling?

A. I have many areas of disagreement on the technical aspects of Dr. Won's analysis and the assumptions he relies on in each of his methodologies. As a practical matter, however, Dr. Won does not actually rely on any of those analyses to support his recommendation for Ameren Missouri, as they all produce results that are significantly below his recommended ROE of 9.50 percent. Rather, Dr. Won's ROE recommendation is based on a comparison of the results of his Two-step DCF model in this case to the results of the same model in Spire Missouri's 2017 case. While I disagree with many aspects of Dr. Won's DCF, CAPM and other benchmarking analyses, the fact is that Dr. Won has not relied on those models in the development of his recommendation. Therefore, while my

response to Dr. Won will address each methodology at a high level, I will focus more specifically on the Two-Step DCF methodology and the comparison underlying his recommended return.

A. Response to Dr. Won's Two-Step DCF Analysis

Q. Please summarize Dr. Won's specification of the Two-Step DCF model.

A. Dr. Won's DCF analysis is a two-stage model where he relies on projected earnings and dividend growth rates from Value Line as the estimate of the short-term growth rate, and projected GDP growth as the long-term growth rate.[52] As support for the use of a two-stage model, Dr. Won cites to the DCF model relied on by FERC.[53] Dr. Won relies on the three-month average of the high and low stock prices for his natural gas utility proxy companies for April through June 2021.[54] As shown in Schedule SJW-11, Dr. Won relies on the nominal Gross Domestic Product ("GDP") growth rate published by the Congressional Budget Office ("CBO") of 3.70 percent as his estimate of the long-term growth rate. Schedule SJW-13 shows the results of Dr. Won's Two-Step DCF analysis, which range from 6.10 percent to 8.73 percent, with an average DCF result of 8.32 percent.

Q. Are the results of Dr. Won's Two-Step DCF model reasonable?

A. No, they are not. The results of Dr. Won's Two-Step DCF analysis are so low as to be unreasonable compared to the authorized equity returns for natural gas distribution companies in other jurisdictions. The mean result of Dr. Won's Two-Step DCF analysis is 8.32 percent which is well below any authorized ROE for a natural gas distribution

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[52] Staff Cost of Service Report, at Schedule SJW-13.

[53] *Id.,* at 21.

[54] *Id.,* at Schedule SJW-12.

company in the last 40 years.[55] The *Hope* and *Bluefield* decisions, which Dr. Won acknowledges are standards to be followed in setting a just and reasonable return,[56] require the authorized return to be comparable to other returns available to investors in companies with similar risk. Dr. Won's Two-Step DCF results clearly violate this standard.

Q. What are your major areas of disagreement in methodology and opinions that Dr. Won relied on to derive his Two-Step DCF analysis?

A. The major areas of concern that I have with Dr. Won's Two-Step DCF analysis are: 1) the development of the short-term growth rate; 2) the development of the long-term growth rate; 3) the misapplication of FERC's Two-Step DCF model; and 4) the development of his ROE recommendation which relies on the comparison of the DCF results from 2017 and 2021 to adjust the authorized ROE from Spire Missouri's 2017 rate case.

1. Development of the Short-term Growth Rate

Q. Are the results of Dr. Won's comparison of his 2017 and 2021 Two-Step DCF results biased by his selection of the short-term growth rate?

A. Yes. As noted above, Dr. Won indicated that the proxy group average DCF result decreased 30-basis points from 2017 to 2021 indicating that the cost of equity has declined. However, the decline in the estimate of the cost of equity is driven primarily by Dr. Won's inclusion of the projected dividend per share ("DPS") growth rates from Value Line in his calculation of the short-term growth rate. As shown in Figure 8 below, the proxy group average DPS growth rate declined 207 basis points between 2017 and 2021. The decline coupled with the fact that in his weighted average short-term growth calculation Dr. Won relied on a 0.7 weighting for the projected DPS growth rates from Value Line and

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[55] S&P Capital IQ Pro.

[56] Staff Cost of Service Report, at 11.

0.3 weighting for the projected Value Line earnings per share ("EPS") growth rates resulted in a decline in Dr. Won's DCF result from 2017 to 2021. However, as I will discuss in more detail below, it is more appropriate to rely solely on projected EPS growth as the short-term growth estimate in the Two-Step DCF model than to include projected DPS growth rates.

Figure 8:Comparison of 2017 and 2021 inputs to Dr. Won's Two-Step DCF analysis

Two-Step DCF Input	2021	2017	Difference (2021-2017)
Dividend Yield	3.29%	2.69%	0.60%
Value Line Projected Earnings Growth Rate	7.36%	6.43%	0.93%
Value Line Projected Dividend Growth Rate	4.86%	6.36%	-2.07%
Projected Nominal GDP Growth Rate	3.70%	4.00%	-0.30%

Q. Why should Dr. Won have relied solely on projected EPS growth as the estimate of short-term growth in the Two-Step DCF model?

A. Earnings are the fundamental driver of a company's ability to pay dividends; therefore, earnings growth is the appropriate measure of a company's growth. As noted by Brigham and Houston:

> Growth in dividends occurs primarily as a result of growth in earnings per share (EPS). Earnings growth, in turn, results from a number of factors, including (1) inflation, (2) the amount of earnings the company retains and invests, and (3) the rate of return the company earns on its equity (ROE).[57]

In contrast, changes in a company's dividend payments are based on management decisions related to cash management and other factors. For example, a company may decide to retain certain earnings rather than include those earnings in a dividend issuance.

[57] Eugene F. Brigham and Joel F. Houston, Fundamentals of Financial Management, at 317 (Concise Fourth Edition, Thomson South-Western, 2004).

As shown in Figure 8, the Value Line projected DPS growth rates for Dr. Won's proxy group decreased 207 basis points. As a result, changes in management decisions can cause large fluctuations in the dividend growth of a utility. Therefore, dividend growth rates are less likely than earnings growth rates to reflect investor perceptions of a company's growth prospects.

Furthermore, investment analysts report predominant reliance on EPS growth projections. In a survey completed by 297 members of the Association for Investment Management and Research, the majority of respondents ranked earnings as the most important variable in valuing a security (more important than cash flow, dividends, or book value).[58]

Academic research also supports the use of EPS growth estimates. A 2002 study in the *Journal of Accounting Research*, examined "the valuation performance of a comprehensive list of value drivers" and found that "forward earnings explain stock prices remarkably well" and were generally superior to other value drivers analyzed.[59] A 2012 study from the journal *Contemporary Accounting Research* found that the sell-side analysts with the most accurate stock price targets were those whom the researchers found to have more accurate earnings forecasts.[60]

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[58] Block, Stanley B., "A Study of Financial Analysts: Practice and Theory", Financial Analysts Journal (July/August 1999).

[59] Liu, Jing, et al., "Equity Valuation Using Multiples," Journal of Accounting Research, Vol. 40 No. 1, March 2002.

[60] Gleason, C.A., et al., "Valuation Model Use and the Price Target Performance of Sell-Side Equity Analysts," Contemporary Accounting Research.

Q. Do you have any other concerns with Dr. Won's reliance on Value Line projected DPS growth rates?

A. Yes, I do. In addition to the theoretical basis for the use of earnings growth rates, there is the practical consideration of the availability of market data. The source for all of Dr. Won's growth rates is Value Line. Dr. Won's reliance on Value Line's projected DPS and EPS growth rates unnecessarily introduces "sole source" bias into his calculations. By contrast, my Constant Growth and Multi-Stage DCF analyses which I presented in my Direct Testimony, use earnings growth rates from multiple sources, including Zack's and Yahoo! Finance, both of which provide consensus estimates from multiple analysts.

Q. Did Staff witness Mr. Chari rely on projected DPS growth rates from Value Line to develop his Two-Step DCF analysis in Case No. ER-2021-0240 for Ameren Missouri's operations?

A. No, he did not. Mr. Chari relied on projected earnings growth rates from Value Line and S&P Global Market Intelligence as the estimate of short-term growth in his Two-Step DCF analysis for Ameren Missouri's electric operations.

Q. How would Dr. Won's Two-Step DCF results change if he had relied solely on projected EPS growth as the estimate of short-erm growth?

A. As shown in Schedule AEB-R1, Attachment 10, I re-calculated Dr. Won's Two-Step DCF Analysis relying only on the projected EPS growth rate from Value Line as the estimate of short-term growth. This increases the results of Dr. Won's Two-Step DCF analysis from 8.32 percent to 9.53 percent. Additionally, as shown in Schedule AEB-R1, Attachment 10, I also re-calculated Dr. Won's Two-Step DCF analysis using 2017 market data to rely solely on projected EPS growth rate from Value Line as the estimate of short-term growth. This resulted in a decrease in Dr. Won's Two-Step DCF analysis using 2017 market data from 8.62 percent to 8.38 percent. Therefore, had Dr. Won relied solely on projected EPS

growth rates from Value Line as the short-term growth estimate, he would have concluded that the cost of equity has increased since Spire Missouri's 2017 rate case.

2. Development of the Long-term Growth Rate

Q. What long-term GDP growth rate has Dr. Won relied on to develop his Two-Step DCF analysis?

A. Dr. Won relied on the projected GDP growth rate of 3.70 percent reported by the CBO as the estimate of long-term growth in his Two-Step DCF model.[61]

Q. What is your opinion of the long-term growth rate used in Dr. Won's Two-Step DCF model?

A. The long-term growth rate that Dr. Won relies on results in an understated cost of equity. While Dr. Won does not state the time-period of the GDP growth rate in either his testimony or schedules, it would appear based on a review of the data published by the CBO that the projected GDP growth rate is for the period of 2026-2031.[62] Therefore, Dr. Won is relying on a long-term growth rate that only reflects growth for a five-year period. Furthermore, the CBO has advised that the forecasts should be used with caution considering the uncertainty involved in the forecasting process:

> An unusually high degree of uncertainty surrounds CBO's latest economic projections. The agency's projections of inflation are highly uncertain, both in the short term—when the upward pressure on prices from supply shortages and strong demand for labor could be larger or smaller than expected—and in the longer term, when the path of expected inflation could be higher or lower than expected. Uncertainty also surrounds the path of the pandemic and the recovery from the recent downturn, both domestically and internationally. The impact of recent fiscal and monetary policies is highly uncertain, as are the stability of financial markets and the path of the

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[61] Staff Cost of Service Report, at Schedule SJW-11.

[62] Congressional Budget Office, "Additional Information About the Updated Budget and Economic Outlook: 2021 to 2031," July 2021, at 27.

> recovery in the labor market. The pace of potential output is a significant longer-term uncertainty, as is the impact of the pandemic on the key inputs to that potential output growth.[63]

The CBO noted that the level of uncertainty is particularly high over the near-term given the effects of the pandemic and recent accommodative monetary and fiscal policy.

Finally, Dr. Won's projected GDP growth rate of 3.70 percent is 186 basis points below the long-term projected GDP growth rate that I relied on in my Direct Testimony of 5.56 percent which considers long-term historical growth in real GDP as reported by the Bureau of Economic Analysis ("BEA") from 1929 to 2019 and projected inflation rates from Blue Chip Financial Forecasts and the Energy Information Administration ("EIA").[64] Therefore, it is likely that Dr. Won's estimate of projected GDP growth may understate a reasonable expectation of long-term economic growth.

Q. How would Dr. Won's Two-Step DCF results change if he had relied on a projected GDP growth rate similar to the estimate you used in your Direct Testimony?

A. As shown in Schedule AEB-R1, Attachment 10, if Dr. Won had relied on Value Line's projected EPS growth rates as the estimate of the short-term growth rate and the projected GDP growth rate that I relied on for my Multi-Stage DCF analysis of 5.56 percent as the estimate of long-term growth, the average result of his Two-Step DCF analysis would be 10.16 percent.

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[63] *Id.,* at 45.

[64] Schedule AEB-D2, Attachment 5

3. Misapplication of FERC's Two-Step DCF Analysis

Q. Does Dr. Won's Two-Step DCF analysis follow FERC's current methodology?

A. No, it does not. Dr. Won references FERC's ROE methodology from Opinion No. 569, which involved the MISO transmission owners as support for his use of a short-term and long-term growth rate in his Two-Step DCF analysis.[65] Dr. Won's methodology, however, is not consistent with FERC's most recent determination in the MISO transmission owners' case. In addition to changing its overall methodology for setting the ROE to rely on an equal weighting of the DCF, CAPM and Risk Premium methodologies, FERC also adjusted its application of the two-stage DCF model in Opinion No. 569-A. The following revisions that were recently specified by FERC were not applied in Dr. Won's specification of the Two-Step DCF model:

- FERC assigns 80 percent weight to the short-term earnings per share growth rate and 20 percent to the long-term GDP growth 20 percent.
- FERC has consistently relied on earnings growth rates from I/B/E/S (which are the same as those reported on Yahoo! Finance), not Value Line, as Dr. Won has used in his Two-Step DCF analysis.
- FERC relies on six months of high and low stock prices for the proxy group companies to compute the dividend yield, not the three months of stock price data that Dr. Won has relied upon.
- FERC uses Global Insights as the source of its projected GDP growth rate, rather than the CBO upon which Dr. Won has relied in his Two-Step DCF analysis.
- Finally, FERC excludes high and low outliers from the results of the DCF, CAPM and Risk Premium methodologies. Dr. Won has not indicated whether he has excluded outliers and, if so, how that determination was made.

[65] Staff Cost of Service Report, at 21.

Q. Even if Dr. Won had applied the FERC's two-stage DCF methodology consistent with the recent Opinion 569-A, would it be reasonable to rely exclusively on the results of this methodology to set the ROE?

A. No. The FERC has recognized that exclusive reliance on the results of the DCF model is not appropriate based on recent market conditions. Therefore, Dr. Won's reliance on FERC's DCF methodology, without recognizing that FERC is only giving this methodology one third to one half of the weight in its final ROE determination, is not appropriate. As discussed in Opinion No. 569-A, in prior electric transmission ROE cases, FERC sought to depart from its prior approach of relying exclusively on the DCF model because it was less confident that the midpoint of their zone of reasonableness, set using this model, reflected the ROE that would meet the *Hope* and *Bluefield* standards as a result of anomalous market conditions and bond yields that were at historic lows.[66] Therefore, FERC determined that it would rely on multiple models, weighting the results of the DCF, CAPM and Risk Premium models equally in electric transmission cases, and the DCF and the CAPM equally in natural gas pipeline cases.[67]

Q. What would be the results of Dr. Won's Two-Step DCF analysis if he had followed the FERC's methodology?

A. As shown in Schedule AEB-R1, Attachment 10, if Dr. Won had followed FERC's methodology in his Two-Step DCF analysis, the range of reasonableness for his proxy group would be from 7.55 percent to 10.44 percent, with a midpoint of 8.99 percent and a median of 8.97 percent.

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66 FERC Opinion No. 569-A, issued May 21, 2020, at P4.

67 FERC Policy Statement on Determining Return on Equity for Natural Gas and Oil Pipelines, May 202 0, at 17.

Q. How do the changes that you made to Dr. Won's Two-Step DCF analysis affect the results of his comparison between his current Two-Step DCF results and the results as of 2017?

A. As shown in Figure 9, in each case the DCF results increased from 2017 to 2021. For example, if Dr. Won had relied solely on earnings growth rates as the estimate of short-term growth his Two-Step DCF analysis would have indicated an increase in the cost of equity of 115 basis points form 8.38 percent to 9.53 percent. Similarly, if Dr. Won had relied on the correct specification of FERC's Two-Step DCF analysis, his DCF results would have increased 128 basis points from 7.69 percent to 8.97 percent. As a result, making reasonable adjustments to Dr. Won's Two-Step DCF analysis results in the conclusion that the cost of equity has increased since Spire Missouri's 2017 rate case.

Figure 9:Summary of Adjustments to Dr. Won's Two-Step DCF Analysis

	2021 Proxy Group Mean	2017 Proxy Group Mean	Difference (2021 – 2017)
As Filed	8.32%	8.62%	-0.30%
VL EPS Growth Rates as the short-term growth rate	9.53%	8.38%	1.15%
VL EPS Growth Rates as the short-term growth rate & Bulkley projected GDP growth rate as the long-term growth rate	10.16%	8.89%	1.27%
FERC Two-Step DCF (Median)	8.97%	7.69%	1.28%

4. Adjustment to Spire Missouri's 2017 Authorized ROE

Q. Has Dr. Won made any attempt to reconcile his Two-Step DCF model results with his recommended ROE?

A. Yes. As discussed above, Dr. Won attempts to justify his recommended ROE using a benchmarking analysis. Rather than relying on the results of his DCF model, Dr. Won

compares the DCF results in Spire Missouri's 2017 rate case and his DCF results in this case. Dr. Won suggests that the authorized ROE that was approved by the Commission can be interpreted as the Commission's perspective on the relationship between the COE and the ROE. Based on that unfounded assumption, Dr. Won suggests that, as long as that relationship has not changed, it is appropriate to rely on a comparison of his DCF results from 2017 to his current DCF results to adjust the authorized ROE from 2017 to reflect changes in the cost of equity.[68]

Q. Did Staff perform a Two-Step DCF analysis in the Spire Missouri's 2017 rate case?

A. No. Staff performed a Constant Growth DCF analysis in the 2017 rate case for Spire Missouri. The results of Staff's Constant Growth DCF analysis ranged from 6.90 percent to 7.70 percent, as shown on Schedule 10 of Staff witness David Murray's 2017 attachments. Therefore, Staff's estimate of the cost of equity in 2017 was significantly below the cost of equity implied by Dr. Won's Two-Step DCF analysis of 8.32 percent. This comparison would indicate that the cost of equity has increased since the 2017 rate for Spire Missouri.

Q. Did the Commission rely on the Constant Growth DCF results calculated by Staff in the determination of the authorized ROE for Spire Missouri in 2017?

A. No. The Commission did not rely on the model results developed by the ROE witnesses in the case but instead considered the recommendations presented in the case which ranged from 9.2 percent to 10.35 percent. In addition, the Commission considered recently authorized ROEs, capital market conditions including economic growth and anticipated increases in short-term interest rates by the Federal Reserve, and the

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[68] Staff Cost of Service Report, at 24-25.

business and financial risks of the company.[69] Based on these considerations, the Commission awarded Spire Missouri an authorized ROE of 9.80 percent.

Q. What is your response to Dr. Won's use of the Spire Missouri ROE to set his ROE recommendation for Ameren Missouri?

A. Dr. Won's analysis of the Spire Missouri case to estimate the ROE for Ameren Missouri is not a meaningful indicator of the investor required return on equity. Further, it is important to note that the Staff has relied on this comparative approach in other cases, including the 2017 Spire Missouri case and the Commission has rejected the Staff's methodology and ultimate recommendation. In reviewing the 2017 Spire Missouri case, it is clear that the Commission considered an approach that was developed by Staff that was very similar to the comparative methodology relied on by Dr. Won. There is no evidence in that record that supports Dr. Won's theory that the Commission has established any relationship between the results from Staff's DCF model in the Spire Missouri 2017 case and the ROE that was authorized. In fact, the Commission noted that Staff witness Murray's recommendation of 9.5 percent (which was substantially higher than his DCF results of 6.90 percent to 7.70 percent) was too low because Mr. Murray relied on Commission decisions that had test years in 2014 and 2015 and did not consider the improving economy and the expectation that the Federal Reserve would increase short-term interest rates.[70] Dr. Won's analysis presented in this case to estimate the ROE for Ameren Missouri suffers from the same deficiencies that Commission outlined in the 2017 rate case for Spire Missouri. Dr. Won also is comparing capital market conditions today to those that existed in 2017 for a Commission decision that had a test year which was trued-

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[69] *In the Matter of Laclede Gas Company's Request to increase its Revenues for Gas Service*, File No. GR-2017-0215 and File No. GR-2017-0216, Report and Order (Feb. 21, 2018), at 32.

[70] *Id.,* at 30-31.

up through September 30, 2017. Dr. Won also failed to consider macroeconomic conditions including that the economy is entering a period of sustained economic growth, long-term interest rates are expected to increase over the near-term, and the currently high inflation rates. Using the same approach that the Commission rejected in the Spire Missouri's 2017 rate case, Dr. Won is suggesting, without support, that there is a relationship between the Commission authorized ROE and Staff's estimate of the cost of equity in order to justify his benchmarking methodology rather than have to address the unreasonably low results derived from his Two-Step DCF model.

Q. Please summarize your conclusions regarding the analyses that Dr. Won uses to support his recommended ROE of 9.50 percent?

A. First, it is important to recognize that Dr. Won's Two-Step DCF model did not result in any estimates that he relied on to develop his recommended ROE. Further, when benchmarked against recently authorized ROEs, it is clear that the results of Dr. Won's Two-Step DCF model do not meet the *Hope* and *Bluefield* principles, because there are no instances in recent authorized ROEs where a regulatory commission has determined that the cost of equity for a natural gas utility is 8.32, as suggested by Dr. Won's model.

Second, I do not agree with Dr. Won's conclusion that the cost of equity has decreased since Spire Missouri's 2017 rate case. As shown in Figure 9 above when reasonable adjustments are made to Dr. Won's Two-Step DCF, such as relying on earnings growth rates as the estimate of short-term growth or calculating the Two-Step DCF model as specified by the FERC, the DCF results have increased since Spire Missouri's 2017 rate case.

Third, while Dr. Won relies on FERC precedent to support his DCF methodology, his analysis is not consistent with FERC's current approach for calculating the DCF

methodology. In addition, by relying entirely on his DCF result, he has ignored the FERC's broader conclusion that it is no longer appropriate to rely only on the DCF model.

Regarding the benchmarking analysis performed using Spire Missouri's 2017 rate case, I conclude that this analysis is not at all meaningful. I further conclude that the analysis is entirely consistent with the analysis that Staff presented to the Commission in Spire Missouri's 2017 rate case and that was rejected by the Commission.

Consistent with FERC's recent determinations in Opinion No. 569-A, I believe it is important to give some weight to the results of many financial models to estimate the cost of equity for Ameren Missouri. While Dr. Won's comparative analysis ultimately results in an ROE recommendation that is generally in line with the average of authorized equity returns for natural gas distribution companies since 2018, as shown in Figure 3, the range of authorized returns is very broad, which makes it important to recognize, as the Commission did in the Spire Missouri case, that a simple review of returns from historical periods is insufficient without consideration of the current market conditions.

B. Capital Asset Pricing Model

Q. Please summarize Dr. Won's application of the CAPM.

A. Dr. Won states that he develops the CAPM as a test of the reasonableness of his DCF results.[71] Dr. Won's CAPM analysis uses a risk-free rate based on the average yield on the 30-year Treasury bond for the three months ending June 30, 2021, Value Line Betas for the natural gas utility proxy group, and four measures of the market risk premium ("MRP"). The first two estimates of the MRP are the long-term geometric and arithmetic

[71] Staff Cost of Service Report, at 22.

average MRPs of 4.63 percent and 6.07 percent, respectively, calculated as the difference between the return on large company stocks and long-term government bonds from 1926 to 2020.[72] Similarly, the second two estimates of the MRP are the long-term geometric and arithmetic average MRPs of 4.84 percent and 6.43 percent, respectively, but these estimates of the MRP are calculated as the difference between the return on the S&P 500 and long-term government bonds from 1928 to 2020.[73] The results of Dr. Won's CAPM analyses range from 6.14 percent to 8.64 percent. Dr. Won concludes that the results of his CAPM analysis support the range of results produced by his DCF analysis.[74]

Q. Does Dr. Won rely on his CAPM analysis to establish his recommended ROE for Ameren Missouri?

A. No, he does not. Dr. Won's recommendation is based on the benchmarking analysis performed using the results of his Two-Step DCF model. Dr. Won simply suggests that the CAPM results support those of his DCF analysis.

Q. Do you agree with the range resulting from Dr. Won's CAPM analysis?

A. No. First, Dr. Won claims that his CAPM analysis results in a range of returns from 6.14 percent to 8.64 percent; however, it is unclear how he has developed this range. As shown in Schedule SJW-14, the proxy group average range for the four MRP scenarios is 6.43 percent to 8.05 percent. However, regardless of the CAPM ranges used, the high-end of each of the ranges is below any authorized ROE for a natural gas distribution company

[72] Staff Cost of Service Report, at 23.
[73] Staff Cost of Service Report, at 23.
[74] Staff Cost of Service Report, at 23.

over the past 40 years.[75] As such, Dr. Won's CAPM results do not meet the comparable return standard of *Hope* and *Bluefield*.

Q. What risk-free rate does Dr. Won use in his CAPM analysis?

A. Dr. Won relies on a current risk-free rate of 2.26 percent, which was the three-month average yield on the 30-year Treasury bond as of June 30, 2021.

Q. Do you agree with Dr. Won's estimate of the risk rate?

A. No. My primary concern with Dr. Won's risk-free rate is that the estimation of the cost of equity is a forward-looking analysis. As discussed in Section VI, investors expect interest rates to increase over the near-term as the economy recovers from the COVID-19 pandemic and the Federal Reserve begins to normalize monetary policy. For example, according to Blue Chip, financial markets are expecting interest rates on 30-year government bonds to increase to 2.60 percent by the fourth quarter of 2022, and to approximately 3.50 percent during the period from 2023-2027.[76] This is consistent with a recent report from Wells Fargo which forecasted a yield on the 30-year Treasury Bond in the range of 2.75 percent to 3.25 for 2021 through 2022.[77] As equity investors consider their return requirements, they must factor in expectations for higher interest rates on government bonds. Dr. Won's exclusive reliance on current government bond yields does not reflect the market's expectations regarding interest rates over the rate period. Since interest rates are expected to increase, it would be more appropriate to consider a CAPM analysis which relies on projected yields on the 30-year Treasury Bond as this would better

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[75] S&P Capital IQ Pro.

[76] Blue Chip Financial Forecasts, Vol. 40, No 6, June 1, 2021, at 2 and 14.

[77] Well Fargo Investment Institute, 2021 Midyear Outlook, June 2021, at 15.

reflect capital market conditions during the period that Ameren Missouri's rates will be in effect.

Q. What MRP does Dr. Won use in his CAPM analysis?

A. Dr. Won estimates a MRP range of 4.63 percent to 6.43 percent using four separate estimates of the historical MRP. The first two estimates of the MRP are the long-term geometric and arithmetic average MRPs of 4.63 percent and 6.07 percent, respectively, calculated as the difference between the return on large company stocks and long-term government bonds from 1926 to 2020.[78] Similarly, the second two estimates of the MRP are the long-term geometric and arithmetic average MRPs of 4.84 percent and 6.43 percent, respectively, but these estimates of the MRP are calculated as the difference between the return on the S&P 500 and long-term government bonds from 1928 to 2020.[79]

Q. Why do you disagree with Dr. Won's estimated MRP range of 4.63 percent to 6.43 percent?

A. It is important to note that because Dr. Won does not rely on his CAPM methodology, and the result of this approach demonstrates that his assumptions are unreasonable, I do not address in detail the concerns I have for the methodology that Dr. Won used to estimate the MRP. Further, many of the assumptions Dr. Won uses to estimate his MRP were also relied upon by OPC witness Murray and are addressed in my response to this witness. However, I do believe it is important to note a practical concern I have with the range of MRPs relied on by Dr. Won. In each of the four MRP scenarios Dr. Won has relied on a long-term historical average of the MRP. However, given the current low yields on Treasury bonds, and the inverse relationship between interest rates and the MRP that is

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[78] Staff Cost of Service Report, at 23.

[79] Staff Cost of Service Report, at 23.

shown in the Bond Yield Plus Risk Premium analysis that I presented in Direct Testimony, Dr. Won's use of a historical MRP will understate the MRP in the current market environment. For example, the historical income-only return on government bonds over the period 1926 to 2020 (which is the same period Dr. Won used to estimate two of his estimates of the MRP) has been approximately 4.91 percent[80], while the 30-day average risk-free rate on long-term government bonds as of August 31, 2021 is 1.91 percent. Because interest rates on long-term government bonds are well below the historical average of 4.91 percent, the inverse relationship between interest rates and the MRP implies that the MRP should be well above the long-term historical averages of 4.63 percent to 6.43 percent that Dr. Won calculates. Therefore, Dr. Won's incorrect use of the historical MRP given current market conditions is the primary reason his CAPM analysis produced estimates of the cost of equity that are below any authorized ROE for a natural gas utility in the last 40 years.

Q. Does Dr. Won compare the results of his CAPM analysis to Staff's CAPM analysis in the 2017 rate for Spire Missouri?

A. No, he does not. To develop his adjustment to the ROE authorized for Spire Missouri in 2017, Dr. Won only compares the results of his 2021 and 2017 Two-Step DCF analysis. Dr. Won does not consider the changes in the CAPM analysis between 2017 and 2021. However, Staff witness Murray in the 2017 rate case for Spire Missouri calculated a CAPM result of 6.08 percent using the geometric average historical MRP and 7.14 percent using the arithmetic average historical MRP.[81] In the current proceeding for Ameren Missouri,

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[80] Duff &Phelps, Valuation Handbook: Guide to Cost of Capital, 2021.

[81] Case Nos. GR-2017-0125 and GR-2017-0216, Staff Cost of Service Report, September 2017, at 42-43.

Dr. Won estimated a proxy group average CAPM range of 6.43 percent to 6.62 percent relying on the geometric average historical MRP and 7.73 percent to 8.05 percent relying on the arithmetic average historical MRP.[82] Therefore, while I have discussed that I do not believe the authorized ROE in this case should be determined based on an adjustment to the ROE authorized in the 2017 rate case for Spire Missouri, Dr. Won would have concluded that the cost of equity has increased since 2017 if he compared his CAPM results to the CAPM results of Staff witness Murray.

C. Rule of Thumb methodology

Q. Please summarize Dr. Won's "Rule of Thumb" analysis.

A. The "Rule of Thumb" methodology presented by Dr. Won is a form of the risk premium methodology that adds an average utility bond yield to an estimate of the market risk premium. In his specification of this approach, Dr. Won relies on the three-month average yield on Moody's A-rated and Baa-rated utility bonds through June 30, 2021 of 3.26 percent and 3.41 percent and an estimated market risk premium of 3.00 to 5.00 percent to establish a range of returns from 6.26 percent to 8.41 percent.[83]

Q. Do you agree with this methodology?

A. I agree that it is generally appropriate to rely on properly-specified risk premium methodologies. However, Dr. Won appears to have changed the assumptions used in the "Rule of Thumb" from his recent prior testimony. This unsupported change has the effect of lowering the ROE that results from his risk premium approach. Specifically, Dr. Won recently filed testimony in Case No. WR-2020-0334 for Missouri-American Water

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[82] Staff Cost of Service Report, at 23.
[83] Staff Cost of Service Report, at 24.

Company ("MAWC") on November 24, 2020 and indicated that the estimated MRP range for the "Rule of Thumb" was 4.00 percent to 6.00 percent.[84] In this case for Ameren Missouri, Dr. Won is recommending a range for the MRP of 3.00 percent to 5.00 percent, adjusting his estimated MRP range for the "Rule of Thumb" analysis downwards 100 basis points.

Q. Is it reasonable to expect that the MRP would change significantly over time?

A. No. Dr. Won purports to rely on a historical estimate of the MRP. Typically, the historical MPR is calculated over a long time period. Therefore, the MRP would not be expected to change by such a substantial amount in a short period of time.

Q. Did other assumptions in his Rule of Thumb calculation change?

A. Yes. The yields on the Moody's A-rated and Baa-rated utility bonds that Dr. Won relies on for his "Rule of Thumb" analysis increased 20 to 41 basis points from the time he filed his testimony in the Missouri American Water Company case to the current proceeding for Ameren Missouri.

Q. How would the results of Dr. Won's Rule of Thumb analysis change if he had relied on the MRP range that he relied on in the Missouri American Water case?

A. If Dr. Won had relied on the MRP range of 4.00 percent to 6.00 percent from his testimony in the case for MAWC, the results of his "Rule of Thumb" methodology would have been of 7.26 percent to 9.41 percent.

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[84] Case No. WR-2020-0344, Staff Cost of Service Report, November 2020, at 27.

Q. Do these corrected results support Dr. Won's Two-Step DCF analysis?

A. No, they do not. Comparing the corrected results discussed above to Dr. Won's Two-Growth DCF result range of 6.10 percent of 8.73 percent demonstrates that the Rule of Thumb approach supports a higher cost of equity and thus does not support his Two-Step DCF results.

Q. Do you have any other concerns with Dr. Won's "Rule of Thumb" analysis?

A. Yes. Similar to his CAPM analysis, Dr. Won's specification of this risk premium approach relies on historical estimates of the market risk premium and does not take into consideration the inverse relationship between interest rates and the equity risk premium. Further, the use of the three-month average yield on utility bonds is outdated and does not reflect the expectation of rising interest rates. As such, this methodology is not reflective of investor return requirements over the rate period.

D. Authorized Returns in Other Jurisdictions

Q. Please summarize Dr. Won's analysis of authorized returns in other jurisdictions.

A. Dr. Won summarizes the authorized returns for all rate cases, fully litigated rate cases only and settled rate cases only for natural gas distribution companies in other jurisdictions from 2010 to 2021Q2.[85] Dr. Won's data indicate that the average authorized ROE for natural gas distribution utilities in both fully litigated and settled proceedings has been in the range of 9.46 percent to 10.15 percent over this period.

Q. What are your conclusions about these authorized returns?

A. Dr. Won's recommended ROE of 9.50 percent is 24 basis points below the average authorized ROE for natural gas utilities from 2010-2020 of 9.74 percent and 305 basis

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[85] Staff Cost of Service Report, at 25-26.

points below the highest ROE award during this period for a natural gas utility. Additionally, as shown in Figure 3, Dr. Won's recommendation is towards the low-end of the authorized ROEs for natural gas utilities since 2018. As noted above, 67 of the 115 authorized ROEs awarded since 2018 were equal to or greater than 9.60 percent.[86]

Q. Has Dr. Won provided any evidence to suggest that Ameren Missouri is a below-average risk utility?

A. No. Dr. Won has presented no evidence regarding the relative risk of Ameren Missouri and other natural gas utilities across the U.S., or his proxy group companies.

Q. Is it important to conduct an analysis of the relative risk of Ameren Missouri and the proxy companies?

A. Yes, it is, and the Commission has specifically considered relative risk in assessing the sufficiency of ROE recommendations. In its decision in Spire Missouri's 2017 rate case, the Commission concluded that the ROE recommendation of 9.20 percent proposed by the OPC was too low because the OPC did not consider the fact that Spire Missouri faced increased business risk when compared to OPC's proxy group.[87]

Q. Have you conducted a risk analysis for Ameren Missouri?

A. Yes, as discussed in my Direct Testimony, I considered the regulatory risk of the Company and the small size of Company as compared to the companies in the proxy group. I concluded that Ameren Missouri had greater business risk than the proxy group.[88] Based

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[86] The authorized ROEs that are established in New York State are not comparable and should be excluded from the authorize ROE range because the returns are essentially applied state-wide without differentiation between the risk factors of the companies

[87] *In the Matter of Laclede Gas Company's Request to increase its Revenues for Gas Service*, File No. ER-2017-0215 and File No. GR-2017-0216, Report and Order (Feb. 21, 2018), at 31.

[88] Direct Testimony of Ann E. Bulkley, at 54-67.

on this analysis, authorizing an ROE that is below the average authorized ROE for natural gas utilities since 2018, would not sufficiently compensate investors for the added risk faced by the Company.

E. Conclusions

Q. What is your response to the approach used by Dr. Won to develop his recommended ROE for Ameren Missouri?

A. While I have discussed each of Dr. Won's models, he abandons the DCF and CAPM analyses he has prepared. His recommendation is based entirely on an analysis that compares the results of Staff's models in Spire Missouri's 2017 rate case to his models in this case as a basis for adjusting the ROE that was authorized for Spire Missouri to reflect an ROE for Ameren Missouri in the current proceeding. The Commission has already considered and rejected this approach for setting the ROE in Spire Missouri's 2017 rate case. In that proceeding, the Commission clearly identified the flaws in Staff's methodology and Dr. Won has done nothing in his analysis in the Ameren Missouri case to correct those flaws. Therefore, it would be appropriate to place no weight on Dr. Won's recommendations.

However, even if Dr. Won's Two-Step DCF comparison is considered, when reasonable adjustments are made to Dr. Won's Two-Step DCF analysis, his DCF results show that the cost of equity has increased since Spire Missouri's 2017 rate case. Furthermore, a comparison of Dr. Won's DCF and CAPM analyses to those presented by Staff in Spire Missouri's 2017 rate case also shows that the cost of equity has increased since 2017. This leaves only Dr. Won's comparison to authorized ROE's for other natural gas utilities. However, Dr. Won's recommendation is slightly below the average authorized ROE for natural gas utilities since 2018 even though Dr. Won has provided no evidence to indicate that the business risk of the company is lower than other natural gas utilities. In Spire

Missouri's 2017 rate case, the Commission noted the importance of considering the business risk of the subject company. If Dr. Won had examined the business risk of the Company as I have in my Direct Testimony, he would have concluded that the business risk of the Company was greater than that of the proxy group. While I do not agree with the "comparative analysis" that Dr. Won has developed to adjust the authorized ROE of 9.80 percent from Spire Missouri's 2017 rate case, reasonable adjustments to Dr. Won's analyses show that the cost of equity has increased and thus the authorized ROE for Ameren Missouri in this case should be at least 9.80 percent.

VIII. OPC WITNESS MR. MURRAY'S ROE ANALYSIS

Q. Please summarize Mr. Murray's ROE analyses.

A. Mr. Murray develops several cost of equity analyses including the multi-stage DCF and the CAPM. In these analyses, Mr. Murray relies on a proxy group of comparable companies and separately calculates the ROE for Ameren. In addition, Mr. Murray develops a Rule of Thumb approach and considers recently authorized ROEs. As shown in Figure 10 the results of Mr. Murray's ROE estimation methodologies range from 5.75 percent to 7.62 percent.

Figure 10: Results of Mr. Murray's ROE Estimation Methodologies

Methodology	Range
Multi-Stage DCF (AEE, 3.5% long-term growth rate)[89]	7.12%
Multi-Stage DCF (AEE, 3.0% long-term growth rate)[90]	6.95%-6.96%
Multi-Stage DCF (AEE, 2.5% long-term growth rate)[91]	6.78%-6.79%
Multi-Stage DCF (Natural Gas Proxy Group, 3% long-term [92] growth rate)	Average All: 7.62% Average Mostly Pure Play: 7.45%
CAPM[93]	6.40% - 6.81%
Rule of Thumb[94]	5.75%

Q. Is Mr. Murray's ROE recommendation based on the results of his ROE models?

A. As a practical matter, not at all. Mr. Murray establishes a range that he suggests the Commission consider in this case of 8.50 percent to 9.50 percent, however he provides no basis for that range in his testimony or workpapers. Within that range, Mr. Murray's recommendation of an ROE of 9.25 percent is based on the Commission's acceptance of his proposed 45 percent equity ratio.[95] While Mr. Murray suggests that he considers his COE estimates, the results of Mr. Murray's models do not support his recommended range. Mr. Murray's recommendation of 9.25 percent is 175 to 275 basis points above the COE range that he determines based on the results of his models of 6.50 percent to 7.00 percent.[96] Mr. Murray states that his recommendation is also based on consideration of

[89] Direct Testimony of David Murray, at DM-D-2-1 and DM-D-2-2.
[90] Direct Testimony of David Murray, at DM-D-2-1 and DM-D-2-2.
[91] Direct Testimony of David Murray, at DM-D-2-1 and DM-D-2-2.
[92] Direct Testimony of David Murray, at 25.
[93] Direct Testimony of David Murray, at DM-D-5-1 through DM-D-5-3.
[94] Direct Testimony of David Murray, at 30.
[95] Direct Testimony of David Murray, at 5.
[96] Direct Testimony of David Murray, at 5.

the Commission's authorized ROE for Empire District Electric, the authorized ROE for Ameren Illinois' natural gas utility operations, capital market conditions, and an approximation of the "Zone of Reasonableness" that the Commission would consider.

Q. How does Mr. Murray factor his ROE model results into his ROE recommendation?

A. Mr. Murray relies on his essentially discarded Multi-Stage DCF analysis to conclude that the cost of equity is low and therefore, authorized ROEs should be reduced.[97] Thus Mr. Murray recommends an ROE of 9.25 percent for Ameren Missouri's natural gas operations which is lower than the ROE range of 9.40 percent to 9.95 percent that was outlined as reasonable in the Settlement Agreement approved by the Commission in the Company's last rate case proceeding in 2019.[98] Therefore, Mr. Murray defaults to the incorrect concept that authorized ROEs are greater than the cost of equity in order to claim that he has considered his results because he cannot ultimately rely on his Multi-Stage DCF analysis due to the unreasonably low results produced by the model. The irrationality and arbitrary nature of the recommendation is however readily apparent.

Q. What are your primary conclusions regarding Mr. Murray's analyses and conclusions?

A. While there are many assumptions and methodologies relied on by Mr. Murray with which I disagree, that will be discussed in the remainder of my Rebuttal Testimony, it is important to recognize that, as was the case with Dr. Won, because Mr. Murray's models produce results that are 163 to 350 basis points below his recommended ROE of 9.25 percent, it is unreasonable to suggest that he has relied on any of his analyses. Therefore, Mr.

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97 Direct Testimony of David Murray, at 8.

98 File No. GR-2019-0077, *In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariff to Increase Its Revenues for Natural Gas Service,* Order of Correction, August 21, 2019.

Murray's recommendation is essentially his unsupported view of the ROE for Ameren Missouri.

A. Response to Mr. Murray's Multi-Stage DCF Analysis

Q. Please explain how Mr. Murray conducts his Multi-Stage DCF analysis.

A. Mr. Murray's Multi-Stage DCF analysis includes three stages, the first two of which have defined time horizons, while the third assumes cash flows in perpetuity. In the first stage, Mr. Murray relies on analyst estimates of annual dividends per share ("DPS") and earnings per share ("EPS") which were available for the next three to four years. In the final year of the first stage (i.e., 2025), Mr. Murray calculates the estimated dividend payout ratio based on the analysts' estimated annual DPS and EPS. His second stage then models an equal percentage change in the dividend payout ratio from the end of the first stage until the terminal year (i.e., 2035), where Mr. Murray assumes a payout ratio that retains sufficient earnings to ensure each company in his group maintains a perpetual growth rate of 3.0 percent.[99] Mr. Murray's Multi-Stage DCF results for the proxy group are 7.45 percent for the companies that Mr. Murray has defined as "mostly pure play" and 7.62 percent for all of the companies included in his natural gas proxy group.[100]

Mr. Murray conducts scenarios on the long-term growth rate in his DCF analysis for Ameren ranging from 2.5 percent to 3.5 percent. Mr. Murray's Multi-Stage DCF analysis produces an ROE estimate for Ameren of 6.78 percent to 7.12 percent.[101]

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[99] Direct Testimony of David Murray, at 25.

[100] Direct Testimony of David Murray, at DM-D-3-1.

[101] Direct Testimony of David Murray, at DM-D-2-1 and DM-D-2-2.

Q. Does Mr. Murray's Multi-Stage DCF analysis indicate increased risk for utilities?

Yes, it does. Mr. Murray compares the average Beta Coefficient for his proxy group for Ameren Missouri to the average Beta Coefficient for his proxy group for Empire District Electric Company ("Empire") in Docket No. ER-2019-0374. Mr. Murray noted that the betas used in the CAPM are higher in the analysis for Ameren Missouri than in the analyses prepared for Empire.[102] Further, Mr. Murray recognizes that the increase in Betas implies a higher cost of equity.[103] Additionally, while I do not agree with the specification of Mr. Murray's Multi-Stage DCF model, had Mr. Murray also compared the results of his Multi-Stage DCF analysis in the current proceeding to the Multi-Stage DCF analysis he presented in Empire's 2019 rate case, he would have concluded that the cost of equity has increased. As shown in Figure 11, comparing the results of his analyses to the analyses prepared in the 2019 Empire case suggests an increase in the cost of equity of approximately 100 basis points. Despite the change in his model results, and his recognition that changes in capital market conditions indicate the cost of equity has increased since Empire's 2019 rate case[104], Mr. Murray recommends an ROE of 9.25 percent for Ameren Missouri which is equivalent to his recommendation in Empire's 2019 rate case.

[102] Direct Testimony of David Murray, at 29.
[103] Direct Testimony of David Murray, at 11.
[104] Direct Testimony of David Murray, at 2.

Figure 11:Comparison of Mr. Murray's Multi-Stage DCF Results in the Current Proceeding for Ameren Missouri and Empire's 2019 Rate Case

Methodology	Empire's 2019 Rate Case	Ameren Missouri Rate Case Range
Multi-Stage DCF	6.5% - 6.75%[105]	7.45% - 7.62%
Proxy Group Beta	0.50[106]	0.784

Q. Did Staff witness Mr. Chari conclude that the cost of equity has increased since Empire's 2019 rate case?

A. Yes, he did. As noted above, Mr. Chari estimated a cost of equity using the DCF model of 8.29 percent[107] for Ameren Missouri's electric operations which was much lower than the average authorized ROE for electric utilities that he referenced of 9.43 percent in 2020 and 9.44 percent in 2021.[108] However, Mr. Chari compared the DCF result at the time of the 2019 rate case for Empire District Electric Company to the current DCF result for Ameren Missouri's electric operations to develop his recommendation for Ameren Missouri's electric operations. Since the DCF result increased 55 basis points, Mr. Chari concluded that the authorized ROE for Ameren Missouri's electric operations should increase from the 9.25 percent ROE that was authorized for Empire District Electric Company.[109] If Mr. Murray had developed a similar comparison of his DCF results which as noted above, he did for his Beta coefficients, he would have also concluded that his Multi-Stage DCF analysis indicates that the cost of equity has increased since Empire's 2019 rate case.

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[105] Docket No. ER-2019-0374, Direct Testimony of David Murray, January 15, 2020, at 35.
[106] Docket No. ER-2019-0374, Direct Testimony of David Murray, January 15, 2020, at 39.
[107] Case No. ER-2021-0240, Staff Cost of Service Report, at Schedule PC-9-1.
[108] Case No. ER-2021-0240, Staff Cost of Service Report, at 28.
[109] Case No. ER-2021-0240, Staff Cost of Service Report, at 8-9.

Q. Are the results of Mr. Murray's Multi-Stage DCF model reasonable?

A. No. The results of Mr. Murray's Multi-Stage DCF analysis are so low as to be unreasonable and are not reflective of the cost of equity. Not a single regulatory jurisdiction has authorized an ROE as low as the results of Mr. Murray's Multi-Stage DCF model, which provides reasonable context that he has either failed to consider or rejected. The *Hope* and *Bluefield* decisions, which Mr. Murray acknowledges are standards to be upheld, require the authorized return to be just and reasonable, as well as comparable to other returns available to investors in companies with similar risk. [110] Mr. Murray's Multi-Stage DCF results clearly violate this standard.

Q. Please summarize Mr. Murray's opinion as to the difference between authorized ROEs and the cost of equity.

A. Mr. Murray attempts to reconcile the difference between the results of his ROE estimation models and his recommendation by suggesting that average allowed ROEs have been greater than the cost of equity. Therefore, according to Mr. Murray, the results of the modern financial models must be reconciled with the principles of *Hope* and *Bluefield* which require the return to be just and reasonable and commensurate to the return available to investors in assets of similar risk.[111] Thus, Mr. Murray develops a zone of reasonableness based on recent authorized returns and prior Commission guidance.

Q. Do you agree with Mr. Murray that allowed ROEs are overstating the cost of equity?

A. No, I do not. Mr. Murray's conclusion is solely reliant on the assumption that he has appropriately specified the Multi-Stage DCF model, the result of which he does not use in

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[110] Direct Testimony of David Murray, at 5.

[111] *Ibid*.

setting his recommended ROE. Mr. Murray's specification of and reliance on the Multi-Stage DCF model to estimate the cost of equity is, however, incorrect for several reasons. First, as Mr. Murray and I have both acknowledged utility share prices are inversely related to interest rates.[112] For example, as interest rates increase, which, as discussed in Section VI, is expected over the near-term, the share prices of utility stocks will decline. A decline in share prices will result in an increase in the cost of equity estimate of the DCF model. Therefore, Mr. Murray's Multi-Stage DCF results are likely understating the cost of equity during the period that Ameren Missouri's rate will be in effect.

Second, Mr. Murray references equity analyst reports as support for the inputs in his Multi-Stage DCF model such as the long-term growth rate. However, equity analysts' current views on the valuation of utilities are strongly based on the projections of earnings growth which are in turn based in part on the ROEs that are authorized for the operating subsidiaries of the utility. **[redacted][113] [redacted]** As noted above a decline in the valuation of the company would result in an increase in the DCF results. Had Mr. Murray assumed a growth rate greater than his long-term growth rate assumption of 2.5 percent to 3.5 percent, he would have arrived at a higher estimate of the cost of equity for Ameren.

[112] Direct Testimony of David Murray, at 10.

[113] Julien Dumoulin-Smith, et. al, "Long-term transmission opportunities abound: catching up with management," June 21, 2021, Bank of America Merrill Lynch

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____[114] ** Investors would not pay for the current valuation of Ameren for a growth rate that is well below the growth rate they expect.

Q. What are equity analysts' current recommendations regarding natural gas utility stocks given the current market environment?

A. Since utility share prices are inversely related to interest rates and interest rates are expected to increase, investors expect utilities to underperform over the near term. In fact, as noted above, the utility sector was rated as underperform by Fidelity, Charles Schwab and Well Fargo. This is consistent with Zacks Investment Research ("Zacks") which has specifically ranked the natural gas distribution industry as 128 out of 252 industries ranked by Zacks.[115] As Zacks notes a ranking in the bottom half of the industry rankings indicates that Zacks expects the natural gas distribution industry to underperform over the next three to six months.[116] Furthermore, as shown in Figure 12, Zacks' recommendation for investors is "hold" for each of the natural gas utilities included in Mr. Murray's natural gas proxy group with an average combined Value, Growth, and Momentum ("VGM") rating from Zacks of "D". While Zacks has noted that stocks ranked as "Hold" have historically only slightly underperformed the S&P 500, the combination of the "Hold" rating with a low VGM rating indicates Zacks expects Mr. Murray's proxy group to underperform over the near-term.[117]

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[114] James M. Thalaker, et. al, "AEE 2Q20 – Guidance Unchanged, Reiterate Outperform," August 9, 2020, BMO Capital Markets.

[115] Zacks Investment Research, "Should I invest in the utility gas distribution industry?," September 23, 2021.

[116] *Ibid.*

[117] Zacks Investment Research, "The Zacks Rank Guide," 2021.

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Figure 12: Mr. Murray's Natural Gas Utility Proxy Group –
Zacks' Ranking as of September 2021

Company	Ticker	Zacks Recommendation [118]	Zacks Value Growth Momentum ("VGM") Score[119]			
			Value	Growth	Momentum	VGM
Atmos Energy Corporation	ATO	Hold	D	F	D	F
NiSource Inc.	NI	Hold	B	D	C	C
Northwest Natural Gas Company	NWN	Hold	B	C	C	B
ONE Gas Inc.	OGS	Hold	D	F	B	F
South Jersey Industries, Inc.	SJI	Hold	A	D	C	C
Southwest Gas Corporation	SWX	Hold	B	F	C	D
Spire, Inc.	SR	Hold	B	F	C	D

Q. Have you reviewed the reports of any other equity analysts that have considered the companies included in Mr. Murray's proxy group?

A. **_____

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[118] Zacks' Ranking consist of strong buy, buy, hold, sell and strong sell.

[119] Zacks VGM Score: Stocks are graded into five groups: A, B, C, D and F with A being the highest ranking and F being the lowest rankings.

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[redacted][120]

[redacted][121,122]

**FIGURE 13 IS

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Q. What do you conclude from your review of the equity analyst reports for the companies in Mr. Murray's proxy group?

A. Mr. Murray's Multi-Stage DCF model estimated using current stock price data assumes current interests will continue over the near-term. This is, however, counter to the expectation of investors and equity analysts. As noted above, the natural gas utility sector and the companies included in Mr. Murray's proxy group are projected to underperform the broader market as a result of the expectation that interest rates will increase. If utility

[120] Julien Dumoulin-Smith, et. al, "North American Gas Utilities: Cas LDC 2Q recap: where did we land? Quieter Q all around, but items to watch," August 17, 2021, Bank of America Merrill Lynch

[121] Julien Dumoulin-Smith, et. al, "North American Gas Utilities: Cas LDC 2Q recap: where did we land? Quieter Q all around, but items to watch," August 17, 2021, Bank of America Merrill Lynch

[122] Julien Dumoulin-Smith, et. al, "ONE Gas, Inc.: Sound quarter & de-risking, but see more attractive alternatives," August 5, 2021, Bank of America Merrill Lynch

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stock prices decline as expected, then Mr. Murray's Multi-Stage DCF model will understate the cost of equity for Ameren Missouri over the period that rates will be in effect.

Q. What is your opinion of the long-term growth rate used in Mr. Murray's Multi-Stage DCF model?

A. Mr. Murray relies on a long-term growth rate range of 2.5 percent to 3.5 percent, which he notes is based on his review of historical growth rate data from the Moody's electric utility index, a sample of electric utility companies whose data is available from Value Line and reports from equity analysts.[123] This long-term growth rate range appears to be similar to the range relied on by Evercore ISI in the calculation of their Dividend Discount Model ("DDM") for the regulated utilities covered by the bank.[124] Mr. Murray's long-term growth rate assumption, however, is not consistent with the stock prices that he relies on to calculate his Multi-Stage DCF model. In fact, the basis for the current valuation of utilities is the expectation that utilities will sustain current earnings growth rates for the foreseeable future. **[redacted][125]**

[123] Direct Testimony of David Murray, at 22.

[124] Durgesh Chopra, et al., "Reshuffling the Deck – Changing Ratings," Evercore ISI, April 19, 2020, at 16.

[125] Julien Dumoulin-Smith, et. al, "MISO & The Transmission Story Bolter Improving Backdrop: Upgrade to Buy," Bank of America Securities, April 13, 2021.

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If equity analysts expected the long-term growth rate to decline to a range 2.5 percent to 3.5 percent, then they would likely reduce their estimated price targets.

Q. Have you reviewed Evercore ISI's DDM, which Mr. Murray cites as a source for his long-term growth rate estimate?

A. Yes. First, it is important to note that while Evercore ISI covers 26 regulated utilities, 3 diversified utilities and 2 Independent Power Producers only one of the companies included in Mr. Murray's proxy group (i.e., NiSource, Inc.) is covered by Evercore ISI.[126] Therefore, Mr. Murray is applying assumptions developed by Evercore ISI for the electric utility industry to the natural gas industry for his Multi-Stage DCF analysis of his proxy group.

Q. Do you have any other concerns regarding Mr. Murray's reliance on Evercore ISI's DDM model?

A. Yes, I do. **[redacted]**[127]** Therefore, the long-term growth assumption assumed in Evercore ISI's DDM of 2.50 percent would not support the current valuation multiple for Ameren. This means that investors expect Ameren's long-term growth rate to exceed the growth rate assumed by Evercore ISIS and Mr. Murray. This is important to note because in his Multi-Stage DCF analysis of Ameren, Mr. Murray is assuming this low long-term growth rate with the current price of Ameren. This results in an understated cost of equity estimate. If Mr. Murray were to assume a

[126] Durgesh Chopra, et. al, "Reshuffling the Deck – Changing Ratings," Evercore ISI, April 19, 2020, at 16.
[127] Durgesh Chopra, et. al, "Ameren Corp. – Bang for Your Buck," Evercore ISI, April 19, 2020, at 16.

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long-term growth rate more consistent with current earnings growth projections, he would have obtained a much higher ROE estimate for Ameren.

Q. **

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[129]

Q.

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[128] Direct Testimony of David Murray, at 21.

[129] Ameren Dividend Policy Considerations, Ameren Finance Committee, October 2017, p. 5-10.

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[redacted]**

Q. Is the long-term growth rate used in Mr. Murray's Multi-Stage DCF model consistent with the long-term growth rate that Mr. Murray has relied on in prior rate cases?

A. No, it is not. In Case Nos. GR-2017-0215 and GR-2017-0216, Mr. Murray, who was the Staff ROE witness in the case, relied on a Constant Growth DCF model to estimate the cost of equity for Spire Missouri. To develop the long-term growth estimate for his Constant Growth DCF model, Mr. Murray reviewed the long-term historical EPS, BVPS and DPS growth rates for the natural gas industry, historical and projected GDP growth and projected growth in EPS and DPS. Mr. Murray concluded that from 1968 through 2016, the natural gas industry achieved long-term growth in the range of 4.2 percent to 4.6 percent.[130] However, giving weight to current projected EPS and DPS growth rates, Mr. Murray assumed a long-term growth rate range of 4.2 percent to 5.0 percent for his Constant Growth DCF model.[131] This long-term growth rate range is substantially higher than the long-term growth rate range of 2.5 percent to 3.50 percent that Mr. Murray has relied on in the current case for Ameren Missouri.

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[130] File No. GR-2017-0215 and File No. GR-2017-0216, Staff Cost of Service Report (September 2017), at 39.

[131] *Ibid.*

Q. How did Staff estimate the long-term growth rate in Case No. GR-2014-0007 for Spire Missouri?

A. Similar to the approach employed by Mr. Murray in Case Nos. GR-2017-0215 and GR-2017-0216 for Spire Missouri, Staff witness Zephania Marevangepo relied on a Constant Growth DCF model and estimated the long-term growth estimate by reviewing the long-term historical EPS, BVPS and DPS growth rates for the natural gas industry, historical and projected GDP growth and projected growth in EPS and DPS.[132] Staff witness Marevangepo also concluded that the natural gas industry has achieved long-term growth in the range of 4.20 percent to 4.50 percent but giving weight to more recent forecasted growth rates concluded that a long-term growth rate range of 4.00 percent to 5.00 percent was appropriate for his Constant Growth DCF model.[133] Therefore, Staff has historically used a long-term growth rate range that is considerably higher than the range used by Mr. Murray in his Multi-Stage DCF analysis for Ameren Missouri.

Q. Did Mr. Murray compare his Constant Growth DCF estimate in Case Nos. GR-2017-0215 and GR-2017-0216 for Spire Missouri to the Constant Growth DCF results calculated by Staff in Case No. GR-2014-0007 for Spire Missouri?

A. Yes, he did. In fact, Mr. Murray concluded the following in Case Nos. GR-2017-0215 and GR-2017-0216 for Spire Missouri: "[i]t is noteworthy that this COE estimate is approximately 100 basis points lower than Staff's estimated COE in MGE's last rate case, Case No. GR-2014-0007".[134] Since the long-term growth rate range was similar (i.e., 4.20 percent to 5.00 percent in Case Nos. GR-2017-0215 and GR-2017-0216 and 4.00 percent

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[132] File No. GR-2014-0007, Staff Cost of Service Report (January 29, 2014), at 22-29.

[133] *Id.,* at 28-29.

[134] File No. GR-2017-0215 and File No. GR-2017-0216, Staff Cost of Service Report (September 2017), at 39.

to 5.00 percent in Case No. GR-2014-0007) the difference in the range of Constant Growth DCF results between the 2014 (7.90 percent to 8.90 percent) and 2017 (6.90 percent to 7.70 percent) rate cases for Spire Missouri was the decline in the proxy group average dividend yield from 3.90 percent to 2.70 percent.[135]

Q. Have you developed an estimate of the cost of equity using the Constant Growth DCF model that Mr. Murray relied on in Case Nos. GR-2017-0215 and GR-2017-0216 for Spire Missouri?

A. Yes, I have. As shown in Schedule AEB-R1, Attachment 13, I have assumed a long-term growth rate range of 4.2 percent to 5.00 percent which is consistent with the long-term growth rate relied on by Mr. Murray in Case Nos. GR-2017-0215 and GR-2017-0216 for Spire Missouri and is similar to the range relied on by Staff witness Marevangepo in Case No. GR-2014-0007 for Spire Missouri. This results in a Constant Growth DCF range of 7.86 percent to 8.66 percent. While I do not specifically agree with the assumptions that Staff has used to estimate the Constant Growth DCF model in prior cases, had Mr. Murray developed a similar comparison of Constant Growth DCF results as he did in Case Nos. GR-2017-0215 and GR-2017-0216 for Spire Missouri, he would have concluded that the cost of equity has increased since Spire Missouri's 2017 rate case.

Q. Please summarize your conclusions regarding Mr. Murray's Multi-Stage DCF analysis.

A. Mr. Murray abandons his Multi-Stage DCF analysis due to the unreasonably low results produced by the model. However, despite his lack of confidence in his own model results,

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[135] File No. GR-2017-0215 and File No. GR-2017-0216, Staff Cost of Service Report (September 2017), at Schedule 10 and File No. GR-2014-0007, Staff Cost of Service Report (January 29, 2014), at Schedule ZM-12.

he is asking the Commission to accept that it is appropriate to use these results to demonstrate changes in the cost of equity between time periods and to generally support a lower overall ROE. It stands to reason that if the results of the model are unreliable and cannot be used to estimate the ROE, then the results are unreliable for any other attempt to measure the cost of equity, including Mr. Murray's comparisons to historical model results from other proceedings and his comparison to recently authorized ROEs.

Reviewing Mr. Murray's Multi-Stage Model specification identifies two primary flaws: 1) the growth rates that Mr. Murray relies on of 2.5 percent to 3.5 percent are significantly understated based on analysts' projections, and significantly lower than the range he relied on in Spire Missouri's 2017 rate case, depressing the results of his DCF analysis; and 2) while Mr. Murray acknowledges that share prices are related to interest rates, he fails to consider the effect of a rising interest rate environment on the valuations of natural gas utilities, which also contributes to his unreasonably low DCF results.

Finally, Mr. Murray recommended a 9.25 percent ROE in Spire Missouri's 2017 rate case which is equivalent to his recommendation in the current proceeding for Ameren Missouri. However, had Mr. Murray replicated the Constant Growth DCF analysis he presented in Spire Missouri's 2017 rate case, he would have concluded that the cost of equity has increased since that time. Thus, I conclude that Mr. Murray's Multi-Stage DCF model is neither providing reasonable estimates of the cost of equity for natural gas utilities nor does it support his conclusion that the cost of equity for natural gas utilities is much lower than recently authorized ROEs.

B. Capital Asset Pricing Model

Q. Please summarize Mr. Murray's application of the CAPM.

A. Mr. Murray develops three separate specifications of the CAPM analysis. The first CAPM analysis uses a risk-free rate that appears to be based on the average yield on the 20-year Treasury bond for the eight months ending August 31, 2021,[136] recalculated Betas for Ameren and the natural gas utility proxy group, and a MRP of 6.00 percent, which Mr. Murray contends is "similar to historical spreads and estimates provided by sources, such as Duff & Phelps".[137] The second CAPM analysis uses a risk-free rate based on the average yield on the 30-year Treasury bond for the eight months ending August 31, 2021,[138] recalculated Betas for Ameren and the natural gas utility proxy group, and a MRP of 6.00 percent, which Mr. Murray contends is "similar to historical spreads and estimates provided by sources, such as Duff & Phelps".[139] Finally, the third CAPM analysis uses the normalized risk-free rate reported by Duff and Phelps, recalculated Betas for Ameren and the natural gas utility proxy group, and a MRP of 5.50 percent as reported by Duff and Phelps. The results of Mr. Murray's CAPM analyses range from 6.40 percent to 6.80 percent.[140] Ultimately, Mr. Murray concludes that his CAPM analyses support a COE range of 6.50 percent to 6.80 percent.[141]

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[136] DM-D-5-1 note for Column 1 cites to the St. Louis Federal Reserve for the GS20 series. The eight-month average of the 20-year Treasury yield as of August 31, 2021, based on that series is 2.00 percent, which compares most closely to Mr. Murray's estimate of 2.00 percent.

[137] DM-D-5-1 note for Column 3.

[138] DM-D-5-2 note for Column 1 cites to the St. Louis Federal Reserve for the GS30 series. The three-month average of the 30-year Treasury yield as of August 31, 2021, based on that series is 2.11 percent, which compares most closely with Mr. Murray's estimate of 2.11 percent.

[139] DM-D-5-2 note for Column 3.

[140] DM-D-5-1, DM-D-5-2, and DM-D-5-3

[141] Direct Testimony of David Murray, at 30.

Q. Do you agree with the risk-free rate that Mr. Murray uses in his CAPM analysis?

A. While I do not specifically dispute the normalized risk-free rate of 2.50 percent that Mr. Murray relies on in one of his CAPM analyses, I do not agree with Mr. Murray's reliance on the eight-month average 20-year and 30-year Treasury Bond yields in his remaining CAPM analyses. The cost of equity is being estimated for the forward-looking period when the Company's rates will be in effect. Therefore, it is equally important that the risk-free rate be reflective of the expected risk-free rate during Ameren Missouri's rate period. As discussed in Section VI of my Rebuttal Testimony, the economy is in the early expansion phase of the business cycle, which means government bond yields are expected to increase over the near-term and, in fact, have increased since the low reached in August 2020. Considering the demonstrated increases in the bond yields since August 2020, resulting from the pandemic, and the forward-looking nature of the analysis that is being performed, I believe Mr. Murray should have placed primary weight on the normalized risk-free rate of 2.50 percent, which is Duff and Phelps' estimate of the expected long-term risk-free rate.[142] Furthermore, I believe it is also important to rely on, as I have in my Direct Testimony, interest rate projections that reflect the views of economists regarding the interest rates that are expected to prevail during the period that the Company's rates will be in effect.

Q. Do you have any other concerns with the risk-free rate relied on by Mr. Murray?

A. Yes. In addition to the yield on the 30-year Treasury bond, Mr. Murray has also relied on the yield on the 20-year Treasury bonds as the estimate of the risk-free rate. However, in determining the security most relevant to the application of the CAPM, it is important to

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[142] Duff and Phelps, Cost of Capital Navigator.

select the term (or maturity) that best matches the life of the underlying investment. As noted by Morningstar:

> The traditional thinking regarding the time horizon of the chosen Treasury security is that it should match the time horizon of whatever is being valued… Note that the horizon is a function of the investment, not the investor. If an investor plans to hold stock in a company for only five years, the yield on a five-year Treasury note would not be appropriate since the company will continue to exist beyond those five years.[143]

Because electric, natural gas and water utility assets represent long-duration investments, it is appropriate to use yields on long-term Treasury bonds as the risk-free rate component of the CAPM. In my view, the 30-year Treasury bond is the appropriate security for that purpose. Therefore, I do not agree with Mr. Murray's consideration of the 20-year Treasury bond as the estimate of the risk-free rate in his CAPM analysis.

Q. What Beta coefficients are relied on by Mr. Murray?

A. Mr. Murray calculates raw Beta coefficients for Ameren and the companies in his natural gas utility proxy group using a template provided by S&P Market Intelligence, and then attempts to adjust those Betas using the Blume formula. The result of that analysis suggests a Beta for Ameren of 0.734, for the proxy group of 0.784 and for the "mostly regulated LDCs" in the proxy group of 0.755.[144]

Q. What is your response to Mr. Murray's calculation of the Beta coefficients using a template provided by S&P?

A. Mr. Murray has relied on Value Line as the source of his Beta coefficients in his CAPM analysis for many years. Mr. Murray offers no explanation as to why he has decided not to rely on Value Line and to instead recalculate his own estimates of Beta in this

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[143] Morningstar Inc., Ibbotson SBBI 2013 Valuation Yearbook, at 44.
[144] DM-D-5-1, DM-D-5-2, and DM-D-5-3.

proceeding. Furthermore, while Mr. Murray indicates that he calculated the Beta coefficients for his proxy group companies based on Value Line's approach, the result of his calculation is a proxy group average Beta of 0.784 which is much lower than the average of the Value Line Beta coefficients for the proxy group of 0.88 as of August 31, 2021, as shown in Schedule AEB-R1, Attachment 5.

Q. What MRP does Mr. Murray use in his CAPM analysis?

A. Mr. Murray uses two separate MRPs in his CAPM analysis: (a) a MRP of 6.00 percent, which he contends is "similar to historical spreads and estimates provided by sources, such as Duff & Phelps"[145]; and (b) a MRP of 5.50 percent, as reported by Duff and Phelps.[146]

Q. What is your concern with Mr. Murray's MRP estimates?

A. Given the current low yields on Treasury bonds, and the inverse relationship between interest rates and the MRP, and the higher Betas for the proxy group, Mr. Murray's range of MRPs from 5.50 percent to 6.00 percent is understated. First, from a practical standpoint, the results of his CAPM analysis are significantly below any return that has been authorized by any U.S. regulatory jurisdiction in at least 40 years. The primary reason for the unreasonably low results from Mr. Murray's CAPM is due to his selection of the MRP. Based on historical data from Duff & Phelps, the market risk premium from 1926-2020 is 7.25 percent.[147] The historical income-only return on government bonds used to calculate the historical MRP over the same period has been approximately 4.91

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[145] DM-D-5-2 note for Column 3.

[146] DM-D-5-3.

[147] The market risk premium from 1926-2020 is calculated as the average return on large company stocks from 1926-2020 minus the average income only return on long-term government bonds from 1926-2020 (i.e., 12.16 percent – 4.91 percent = 7.25 percent). Source: Duff &Phelps, Valuation Handbook: Guide to Cost of Capital, 2021.

percent, while the 30-day average risk-free rate on long-term government bonds as of August 31, 2021 is 1.91 percent. Because interest rates on long-term government bonds are well below the historical average of 4.91 percent, the inverse relationship between interest rates and the MRP implies that the MRP should be well above the long-term historical average of 7.25 percent. The MRP range used by Mr. Murray of 5.50 percent to 6.00 percent suggests that the expected MRP is currently 125 to 175 basis points lower than the historical average MRP of 7.25 percent.

Q. Do you have any other concerns with the MRPs relied on by Mr. Murray?

A. Yes. As shown in Figure 14, the implied market returns for the MRPs cited by Mr. Murray range from 8.00 percent to 8.11 percent. These returns are unreasonably low especially when compared to the recent historical returns for large company stocks. As shown in Figure 15, the actual average market return for large company stocks from 2009 to 2020 (i.e., the period after the Great Recession of 2008/09) was 15.53 percent, as reported by Duff & Phelps. Therefore, the range of implied market returns considered by Mr. Murray of 8.00 percent to 8.11 percent is well below and cannot be reconciled with recent returns for the market.

Figure 13: Mr. Murray's Implied Market Returns[148]

Source	Implied MRP	Risk-Free Rate	Implied Market Return
Historical MRP & 20-year Treasury Bond yield	6.00%	2.00%	8.00%
Historical MRP & 30-year Treasury Bond yield	6.00%	2.11%	8.11%
Duff & Phelps MRP and Normalized Risk-free Rate	5.50%	2.50%	8.00%

[148] Source: DM-D-5-1 through DM-D-5-3.

Figure 14: Duff and Phelps – Total Return for Large Company Stocks – 2009-2020[149]

Year	Large Company Stock Total Return
2009	26.46%
2010	15.06%
2011	2.11%
2012	16.00%
2013	32.39%
2014	13.69%
2015	1.38%
2016	11.96%
2017	21.83%
2018	-4.38%
2019	31.49%
2020	18.40%
Average	**15.53%**

Q. What is your conclusion regarding Mr. Murray's CAPM analysis?

A. My conclusion is that Mr. Murray's CAPM results of 6.40 percent to 6.80 percent are not reasonable estimates of the cost of equity for Ameren Missouri and should not be relied upon. Similar to his Multi-Stage DCF analysis, Mr. Murray's mis-specification of the CAPM has resulted in the incorrect conclusion that the cost of equity is well below recently authorized ROEs for natural gas utilities. In particular, Mr. Murray's CAPM analysis fails to take into consideration the inverse relationship between interest rates and the MRP. This results in: 1) an MRP that is well below the historical MRP using large company stocks (7.25 percent); and 2) an implied market return that is well below the long-term average

[149] Source: Duff and Phelps, Cost of Capital Navigator.

total return for large company stocks since 1926, as reported by Duff & Phelps, of 12.16 percent and recent market returns for large company stocks since 2009 of 15.61 percent. As such, the results of Mr. Murray's CAPM analysis are not representative of the forward-looking cost of equity for Ameren Missouri in this proceeding and thus, I recommend the Commission place zero weight on Mr. Murray's CAPM analysis.

C. Rule of Thumb Methodology

Q. Please summarize Mr. Murray's "Rule of Thumb" analysis.

A. The "Rule of Thumb" methodology that Mr. Murray relies on is another risk premium methodology. This methodology relies on an estimated MRP of 3.0 percent to 4.0 percent plus Ameren Missouri's long-term bond yield. However, Mr. Murray selects the low end of the risk premium range of 3.0 percent because he contends that investors view utilities as bond "surrogates/substitutes".[150] Mr. Murray notes that the current yield on Ameren Missouri's long-term bonds is approximately 2.75 percent, which when combined with the 3.0 percent risk premium, results in a ROE estimate for Ameren Missouri of 5.75 percent.[151] While Mr. Murray reports the result of this analysis, he has recommended an ROE that is 350 basis points higher than his Rule of Thumb approach.

Q. Do you agree with this methodology?

A. As discussed in my response to Dr. Won, this specification of the risk premium approach relies on historical estimates of the MRP and does not take into consideration the effect on the MRP of current market conditions. There are a number of studies which have shown that the MRP is inversely related to the level of interest rates. For example, in a March 1998 article titled *Interest Rate Risk and Utility Risk Premia During 1982-93* in

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[150] Direct Testimony of David Murray, at 30.

[151] *Ibid*.

Managerial and Decision Economics, Dr. S. Keith Berry used a regression approach to analyze the relationship between authorized returns on equity for regulated utilities and utility bond yields. The author found that there was an inverse relationship between utility risk premia and interest rates.[152] Similarly, in a Spring 1986 article in Financial Management, Dr. Robert S. Harris also showed that there was a negative relationship between utility risk premia and interest rates.[153]

Adding a risk premium based on a historical average interest rate level to the current yield on Ameren Missouri's long-term bonds, which is significantly below historical averages, results in a vastly understated estimate of the current cost of equity for Ameren Missouri. Finally, the use of the current yield on Ameren Missouri's long-term bonds does not reflect the expectation of rising interest rates. As such, this methodology is not reflective of investor return requirements over the rate period.

D. Conclusions

Q. Please summarize your conclusions about the way in which Mr. Murray arrives at his recommended ROE for Ameren Missouri.

A. While I have responded to each of the methodologies presented by Mr. Murray in my Rebuttal Testimony, it is important to recognize that his own ROE recommendation is not based on the results of any of the models that he develops. Instead, Mr. Murray's ROE recommendation is based on a "zone of reasonableness" of 8.50 percent to 9.50 percent. Nothing in Mr. Murray's testimony supports the selection of the range of reasonableness

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[152] S. Keith Berry, Interest Rate Risk and Utility Risk Premia during 1982-93, Managerial and Decision Economics, Vol. 19, No. 2 (March, 1998), at 7.

[153] Robert S. Harris, Using Analysts' Growth Forecasts to Estimate Shareholders Required Rates of Return, Financial Management, Spring 1986, at 66.

from which he selects his final ROE recommendation. Mr. Murray states that he has developed his range based on recently authorized ROEs for natural gas utilities, the Commission's recently authorized ROE for Empire and Ameren Illinois' (a distribution only utility) allowed ROE for its natural gas utility operations.[154] Notably, none of Mr. Murray's ROE estimation models result in ROEs that fall within this established range. While Mr. Murray discards his ROE analyses for the purposes of setting his recommended ROE, he asks the Commission to rely on the results of his models to conclude that the cost of capital for utilities remains low. Further, he suggests that these model results somehow support his recommended ROE of 9.25 percent. Reliance on his mis-specified models has resulted in Mr. Murray understating the cost of equity for Ameren Missouri. The critical assumptions that I have identified in Mr. Murray's models that result in understated results include:

1) failure to consider that interest rates are expected to increase, which will result in a decline in the valuations of natural gas utilities over the near term;
2) reliance on unreasonably low long-term growth rates in the Multi-Stage DCF analysis, which do not support the current valuations for Ameren or the companies in his natural gas utility proxy group nor are consistent with long-term growth estimates that Mr. Murray has relied on for natural gas utilities in the prior cases;
3) understated MRP estimates in his CAPM and "Rule of Thumb" analyses that do not reflect the inverse relationship between interest rates and the MRP.

If Mr. Murray had specified his models appropriately, he would have concluded that the cost of equity is not lower than the recently authorized returns for natural gas utilities. As a result, I do not believe it is reasonable to rely on Mr. Murray's final recommended ROE.

[154] Direct Testimony of David Murray, at 5-6.

IX. SUMMARY AND RECOMMENDATIONS

Q. Please summarize your conclusions and recommendations regarding the appropriate ROE for Ameren Missouri in this proceeding.

A. The results of my ROE analysis, which are updated using market data through August 31, 2021, continue to support a reasonable range of ROE results for Ameren Missouri between 9.65 percent to 10.40 percent. While the analytical results of ROE estimation models provide a starting point, my recommendation also considers other factors, including company-specific risk factors, capital market conditions and the capital attraction standard. Considering the financial and business risk factors facing Ameren Missouri, and the expectation that interest rates will increase over the near term as the economy recovers from COVID-19, I continue to believe the Company's requested ROE of 9.80 percent is reasonable and appropriate.

- Nothing in the other ROE witnesses' testimony has caused me to change my recommended range of results.
- Neither Dr. Won nor Mr. Murray rely on the results of any of their models to underlie or inform their respective ROE recommendations of 9.50 percent and 9.25 percent.
- Dr. Won's reliance on a comparison of his Two-Step DCF results for Ameren Missouri in this proceeding to those for the same model at the time of Spire Missouri's 2017 rate case does not provide sufficient support for his ROE recommendation. In fact, reasonable adjustments to Dr. Won's Two-Step DCF model including using FERC's specification of the Two-Step DCF model which Dr. Won references, indicate that the cost of equity has increased since Spire Missouri's 2017 rate case.
- Similarly, Mr. Murray's DCF, CAPM and Rule of Thumb methods do not support his ultimate recommendation.
- Finally, recently authorized ROEs for natural gas distribution companies are within the range established in my Direct Testimony.

Q. What is your recommendation regarding a reasonable capital structure for Ameren Missouri in this proceeding?

A. I support the Company's proposed actual capital structure as of September 30, 2021, of 51.93 percent common equity, 47.34 percent long-term debt and 0.73 percent preferred equity. This capital structure represents the manner in which the Company is actually capitalized. Moreover, the proposed equity ratio of 51.93 percent is reasonable when compared to the authorized equity ratios of the proxy group.

Q. Does this conclude your Rebuttal Testimony?

A. Yes, it does.

SUMMARY OF ROE ANALYSES RESULTS

Constant Growth DCF			
	Median Low	Median	Median High
30-Day Average	8.65%	10.01%	11.49%
90-Day Average	8.60%	9.99%	11.60%
180-Day Average	8.75%	10.09%	11.72%
Multi-Stage Growth DCF			
	Median Low	Median	Median High
30-Day Average	8.86%	9.47%	9.82%
90-Day Average	8.94%	9.42%	9.95%
180-Day Average	9.06%	9.58%	10.10%
CAPM			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Value Line Beta	13.02%	13.08%	13.22%
Bloomberg Beta	11.98%	12.08%	12.30%
Long-term Avg. Beta	11.03%	11.17%	11.47%
ECAPM			
Value Line Beta	13.41%	13.45%	13.55%
Bloomberg Beta	12.63%	12.70%	12.87%
Long-term Avg. Beta	11.91%	12.02%	12.24%
Treasury Yield Plus Risk Premium			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Risk Premium Analysis	9.33%	9.55%	10.00%
Risk Premium Mean Result	9.63%		

30-DAY CONSTANT GROWTH DCF -- AMEREN MISSOURI NATURAL GAS PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line Earnings Growth	Yahoo! Finance Earnings Growth	Zacks Earnings Growth	Average Growth Rate	Low ROE	Mean ROE	High ROE
Atmos Energy Corporation	ATO	$2.50	$99.40	2.52%	2.61%	7.00%	7.80%	7.40%	7.40%	9.60%	10.01%	10.41%
NiSource Inc.	NI	$0.88	$25.22	3.49%	3.60%	9.50%	3.52%	6.20%	6.41%	7.07%	10.01%	13.15%
Northwest Natural Gas Company	NWN	$1.92	$52.51	3.66%	3.75%	5.50%	5.50%	4.90%	5.30%	8.65%	9.05%	9.26%
ONE Gas Inc.	OGS	$2.32	$73.30	3.17%	3.25%	6.50%	5.00%	5.00%	5.50%	8.24%	8.75%	9.77%
South Jersey Industries, Inc.	SJI	$1.21	$25.13	4.81%	4.99%	11.50%	4.80%	5.40%	7.23%	9.73%	12.22%	16.59%
Southwest Gas Corporation	SWX	$2.38	$70.89	3.36%	3.46%	8.00%	4.00%	5.50%	5.83%	7.42%	9.29%	11.49%
Spire, Inc.	SR	$2.60	$70.50	3.69%	3.83%	10.00%	7.31%	5.50%	7.60%	9.29%	11.43%	13.87%
Median				3.49%	3.60%	8.00%	5.00%	5.50%	6.41%	8.65%	10.01%	11.49%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional, equals 30-day average as of August 31, 2021.
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.50 x [8])
[5] Source: Value Line
[6] Source: Yahoo! Finance
[7] Source: Zacks
[8] Equals Average ([5], [6], [7])
[9] Equals [3] x (1 + 0.50 x Minimum ([5], [6], [7]) + Minimum ([5], [6], [7])
[10] Equals [4] + [8]
[11] Equals [3] x (1 + 0.50 x Maximum ([5], [6], [7]) + Maximum ([5], [6], [7])

90-DAY CONSTANT GROWTH DCF -- AMEREN MISSOURI NATURAL GAS PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line Earnings Growth	Yahoo! Finance Earnings Growth	Zacks Earnings Growth	Average Growth Rate	Low ROE	Mean ROE	High ROE
Atmos Energy Corporation	ATO	$2.50	$99.70	2.51%	2.60%	7.00%	7.80%	7.40%	7.40%	9.60%	10.00%	10.41%
NiSource Inc.	NI	$0.88	$25.37	3.47%	3.58%	9.50%	3.52%	6.20%	6.41%	7.05%	9.99%	13.13%
Northwest Natural Gas Company	NWN	$1.92	$53.18	3.61%	3.71%	5.50%	5.50%	4.90%	5.30%	8.60%	9.01%	9.21%
ONE Gas Inc.	OGS	$2.32	$74.94	3.10%	3.18%	6.50%	5.00%	5.00%	5.50%	8.17%	8.68%	9.70%
South Jersey Industries, Inc.	SJI	$1.21	$25.84	4.68%	4.85%	11.50%	4.80%	5.40%	7.23%	9.59%	12.09%	16.45%
Southwest Gas Corporation	SWX	$2.38	$68.75	3.46%	3.56%	8.00%	4.00%	5.50%	5.83%	7.53%	9.40%	11.60%
Spire, Inc.	SR	$2.60	$72.54	3.58%	3.72%	10.00%	7.31%	5.50%	7.60%	9.18%	11.32%	13.76%
Median				3.47%	3.58%	8.00%	5.00%	5.50%	6.41%	8.60%	9.99%	11.60%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional, equals 90-day average as of August 31, 2021.
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.50 x [8])
[5] Source: Value Line
[6] Source: Yahoo! Finance
[7] Source: Zacks
[8] Equals Average ([5], [6], [7])
[9] Equals [3] x (1 + 0.50 x Minimum ([5], [6], [7]) + Minimum ([5], [6], [7])
[10] Equals [4] + [8]
[11] Equals [3] x (1 + 0.50 x Maximum ([5], [6], [7]) + Maximum ([5], [6], [7])

180-DAY CONSTANT GROWTH DCF -- AMEREN MISSOURI NATURAL GAS PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line Earnings Growth	Yahoo! Finance Earnings Growth	Zacks Earnings Growth	Average Growth Rate	Low ROE	Mean ROE	High ROE
Atmos Energy Corporation	ATO	$2.50	$96.52	2.59%	2.69%	7.00%	7.80%	7.40%	7.40%	9.68%	10.09%	10.49%
NiSource Inc.	NI	$0.88	$24.18	3.64%	3.76%	9.50%	3.52%	6.20%	6.41%	7.22%	10.16%	13.31%
Northwest Natural Gas Company	NWN	$1.92	$51.15	3.75%	3.85%	5.50%	5.50%	4.90%	5.30%	8.75%	9.15%	9.36%
ONE Gas Inc.	OGS	$2.32	$74.84	3.10%	3.19%	6.50%	5.00%	5.00%	5.50%	8.18%	8.69%	9.70%
South Jersey Industries, Inc.	SJI	$1.21	$24.70	4.90%	5.08%	11.50%	4.80%	5.40%	7.23%	9.82%	12.31%	16.68%
Southwest Gas Corporation	SWX	$2.38	$66.56	3.58%	3.68%	8.00%	4.00%	5.50%	5.83%	7.65%	9.51%	11.72%
Spire, Inc.	SR	$2.60	$70.29	3.70%	3.84%	10.00%	7.31%	5.50%	7.60%	9.30%	11.44%	13.88%
Median				3.64%	3.76%	8.00%	5.00%	5.50%	6.41%	8.75%	10.09%	11.72%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional, equals 180-day average as of August 31, 2021.
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.50 x [8])
[5] Source: Value Line
[6] Source: Yahoo! Finance
[7] Source: Zacks
[8] Equals Average ([5], [6], [7])
[9] Equals [3] x (1 + 0.50 x Minimum ([5], [6], [7]) + Minimum ([5], [6], [7])
[10] Equals [4] + [8]
[11] Equals [3] x (1 + 0.50 x Maximum ([5], [6], [7]) + Maximum ([5], [6], [7])

30-DAY MULTI-STAGE DCF -- MEAN GROWTH RATE -- AMEREN GAS PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
					Second Stage Growth						
Company	Ticker	Stock Price	Annualized Dividend	First Stage Growth	Year 6	Year 7	Year 8	Year 9	Year 10	Third Stage Growth	ROE
Atmos Energy Corporation	ATO	$99.40	$2.50	7.40%	7.08%	6.76%	6.44%	6.12%	5.81%	5.49%	8.60%
NiSource Inc.	NI	$25.22	$0.88	6.41%	6.25%	6.10%	5.95%	5.79%	5.64%	5.49%	9.56%
Northwest Natural Gas Company	NWN	$52.51	$1.92	5.30%	5.33%	5.36%	5.39%	5.42%	5.46%	5.49%	9.47%
ONE Gas Inc.	OGS	$73.30	$2.32	5.50%	5.50%	5.50%	5.49%	5.49%	5.49%	5.49%	8.97%
South Jersey Industries, Inc.	SJI	$25.13	$1.21	7.23%	6.94%	6.65%	6.36%	6.07%	5.78%	5.49%	11.43%
Southwest Gas Corporation	SWX	$70.89	$2.38	5.83%	5.78%	5.72%	5.66%	5.60%	5.54%	5.49%	9.26%
Spire, Inc.	SR	$70.50	$2.60	7.60%	7.25%	6.90%	6.55%	6.19%	5.84%	5.49%	10.13%
Median											9.47%

Notes:
[1] Source: Bloomberg Professional, equals 30-day average as of August 31, 2021.
[2] Source: Bloomberg Professional
[3] Source: Schedule AEB-R1, Attachment 2, Average Growth Rate
[4] Equals [3] + ([9] − [3]) / 6
[5] Equals [4] + ([9] − [3]) / 6
[6] Equals [5] + ([9] − [3]) / 6
[7] Equals [6] + ([9] − [3]) / 6
[8] Equals [7] + ([9] − [3]) / 6
[9] Source: Schedule AEB-R1, Attachment 4
[10] Equals internal rate of return of cash flows for Year 0 through Year 200

90-DAY MULTI-STAGE DCF -- MEAN GROWTH RATE -- AMEREN GAS PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
					Second Stage Growth						
Company	Ticker	Stock Price	Annualized Dividend	First Stage Growth	Year 6	Year 7	Year 8	Year 9	Year 10	Third Stage Growth	ROE
Atmos Energy Corporation	ATO	$99.70	$2.50	7.40%	7.08%	6.76%	6.44%	6.12%	5.81%	5.49%	8.59%
NiSource Inc.	NI	$25.37	$0.88	6.41%	6.25%	6.10%	5.95%	5.79%	5.64%	5.49%	9.54%
Northwest Natural Gas Company	NWN	$53.18	$1.92	5.30%	5.33%	5.36%	5.39%	5.42%	5.46%	5.49%	9.42%
ONE Gas Inc.	OGS	$74.94	$2.32	5.50%	5.50%	5.50%	5.49%	5.49%	5.49%	5.49%	8.89%
South Jersey Industries, Inc.	SJI	$25.84	$1.21	7.23%	6.94%	6.65%	6.36%	6.07%	5.78%	5.49%	11.26%
Southwest Gas Corporation	SWX	$68.75	$2.38	5.83%	5.78%	5.72%	5.66%	5.60%	5.54%	5.49%	9.38%
Spire, Inc.	SR	$72.54	$2.60	7.60%	7.25%	6.90%	6.55%	6.19%	5.84%	5.49%	10.00%
Median											9.42%

Notes:
[1] Source: Bloomberg Professional, equals 90-day average as of August 31, 2021.
[2] Source: Bloomberg Professional
[3] Source: Schedule AEB-R1, Attachment 2, Average Growth Rate
[4] Equals [3] + ([9] − [3]) / 6
[5] Equals [4] + ([9] − [3]) / 6
[6] Equals [5] + ([9] − [3]) / 6
[7] Equals [6] + ([9] − [3]) / 6
[8] Equals [7] + ([9] − [3]) / 6
[9] Source: Schedule AEB-R1, Attachment 4
[10] Equals internal rate of return of cash flows for Year 0 through Year 200

180-DAY MULTI-STAGE DCF -- MEAN GROWTH RATE -- AMEREN GAS PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
					Second Stage Growth						
Company	Ticker	Stock Price	Annualized Dividend	First Stage Growth	Year 6	Year 7	Year 8	Year 9	Year 10	Third Stage Growth	ROE
Atmos Energy Corporation	ATO	$96.52	$2.50	7.40%	7.08%	6.76%	6.44%	6.12%	5.81%	5.49%	8.69%
NiSource Inc.	NI	$24.18	$0.88	6.41%	6.25%	6.10%	5.95%	5.79%	5.64%	5.49%	9.74%
Northwest Natural Gas Company	NWN	$51.15	$1.92	5.30%	5.33%	5.36%	5.39%	5.42%	5.46%	5.49%	9.58%
ONE Gas Inc.	OGS	$74.84	$2.32	5.50%	5.50%	5.50%	5.49%	5.49%	5.49%	5.49%	8.89%
South Jersey Industries, Inc.	SJI	$24.70	$1.21	7.23%	6.94%	6.65%	6.36%	6.07%	5.78%	5.49%	11.53%
Southwest Gas Corporation	SWX	$66.56	$2.38	5.83%	5.78%	5.72%	5.66%	5.60%	5.54%	5.49%	9.51%
Spire, Inc.	SR	$70.29	$2.60	7.60%	7.25%	6.90%	6.55%	6.19%	5.84%	5.49%	10.14%
Median											9.58%

Notes:
[1] Source: Bloomberg Professional, equals 180-day average as of August 31, 2021.
[2] Source: Bloomberg Professional
[3] Source: Schedule AEB-R1, Attachment 2, Average Growth Rate
[4] Equals [3] + ([9] − [3]) / 6
[5] Equals [4] + ([9] − [3]) / 6
[6] Equals [5] + ([9] − [3]) / 6
[7] Equals [6] + ([9] − [3]) / 6
[8] Equals [7] + ([9] − [3]) / 6
[9] Source: Schedule AEB-R1, Attachment 4
[10] Equals internal rate of return of cash flows for Year 0 through Year 200

30-DAY MULTI-STAGE DCF -- LOW GROWTH RATE -- AMEREN GAS PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
					Second Stage Growth						
Company	Ticker	Stock Price	Annualized Dividend	First Stage Growth	Year 6	Year 7	Year 8	Year 9	Year 10	Third Stage Growth	ROE
Atmos Energy Corporation	ATO	$99.40	$2.50	7.00%	6.75%	6.50%	6.24%	5.99%	5.74%	5.49%	8.52%
NiSource Inc.	NI	$25.22	$0.88	3.52%	3.85%	4.18%	4.50%	4.83%	5.16%	5.49%	8.86%
Northwest Natural Gas Company	NWN	$52.51	$1.92	4.90%	5.00%	5.10%	5.19%	5.29%	5.39%	5.49%	9.37%
ONE Gas Inc.	OGS	$73.30	$2.32	5.00%	5.08%	5.16%	5.24%	5.32%	5.41%	5.49%	8.85%
South Jersey Industries, Inc.	SJI	$25.13	$1.21	4.80%	4.91%	5.03%	5.14%	5.26%	5.37%	5.49%	10.60%
Southwest Gas Corporation	SWX	$70.89	$2.38	4.00%	4.25%	4.50%	4.74%	4.99%	5.24%	5.49%	8.83%
Spire, Inc.	SR	$70.50	$2.60	5.50%	5.50%	5.50%	5.49%	5.49%	5.49%	5.49%	9.56%
Median											8.86%

Notes:
[1] Source: Bloomberg Professional, equals 30-day average as of August 31, 2021.
[2] Source: Bloomberg Professional
[3] Source: Schedule AEB-R1, Attachment 2, Minimum Growth Rate
[4] Equals [3] + ([9] − [3]) / 6
[5] Equals [4] + ([9] − [3]) / 6
[6] Equals [5] + ([9] − [3]) / 6
[7] Equals [6] + ([9] − [3]) / 6
[8] Equals [7] + ([9] − [3]) / 6
[9] Source: Schedule AEB-R1, Attachment 4
[10] Equals internal rate of return of cash flows for Year 0 through Year 200

90-DAY MULTI-STAGE DCF -- LOW GROWTH RATE -- AMEREN GAS PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
					Second Stage Growth						
Company	Ticker	Stock Price	Annualized Dividend	First Stage Growth	Year 6	Year 7	Year 8	Year 9	Year 10	Third Stage Growth	ROE
Atmos Energy Corporation	ATO	$99.70	$2.50	7.00%	6.75%	6.50%	6.24%	5.99%	5.74%	5.49%	8.51%
NiSource Inc.	NI	$25.37	$0.88	3.52%	3.85%	4.18%	4.50%	4.83%	5.16%	5.49%	8.84%
Northwest Natural Gas Company	NWN	$53.18	$1.92	4.90%	5.00%	5.10%	5.19%	5.29%	5.39%	5.49%	9.32%
ONE Gas Inc.	OGS	$74.94	$2.32	5.00%	5.08%	5.16%	5.24%	5.32%	5.41%	5.49%	8.78%
South Jersey Industries, Inc.	SJI	$25.84	$1.21	4.80%	4.91%	5.03%	5.14%	5.26%	5.37%	5.49%	10.46%
Southwest Gas Corporation	SWX	$68.75	$2.38	4.00%	4.25%	4.50%	4.74%	4.99%	5.24%	5.49%	8.94%
Spire, Inc.	SR	$72.54	$2.60	5.50%	5.50%	5.50%	5.49%	5.49%	5.49%	5.49%	9.44%
Median											8.94%

Notes:
[1] Source: Bloomberg Professional, equals 90-day average as of August 31, 2021.
[2] Source: Bloomberg Professional
[3] Source: Schedule AEB-R1, Attachment 2, Minimum Growth Rate
[4] Equals [3] + ([9] − [3]) / 6
[5] Equals [4] + ([9] − [3]) / 6
[6] Equals [5] + ([9] − [3]) / 6
[7] Equals [6] + ([9] − [3]) / 6
[8] Equals [7] + ([9] − [3]) / 6
[9] Source: Schedule AEB-R1, Attachment 4
[10] Equals internal rate of return of cash flows for Year 0 through Year 200

180-DAY MULTI-STAGE DCF -- LOW GROWTH RATE -- AMEREN GAS PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
					Second Stage Growth						
Company	Ticker	Stock Price	Annualized Dividend	First Stage Growth	Year 6	Year 7	Year 8	Year 9	Year 10	Third Stage Growth	ROE
Atmos Energy Corporation	ATO	$96.52	$2.50	7.00%	6.75%	6.50%	6.24%	5.99%	5.74%	5.49%	8.61%
NiSource Inc.	NI	$24.18	$0.88	3.52%	3.85%	4.18%	4.50%	4.83%	5.16%	5.49%	9.01%
Northwest Natural Gas Company	NWN	$51.15	$1.92	4.90%	5.00%	5.10%	5.19%	5.29%	5.39%	5.49%	9.47%
ONE Gas Inc.	OGS	$74.84	$2.32	5.00%	5.08%	5.16%	5.24%	5.32%	5.41%	5.49%	8.78%
South Jersey Industries, Inc.	SJI	$24.70	$1.21	4.80%	4.91%	5.03%	5.14%	5.26%	5.37%	5.49%	10.70%
Southwest Gas Corporation	SWX	$66.56	$2.38	4.00%	4.25%	4.50%	4.74%	4.99%	5.24%	5.49%	9.06%
Spire, Inc.	SR	$70.29	$2.60	5.50%	5.50%	5.50%	5.49%	5.49%	5.49%	5.49%	9.57%
Median											9.06%

Notes:
[1] Source: Bloomberg Professional, equals 180-day average as of August 31, 2021.
[2] Source: Bloomberg Professional
[3] Source: Schedule AEB-R1, Attachment 2, Minimum Growth Rate
[4] Equals [3] + ([9] − [3]) / 6
[5] Equals [4] + ([9] − [3]) / 6
[6] Equals [5] + ([9] − [3]) / 6
[7] Equals [6] + ([9] − [3]) / 6
[8] Equals [7] + ([9] − [3]) / 6
[9] Source: Schedule AEB-R1, Attachment 4
[10] Equals internal rate of return of cash flows for Year 0 through Year 200

30-DAY MULTI-STAGE DCF -- HIGH GROWTH RATE -- AMEREN GAS PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
					Second Stage Growth						
Company	Ticker	Stock Price	Annualized Dividend	First Stage Growth	Year 6	Year 7	Year 8	Year 9	Year 10	Third Stage Growth	ROE
Atmos Energy Corporation	ATO	$99.40	$2.50	7.80%	7.41%	7.03%	6.64%	6.26%	5.87%	5.49%	8.68%
NiSource Inc.	NI	$25.22	$0.88	9.50%	8.83%	8.16%	7.49%	6.82%	6.16%	5.49%	10.42%
Northwest Natural Gas Company	NWN	$52.51	$1.92	5.50%	5.50%	5.50%	5.49%	5.49%	5.49%	5.49%	9.52%
ONE Gas Inc.	OGS	$73.30	$2.32	6.50%	6.33%	6.16%	5.99%	5.82%	5.66%	5.49%	9.20%
South Jersey Industries, Inc.	SJI	$25.13	$1.21	11.50%	10.50%	9.50%	8.49%	7.49%	6.49%	5.49%	13.07%
Southwest Gas Corporation	SWX	$70.89	$2.38	8.00%	7.58%	7.16%	6.74%	6.32%	5.91%	5.49%	9.82%
Spire, Inc.	SR	$70.50	$2.60	10.00%	9.25%	8.50%	7.74%	6.99%	6.24%	5.49%	10.85%
Median											9.82%

Notes:
[1] Source: Bloomberg Professional, equals 30-day average as of August 31, 2021.
[2] Source: Bloomberg Professional
[3] Source: Schedule AEB-R1, Attachment 2, Maximum Growth Rate
[4] Equals [3] + ([9] − [3]) / 6
[5] Equals [4] + ([9] − [3]) / 6
[6] Equals [5] + ([9] − [3]) / 6
[7] Equals [6] + ([9] − [3]) / 6
[8] Equals [7] + ([9] − [3]) / 6
[9] Source: Schedule AEB-R1, Attachment 4
[10] Equals internal rate of return of cash flows for Year 0 through Year 200

90-DAY MULTI-STAGE DCF -- HIGH GROWTH RATE -- AMEREN GAS PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
					Second Stage Growth						
Company	Ticker	Stock Price	Annualized Dividend	First Stage Growth	Year 6	Year 7	Year 8	Year 9	Year 10	Third Stage Growth	ROE
Atmos Energy Corporation	ATO	$99.70	$2.50	7.80%	7.41%	7.03%	6.64%	6.26%	5.87%	5.49%	8.67%
NiSource Inc.	NI	$25.37	$0.88	9.50%	8.83%	8.16%	7.49%	6.82%	6.16%	5.49%	10.39%
Northwest Natural Gas Company	NWN	$53.18	$1.92	5.50%	5.50%	5.50%	5.49%	5.49%	5.49%	5.49%	9.47%
ONE Gas Inc.	OGS	$74.94	$2.32	6.50%	6.33%	6.16%	5.99%	5.82%	5.66%	5.49%	9.12%
South Jersey Industries, Inc.	SJI	$25.84	$1.21	11.50%	10.50%	9.50%	8.49%	7.49%	6.49%	5.49%	12.87%
Southwest Gas Corporation	SWX	$68.75	$2.38	8.00%	7.58%	7.16%	6.74%	6.32%	5.91%	5.49%	9.95%
Spire, Inc.	SR	$72.54	$2.60	10.00%	9.25%	8.50%	7.74%	6.99%	6.24%	5.49%	10.70%
Median											9.95%

Notes:
[1] Source: Bloomberg Professional, equals 90-day average as of August 31, 2021.
[2] Source: Bloomberg Professional
[3] Source: Schedule AEB-R1, Attachment 2, Maximum Growth Rate
[4] Equals [3] + ([9] − [3]) / 6
[5] Equals [4] + ([9] − [3]) / 6
[6] Equals [5] + ([9] − [3]) / 6
[7] Equals [6] + ([9] − [3]) / 6
[8] Equals [7] + ([9] − [3]) / 6
[9] Source: Schedule AEB-R1, Attachment 4
[10] Equals internal rate of return of cash flows for Year 0 through Year 200

180-DAY MULTI-STAGE DCF -- HIGH GROWTH RATE -- AMEREN GAS PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
					Second Stage Growth						
Company	Ticker	Stock Price	Annualized Dividend	First Stage Growth	Year 6	Year 7	Year 8	Year 9	Year 10	Third Stage Growth	ROE
Atmos Energy Corporation	ATO	$96.52	$2.50	7.80%	7.41%	7.03%	6.64%	6.26%	5.87%	5.49%	8.78%
NiSource Inc.	NI	$24.18	$0.88	9.50%	8.83%	8.16%	7.49%	6.82%	6.16%	5.49%	10.63%
Northwest Natural Gas Company	NWN	$51.15	$1.92	5.50%	5.50%	5.50%	5.49%	5.49%	5.49%	5.49%	9.63%
ONE Gas Inc.	OGS	$74.84	$2.32	6.50%	6.33%	6.16%	5.99%	5.82%	5.66%	5.49%	9.12%
South Jersey Industries, Inc.	SJI	$24.70	$1.21	11.50%	10.50%	9.50%	8.49%	7.49%	6.49%	5.49%	13.20%
Southwest Gas Corporation	SWX	$66.56	$2.38	8.00%	7.58%	7.16%	6.74%	6.32%	5.91%	5.49%	10.10%
Spire, Inc.	SR	$70.29	$2.60	10.00%	9.25%	8.50%	7.74%	6.99%	6.24%	5.49%	10.87%
Median											10.10%

Notes:
[1] Source: Bloomberg Professional, equals 180-day average as of August 31, 2021.
[2] Source: Bloomberg Professional
[3] Source: Schedule AEB-R1, Attachment 2, Maximum Growth Rate
[4] Equals [3] + ([9] − [3]) / 6
[5] Equals [4] + ([9] − [3]) / 6
[6] Equals [5] + ([9] − [3]) / 6
[7] Equals [6] + ([9] − [3]) / 6
[8] Equals [7] + ([9] − [3]) / 6
[9] Source: Schedule AEB-R1, Attachment 4
[10] Equals internal rate of return of cash flows for Year 0 through Year 200

CALCULATION OF LONG-TERM GDP GROWTH RATE

Real GDP ($ Billions) [1]		
1929	$	1,109.4
2020	$	18,384.7
Compound Annual Growth Rate		**3.13%**
Consumer Price Index (YoY % Change) [2]		
2027-2031		2.20%
Average		2.20%
Consumer Price Index (All-Urban) [3]		
2031		3.26
2050		5.00
Compound Annual Growth Rate		2.27%
GDP Chain-type Price Index (2012=1.000) [3]		
2031		1.42
2050		2.21
Compound Annual Growth Rate		2.37%
Average Inflation Forecast		**2.28%**
Long-Term GDP Growth Rate		**5.49%**

Notes:
[1] Bureau of Economic Analysis, August 26, 2021
[2] Blue Chip Financial Forecasts, Vol. 40, No. 6, June 1, 2021, at 14
[3] Energy Information Administration, Annual Energy Outlook 2021 at Table 20, February 3, 2021.

CAPITAL ASSET PRICING MODEL -- CURRENT RISK-FREE RATE & VL BETA

$K = Rf + \beta (Rm - Rf)$
$K = Rf + 0.25 \times (Rm - Rf) + 0.75 \times \beta \times (Rm - Rf)$

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Current 30-day average of 30-year U.S. Treasury bond yield	Beta	Market Return	Market Risk Premium	CAPM ROE	ECAPM ROE
Atmos Energy Corporation	ATO	1.91%	0.80	14.56%	12.64%	12.03%	12.66%
NiSource Inc.	NI	1.91%	0.85	14.56%	12.64%	12.66%	13.14%
Northwest Natural Gas Company	NWN	1.91%	0.85	14.56%	12.64%	12.66%	13.14%
ONE Gas Inc.	OGS	1.91%	0.80	14.56%	12.64%	12.03%	12.66%
South Jersey Industries, Inc.	SJI	1.91%	1.05	14.56%	12.64%	15.19%	15.03%
Southwest Gas Corporation	SWX	1.91%	0.95	14.56%	12.64%	13.93%	14.08%
Spire, Inc.	SR	1.91%	0.85	14.56%	12.64%	12.66%	13.14%
Mean						13.02%	13.41%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Value Line; dated August 27, 2021
[3] Source: Schedule AEB-R1, Attachment 8
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- NEAR-TERM PROJECTED RISK-FREE RATE & VL BETA

$K = Rf + \beta (Rm - Rf)$
$K = Rf + 0.25 \times (Rm - Rf) + 0.75 \times \beta \times (Rm - Rf)$

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Near-term projected 30-year U.S. Treasury bond yield (Q4 2021 - Q4 2022)	Beta	Market Return	Market Risk Premium	CAPM ROE	ECAPM ROE
Atmos Energy Corporation	ATO	2.42%	0.80	14.56%	12.14%	12.13%	12.74%
NiSource Inc.	NI	2.42%	0.85	14.56%	12.14%	12.74%	13.19%
Northwest Natural Gas Company	NWN	2.42%	0.85	14.56%	12.14%	12.74%	13.19%
ONE Gas Inc.	OGS	2.42%	0.80	14.56%	12.14%	12.13%	12.74%
South Jersey Industries, Inc.	SJI	2.42%	1.05	14.56%	12.14%	15.17%	15.01%
Southwest Gas Corporation	SWX	2.42%	0.95	14.56%	12.14%	13.95%	14.10%
Spire, Inc.	SR	2.42%	0.85	14.56%	12.14%	12.74%	13.19%
Mean						13.08%	13.45%

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 40, No. 9, September 1, 2021, at 2
[2] Source: Value Line; dated August 27, 2021
[3] Source: Schedule AEB-R1, Attachment 8
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- LONG-TERM PROJECTED RISK-FREE RATE & VL BETA

$K = Rf + \beta (Rm - Rf)$
$K = Rf + 0.25 \times (Rm - Rf) + 0.75 \times \beta \times (Rm - Rf)$

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Projected 30-year U.S. Treasury bond yield (2023 - 2027)	Beta	Market Return	Market Risk Premium	CAPM ROE	ECAPM ROE
Atmos Energy Corporation	ATO	3.50%	0.80	14.56%	11.06%	12.35%	12.90%
NiSource Inc.	NI	3.50%	0.85	14.56%	11.06%	12.90%	13.31%
Northwest Natural Gas Company	NWN	3.50%	0.85	14.56%	11.06%	12.90%	13.31%
ONE Gas Inc.	OGS	3.50%	0.80	14.56%	11.06%	12.35%	12.90%
South Jersey Industries, Inc.	SJI	3.50%	1.05	14.56%	11.06%	15.11%	14.97%
Southwest Gas Corporation	SWX	3.50%	0.95	14.56%	11.06%	14.01%	14.14%
Spire, Inc.	SR	3.50%	0.85	14.56%	11.06%	12.90%	13.31%
Mean						13.22%	13.55%

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 40, No. 6, June 1, 2021, at 14
[2] Source: Value Line; dated August 27, 2021
[3] Source: Schedule AEB-R1, Attachment 8
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- CURRENT RISK-FREE RATE & BLOOMBERG BETA

$K = Rf + \beta (Rm - Rf)$
$K = Rf + 0.25 \times (Rm - Rf) + 0.75 \times \beta \times (Rm - Rf)$

Company	Ticker	[1] Current 30-day average of 30-year U.S. Treasury bond yield	[2] Beta	[3] Market Return	[4] Market Risk Premium	[5] CAPM ROE	[6] ECAPM ROE
Atmos Energy Corporation	ATO	1.91%	0.75	14.56%	12.64%	11.41%	12.20%
NiSource Inc.	NI	1.91%	0.81	14.56%	12.64%	12.14%	12.74%
Northwest Natural Gas Company	NWN	1.91%	0.72	14.56%	12.64%	11.07%	11.95%
ONE Gas Inc.	OGS	1.91%	0.83	14.56%	12.64%	12.43%	12.96%
South Jersey Industries, Inc.	SJI	1.91%	0.84	14.56%	12.64%	12.51%	13.03%
Southwest Gas Corporation	SWX	1.91%	0.85	14.56%	12.64%	12.70%	13.17%
Spire, Inc.	SR	1.91%	0.77	14.56%	12.64%	11.60%	12.34%
Mean						11.98%	12.63%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional
[3] Source: Schedule AEB-R1, Attachment 8
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- NEAR-TERM PROJECTED RISK-FREE RATE & BLOOMBERG BETA

$K = Rf + \beta (Rm - Rf)$
$K = Rf + 0.25 \times (Rm - Rf) + 0.75 \times \beta \times (Rm - Rf)$

Company	Ticker	[1] Near-term projected 30-year U.S. Treasury bond yield (Q4 2021 - Q4 2022)	[2] Beta	[3] Market Return	[4] Market Risk Premium	[5] CAPM ROE	[6] ECAPM ROE
Atmos Energy Corporation	ATO	2.42%	0.75	14.56%	12.14%	11.54%	12.29%
NiSource Inc.	NI	2.42%	0.81	14.56%	12.14%	12.23%	12.81%
Northwest Natural Gas Company	NWN	2.42%	0.72	14.56%	12.14%	11.21%	12.05%
ONE Gas Inc.	OGS	2.42%	0.83	14.56%	12.14%	12.52%	13.03%
South Jersey Industries, Inc.	SJI	2.42%	0.84	14.56%	12.14%	12.60%	13.09%
Southwest Gas Corporation	SWX	2.42%	0.85	14.56%	12.14%	12.78%	13.22%
Spire, Inc.	SR	2.42%	0.77	14.56%	12.14%	11.72%	12.43%
Mean						12.08%	12.70%

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 40, No. 9, September 1, 2021, at 2
[2] Source: Bloomberg Professional
[3] Source: Schedule AEB-R1, Attachment 8
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- LONG-TERM PROJECTED RISK-FREE RATE & BLOOMBERG BETA

$K = Rf + \beta (Rm - Rf)$
$K = Rf + 0.25 \times (Rm - Rf) + 0.75 \times \beta \times (Rm - Rf)$

Company	Ticker	[1] Projected 30-year U.S. Treasury bond yield (2023 - 2027)	[2] Beta	[3] Market Return	[4] Market Risk Premium	[5] CAPM ROE	[6] ECAPM ROE
Atmos Energy Corporation	ATO	3.50%	0.75	14.56%	11.06%	11.81%	12.49%
NiSource Inc.	NI	3.50%	0.81	14.56%	11.06%	12.44%	12.97%
Northwest Natural Gas Company	NWN	3.50%	0.72	14.56%	11.06%	11.51%	12.27%
ONE Gas Inc.	OGS	3.50%	0.83	14.56%	11.06%	12.70%	13.16%
South Jersey Industries, Inc.	SJI	3.50%	0.84	14.56%	11.06%	12.77%	13.22%
Southwest Gas Corporation	SWX	3.50%	0.85	14.56%	11.06%	12.94%	13.34%
Spire, Inc.	SR	3.50%	0.77	14.56%	11.06%	11.97%	12.62%
Mean						12.30%	12.87%

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 40, No. 6, June 1, 2021, at 14
[2] Source: Bloomberg Professional
[3] Source: Schedule AEB-R1, Attachment 8
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- LONG-TERM AVERAGE BETA

CAPM: $K = R_f + \beta (R_m - R_f)$ / ECAPM: K = Rf + 0.25(Rm − Rf) + 0.75β (Rm − Rf)

	[4]	[5]	[6]	[7]	[8]	[9]
	Risk-Free Rate (R_f)	Beta (β)	Market Return (R_m)	Market Risk Premium ($R_m - R_f$)	CAPM (K)	ECAPM (K)
Current 30-day average of 30-year U.S. Treasury bond yield [1]	1.91%	0.721	14.56%	12.64%	11.03%	11.91%
Near-term projected 30-year U.S. Treasury bond yield (Q4 2021 - Q4 2022) [2]	2.42%	0.721	14.56%	12.14%	11.17%	12.02%
Projected 30-year U.S. Treasury bond yield (2023 - 2027) [3]	3.50%	0.721	14.56%	11.06%	11.47%	12.24%
				Average:	**11.22%**	**12.06%**

Notes:
[1] Source: Bloomberg Professional
[2] Source: Blue Chip Financial Forecasts, Vol. 40, No. 9, September 1, 2021, at 2
[3] Source: Blue Chip Financial Forecasts, Vol. 40, No. 6, June 1, 2021, at 14
[4] See Notes [1], [2], and [3]
[5] Source: Schedule AEB-R1, Attachment 7
[6] Source: Schedule AEB-R1, Attachment 8
[7] Equals [6] − [4]
[8] Equals [4] + [5] x [7]
[9] Equals [4] + 0.25 x ([7]) + 0.75 x ([5] x [7])

HISTORICAL BETA - 2011 - 2020

Company	Ticker	[1] 12/31/2011	[2] 12/31/2012	[3] 12/31/2013	[4] 12/31/2014	[5] 12/31/2015	[6] 12/31/2016	[7] 12/31/2017	[8] 12/31/2018	[9] 12/31/2019	[10] 12/31/2020	[11] Average
Atmos Energy Corporation	ATO	0.70	0.70	0.80	0.80	0.80	0.70	0.70	0.60	0.60	0.80	0.72
NiSource Inc.	NI	0.85	0.80	0.85	0.85	NMF	NMF	0.60	0.50	0.55	0.85	0.73
Northwest Natural Gas Company	NWN	0.60	0.55	0.65	0.70	0.65	0.60	0.70	0.60	0.60	0.80	0.65
ONE Gas Inc.	OGS	N/A	N/A	N/A	N/A	N/A	N/A	0.70	0.65	0.65	0.80	0.70
South Jersey Industries, Inc.	SJI	0.65	0.65	0.70	0.80	0.80	0.80	0.85	0.80	0.80	1.05	0.79
Southwest Gas Corporation	SWX	0.75	0.75	0.80	0.85	0.80	0.75	0.80	0.70	0.70	0.95	0.79
Spire, Inc.	SR	0.60	0.55	0.65	0.70	0.70	0.70	0.70	0.65	0.65	0.85	0.68
Mean		0.69	0.67	0.74	0.78	0.75	0.71	0.72	0.64	0.65	0.87	0.72

Notes:
[1] Value Line, dated December 9, 2011.
[2] Value Line, dated December 7, 2012.
[3] Value Line, dated December 6, 2013.
[4] Value Line, dated December 5, 2014.
[5] Value Line, dated December 4, 2015.
[6] Value Line, dated December 2, 2016.
[7] Value Line, dated December 1, 2017.
[8] Value Line, dated November 30, 2018.
[9] Value Line, dated November 29, 2019.
[10] Value Line, dated November 27, 2020.
[11] Average ([1] - [10])

MARKET RISK PREMIUM DERIVED FROM ANALYSTS' LONG-TERM GROWTH ESTIMATES

[1] Estimated Weighted Average Dividend Yield	1.34%
[2] Estimated Weighted Average Long-Term Growth Rate	13.13%
[3] S&P 500 Estimated Required Market Return	14.56%

STANDARD AND POOR'S 500 INDEX

Name	Ticker	[4] Weight in Index	[5] Current Dividend Yield	[6] Cap-Weighted Dividend Yield	[7] Value Line Long-Term Growth Est.	[8] Cap-Weighted Long-Term Growth Est.
LyondellBasell Industries NV	LYB	0.09%	4.50%	0.00%	8.00%	0.01%
American Express Co	AXP	0.36%	1.04%	0.00%	8.50%	0.03%
Verizon Communications Inc	VZ	0.62%	4.56%	0.03%	3.50%	0.02%
Broadcom Inc	AVGO	0.55%	2.90%	0.02%	27.00%	0.15%
Boeing Co/The	BA	0.00%	n/a	n/a	n/a	n/a
Caterpillar Inc	CAT	0.31%	2.11%	0.01%	9.00%	0.03%
JPMorgan Chase & Co	JPM	1.29%	2.25%	0.03%	6.50%	0.08%
Chevron Corp	CVX	0.51%	5.54%	0.03%	23.50%	0.12%
Coca-Cola Co/The	KO	0.66%	2.98%	0.02%	7.00%	0.05%
AbbVie Inc	ABBV	0.58%	4.31%	0.02%	6.50%	0.04%
Walt Disney Co/The	DIS	0.89%	n/a	n/a	14.00%	0.12%
FleetCor Technologies Inc	FLT	0.06%	n/a	n/a	11.00%	0.01%
Extra Space Storage Inc	EXR	0.07%	2.68%	0.00%	5.00%	0.00%
Exxon Mobil Corp	XOM	0.00%	6.38%	0.00%	n/a	n/a
Phillips 66	PSX	0.08%	5.06%	0.00%	20.00%	0.02%
General Electric Co	GE	0.31%	0.30%	0.00%	15.00%	0.05%
HP Inc	HPQ	0.10%	2.61%	0.00%	14.00%	0.01%
Home Depot Inc/The	HD	0.93%	2.02%	0.02%	8.00%	0.07%
Monolithic Power Systems Inc	MPWR	0.06%	0.48%	0.00%	17.50%	0.01%
International Business Machines Corp	IBM	0.34%	4.67%	0.02%	1.50%	0.01%
Johnson & Johnson	JNJ	1.23%	2.45%	0.03%	10.00%	0.12%
McDonald's Corp	MCD	0.48%	2.17%	0.01%	10.50%	0.05%
Merck & Co Inc	MRK	0.52%	3.41%	0.02%	7.50%	0.04%
3M Co	MMM	0.30%	3.04%	0.01%	4.50%	0.01%
American Water Works Co Inc	AWK	0.09%	1.32%	0.00%	8.50%	0.01%
Bank of America Corp	BAC	0.95%	2.01%	0.02%	6.00%	0.06%
Baker Hughes Co	BKR	0.00%	3.16%	0.00%	n/a	n/a
Pfizer Inc	PFE	0.70%	3.39%	0.02%	8.00%	0.06%
Procter & Gamble Co/The	PG	0.94%	2.44%	0.02%	7.00%	0.07%
AT&T Inc	T	0.53%	7.59%	0.04%	2.50%	0.01%
Travelers Cos Inc/The	TRV	0.11%	2.20%	0.00%	8.00%	0.01%
Raytheon Technologies Corp	RTX	0.35%	2.41%	0.01%	1.00%	0.00%
Analog Devices Inc	ADI	0.24%	1.69%	0.00%	8.50%	0.02%
Walmart Inc	WMT	1.12%	1.49%	0.02%	7.50%	0.08%
Cisco Systems Inc/Delaware	CSCO	0.67%	2.51%	0.02%	6.00%	0.04%
Intel Corp	INTC	0.59%	2.57%	0.02%	7.00%	0.04%
General Motors Co	GM	0.19%	n/a	n/a	11.00%	0.02%
Microsoft Corp	MSFT	6.14%	0.74%	0.05%	17.00%	1.04%
Dollar General Corp	DG	0.14%	0.75%	0.00%	10.50%	0.01%
Cigna Corp	CI	0.19%	1.89%	0.00%	10.00%	0.02%
Kinder Morgan Inc	KMI	0.10%	6.64%	0.01%	19.00%	0.02%
Citigroup Inc	C	0.39%	2.84%	0.01%	5.00%	0.02%
American International Group Inc	AIG	0.13%	2.35%	0.00%	28.50%	0.04%
Altria Group Inc	MO	0.25%	7.17%	0.02%	6.00%	0.02%
HCA Healthcare Inc	HCA	0.22%	0.76%	0.00%	12.00%	0.03%
Under Armour Inc	UAA	0.01%	n/a	n/a	11.00%	0.00%
International Paper Co	IP	0.06%	3.41%	0.00%	11.00%	0.01%
Hewlett Packard Enterprise Co	HPE	0.05%	3.10%	0.00%	6.50%	0.00%
Abbott Laboratories	ABT	0.61%	1.42%	0.01%	11.50%	0.07%
Aflac Inc	AFL	0.10%	2.33%	0.00%	8.50%	0.01%
Air Products and Chemicals Inc	APD	0.16%	2.23%	0.00%	12.00%	0.02%
Royal Caribbean Cruises Ltd	RCL	0.00%	n/a	n/a	n/a	n/a
Hess Corp	HES	0.00%	1.45%	0.00%	n/a	n/a
Archer-Daniels-Midland Co	ADM	0.09%	2.47%	0.00%	8.50%	0.01%
Automatic Data Processing Inc	ADP	0.24%	1.78%	0.00%	9.00%	0.02%
Verisk Analytics Inc	VRSK	0.09%	0.57%	0.00%	8.00%	0.01%
AutoZone Inc	AZO	0.09%	n/a	n/a	14.50%	0.01%
Avery Dennison Corp	AVY	0.05%	1.21%	0.00%	9.00%	0.00%
Enphase Energy Inc	ENPH	0.06%	n/a	n/a	40.00%	0.03%
MSCI Inc	MSCI	0.14%	0.66%	0.00%	16.00%	0.02%
Ball Corp	BLL	0.08%	0.83%	0.00%	22.00%	0.02%
Carrier Global Corp	CARR	0.00%	0.83%	0.00%	n/a	n/a
Bank of New York Mellon Corp/The	BK	0.13%	2.46%	0.00%	5.00%	0.01%
Otis Worldwide Corp	OTIS	0.00%	1.04%	0.00%	n/a	n/a
Baxter International Inc	BAX	0.10%	1.47%	0.00%	8.50%	0.01%
Becton Dickinson and Co	BDX	0.20%	1.32%	0.00%	7.50%	0.01%
Berkshire Hathaway Inc	BRK/B	1.03%	n/a	n/a	6.00%	0.06%
Best Buy Co Inc	BBY	0.08%	2.40%	0.00%	8.50%	0.01%
Boston Scientific Corp	BSX	0.17%	n/a	n/a	17.50%	0.03%
Bristol-Myers Squibb Co	BMY	0.40%	2.93%	0.01%	12.50%	0.05%
Fortune Brands Home & Security Inc	FBHS	0.04%	1.07%	0.00%	10.00%	0.00%
Brown-Forman Corp	BF/B	0.06%	1.02%	0.00%	11.00%	0.01%
Cabot Oil & Gas Corp	COG	0.02%	2.77%	0.00%	14.50%	0.00%
Campbell Soup Co	CPB	0.03%	3.55%	0.00%	5.00%	0.00%
Kansas City Southern	KSU	0.07%	0.77%	0.00%	10.50%	0.01%
Hilton Worldwide Holdings Inc	HLT	0.00%	n/a	n/a	n/a	n/a
Carnival Corp	CCL	0.00%	n/a	n/a	n/a	n/a
Qorvo Inc	QRVO	0.06%	n/a	n/a	19.50%	0.01%
Lumen Technologies Inc	LUMN	0.04%	8.13%	0.00%	2.50%	0.00%
UDR Inc	UDR	0.04%	2.68%	0.00%	6.00%	0.00%
Clorox Co/The	CLX	0.06%	2.76%	0.00%	6.00%	0.00%
Paycom Software Inc	PAYC	0.08%	n/a	n/a	19.50%	0.02%

STANDARD AND POOR'S 500 INDEX

Name	Ticker	[4] Weight in Index	[5] Current Dividend Yield	[6] Cap-Weighted Dividend Yield	[7] Value Line Long-Term Growth Est.	[8] Cap-Weighted Long-Term Growth Est.
CMS Energy Corp	CMS	0.05%	2.71%	0.00%	7.50%	0.00%
Newell Brands Inc	NWL	0.00%	3.62%	0.00%	n/a	n/a
Colgate-Palmolive Co	CL	0.18%	2.31%	0.00%	4.50%	0.01%
Comerica Inc	CMA	0.03%	3.68%	0.00%	2.50%	0.00%
IPG Photonics Corp	IPGP	0.02%	n/a	n/a	17.00%	0.00%
Conagra Brands Inc	CAG	0.04%	3.77%	0.00%	5.00%	0.00%
Consolidated Edison Inc	ED	0.07%	4.11%	0.00%	4.00%	0.00%
Corning Inc	GLW	0.09%	2.40%	0.00%	20.00%	0.02%
Cummins Inc	CMI	0.09%	2.46%	0.00%	7.00%	0.01%
Caesars Entertainment Inc	CZR	0.00%	n/a	n/a	n/a	n/a
Danaher Corp	DHR	0.63%	0.26%	0.00%	18.00%	0.11%
Target Corp	TGT	0.33%	1.46%	0.00%	13.00%	0.04%
Deere & Co	DE	0.32%	1.11%	0.00%	17.00%	0.05%
Dominion Energy Inc	D	0.17%	3.24%	0.01%	12.00%	0.02%
Dover Corp	DOV	0.07%	1.15%	0.00%	7.00%	0.00%
Alliant Energy Corp	LNT	0.04%	2.65%	0.00%	5.50%	0.00%
Duke Energy Corp	DUK	0.22%	3.76%	0.01%	7.00%	0.02%
Regency Centers Corp	REG	0.03%	3.47%	0.00%	10.00%	0.00%
Eaton Corp PLC	ETN	0.18%	1.81%	0.00%	5.50%	0.01%
Ecolab Inc	ECL	0.17%	0.85%	0.00%	6.00%	0.01%
PerkinElmer Inc	PKI	0.06%	0.15%	0.00%	11.00%	0.01%
Emerson Electric Co	EMR	0.17%	1.91%	0.00%	10.50%	0.02%
EOG Resources Inc	EOG	0.11%	2.44%	0.00%	12.50%	0.01%
Aon PLC	AON	0.18%	0.71%	0.00%	7.00%	0.01%
Entergy Corp	ETR	0.06%	3.44%	0.00%	3.00%	0.00%
Equifax Inc	EFX	0.09%	0.57%	0.00%	10.50%	0.01%
IQVIA Holdings Inc	IQV	0.13%	n/a	n/a	14.00%	0.02%
Gartner Inc	IT	0.07%	n/a	n/a	18.50%	0.01%
FedEx Corp	FDX	0.19%	1.13%	0.00%	12.00%	0.02%
FMC Corp	FMC	0.03%	2.05%	0.00%	9.50%	0.00%
Ford Motor Co	F	0.14%	n/a	n/a	47.50%	0.07%
NextEra Energy Inc	NEE	0.45%	1.83%	0.01%	10.50%	0.05%
Franklin Resources Inc	BEN	0.04%	3.45%	0.00%	11.50%	0.01%
Freeport-McMoRan Inc	FCX	0.14%	0.82%	0.00%	36.50%	0.05%
Gap Inc/The	GPS	0.03%	1.80%	0.00%	25.00%	0.01%
Dexcom Inc	DXCM	0.14%	n/a	n/a	34.00%	0.05%
General Dynamics Corp	GD	0.15%	2.38%	0.00%	5.00%	0.01%
General Mills Inc	GIS	0.09%	3.53%	0.00%	3.00%	0.00%
Genuine Parts Co	GPC	0.05%	2.67%	0.00%	7.00%	0.00%
Atmos Energy Corp	ATO	0.03%	2.56%	0.00%	7.00%	0.00%
WW Grainger Inc	GWW	0.06%	1.49%	0.00%	5.50%	0.00%
Halliburton Co	HAL	0.05%	0.90%	0.00%	9.00%	0.00%
L3Harris Technologies Inc	LHX	0.00%	1.75%	0.00%	n/a	n/a
Healthpeak Properties Inc	PEAK	0.05%	3.33%	0.00%	-12.00%	-0.01%
Catalent Inc	CTLT	0.06%	n/a	n/a	21.00%	0.01%
Fortive Corp	FTV	0.07%	0.38%	0.00%	6.00%	0.00%
Hershey Co/The	HSY	0.07%	2.03%	0.00%	5.50%	0.00%
Synchrony Financial	SYF	0.08%	1.77%	0.00%	4.50%	0.00%
Hormel Foods Corp	HRL	0.07%	2.15%	0.00%	9.00%	0.01%
Arthur J Gallagher & Co	AJG	0.08%	1.34%	0.00%	12.50%	0.01%
Mondelez International Inc	MDLZ	0.23%	2.26%	0.01%	8.00%	0.02%
CenterPoint Energy Inc	CNP	0.04%	2.55%	0.00%	8.00%	0.00%
Humana Inc	HUM	0.14%	0.69%	0.00%	12.00%	0.02%
Willis Towers Watson PLC	WLTW	0.08%	1.45%	0.00%	8.00%	0.01%
Illinois Tool Works Inc	ITW	0.20%	2.10%	0.00%	11.00%	0.02%
CDW Corp/DE	CDW	0.07%	0.80%	0.00%	10.00%	0.01%
Trane Technologies PLC	TT	0.00%	1.19%	0.00%	n/a	n/a
Interpublic Group of Cos Inc/The	IPG	0.04%	2.90%	0.00%	12.00%	0.00%
International Flavors & Fragrances Inc	IFF	0.10%	2.09%	0.00%	7.50%	0.01%
Jacobs Engineering Group Inc	J	0.05%	0.62%	0.00%	15.00%	0.01%
Generac Holdings Inc	GNRC	0.07%	n/a	n/a	23.50%	0.02%
NXP Semiconductors NV	NXPI	0.15%	1.05%	0.00%	11.00%	0.02%
Hanesbrands Inc	HBI	0.02%	3.21%	0.00%	6.50%	0.00%
Kellogg Co	K	0.06%	3.67%	0.00%	3.50%	0.00%
Broadridge Financial Solutions Inc	BR	0.05%	1.49%	0.00%	8.50%	0.00%
Perrigo Co PLC	PRGO	0.01%	2.34%	0.00%	-2.00%	0.00%
Kimberly-Clark Corp	KMB	0.13%	3.31%	0.00%	5.50%	0.01%
Kimco Realty Corp	KIM	0.04%	3.12%	0.00%	-2.00%	0.00%
Oracle Corp	ORCL	0.67%	1.44%	0.01%	10.00%	0.07%
Kroger Co/The	KR	0.09%	1.82%	0.00%	5.00%	0.00%
Leggett & Platt Inc	LEG	0.02%	3.47%	0.00%	10.00%	0.00%
Lennar Corp	LEN	0.08%	0.93%	0.00%	9.00%	0.01%
Eli Lilly & Co	LLY	0.67%	1.32%	0.01%	11.00%	0.07%
Bath & Body Works Inc	BBWI	0.05%	0.89%	0.00%	23.50%	0.01%
Charter Communications Inc	CHTR	0.41%	n/a	n/a	26.50%	0.11%
Lincoln National Corp	LNC	0.03%	2.45%	0.00%	9.00%	0.00%
Loews Corp	L	0.04%	0.45%	0.00%	12.50%	0.00%
Lowe's Cos Inc	LOW	0.38%	1.57%	0.01%	14.00%	0.05%
IDEX Corp	IEX	0.05%	0.96%	0.00%	8.00%	0.00%
Marsh & McLennan Cos Inc	MMC	0.22%	1.36%	0.00%	11.00%	0.02%
Masco Corp	MAS	0.04%	1.55%	0.00%	9.00%	0.00%
S&P Global Inc	SPGI	0.29%	0.69%	0.00%	10.50%	0.03%
Medtronic PLC	MDT	0.49%	1.89%	0.01%	9.00%	0.04%
Viatris Inc	VTRS	0.00%	3.01%	0.00%	n/a	n/a
CVS Health Corp	CVS	0.31%	2.32%	0.01%	6.00%	0.02%
DuPont de Nemours Inc	DD	0.00%	1.62%	0.00%	n/a	n/a
Micron Technology Inc	MU	0.22%	0.54%	0.00%	11.50%	0.03%
Motorola Solutions Inc	MSI	0.11%	1.16%	0.00%	7.00%	0.01%
Cboe Global Markets Inc	CBOE	0.04%	1.52%	0.00%	12.00%	0.00%
Laboratory Corp of America Holdings	LH	0.08%	n/a	n/a	5.50%	0.00%
Newmont Corp	NEM	0.13%	3.79%	0.00%	14.50%	0.02%

STANDARD AND POOR'S 500 INDEX

Name	Ticker	[4] Weight in Index	[5] Current Dividend Yield	[6] Cap-Weighted Dividend Yield	[7] Value Line Long-Term Growth Est.	[8] Cap-Weighted Long-Term Growth Est.
NIKE Inc	NKE	0.57%	0.67%	0.00%	24.00%	0.14%
NiSource Inc	NI	0.03%	3.57%	0.00%	9.50%	0.00%
Norfolk Southern Corp	NSC	0.17%	1.72%	0.00%	10.00%	0.02%
Principal Financial Group Inc	PFG	0.05%	3.77%	0.00%	5.50%	0.00%
Eversource Energy	ES	0.08%	2.66%	0.00%	6.50%	0.01%
Northrop Grumman Corp	NOC	0.16%	1.71%	0.00%	7.00%	0.01%
Wells Fargo & Co	WFC	0.51%	1.75%	0.01%	-0.50%	0.00%
Nucor Corp	NUE	0.09%	1.38%	0.00%	8.00%	0.01%
PVH Corp	PVH	0.02%	n/a	n/a	12.50%	0.00%
Occidental Petroleum Corp	OXY	0.06%	0.16%	0.00%	36.50%	0.02%
Omnicom Group Inc	OMC	0.04%	3.82%	0.00%	6.00%	0.00%
ONEOK Inc	OKE	0.06%	7.12%	0.00%	9.50%	0.01%
Raymond James Financial Inc	RJF	0.05%	0.74%	0.00%	6.50%	0.00%
Parker-Hannifin Corp	PH	0.10%	1.39%	0.00%	13.00%	0.01%
Rollins Inc	ROL	0.05%	0.82%	0.00%	11.50%	0.01%
PPL Corp	PPL	0.06%	5.66%	0.00%	-7.00%	0.00%
ConocoPhillips	COP	0.20%	3.10%	0.01%	13.50%	0.03%
PulteGroup Inc	PHM	0.04%	1.04%	0.00%	11.00%	0.00%
Pinnacle West Capital Corp	PNW	0.02%	4.32%	0.00%	5.00%	0.00%
PNC Financial Services Group Inc/The	PNC	0.22%	2.62%	0.01%	10.00%	0.02%
PPG Industries Inc	PPG	0.10%	1.48%	0.00%	3.00%	0.00%
Progressive Corp/The	PGR	0.15%	0.42%	0.00%	5.00%	0.01%
Public Service Enterprise Group Inc	PEG	0.09%	3.19%	0.00%	3.50%	0.00%
Robert Half International Inc	RHI	0.03%	1.47%	0.00%	7.50%	0.00%
Edison International	EIX	0.00%	4.58%	0.00%	n/a	n/a
Schlumberger NV	SLB	0.11%	1.78%	0.00%	8.50%	0.01%
Charles Schwab Corp/The	SCHW	0.36%	0.99%	0.00%	7.00%	0.02%
Sherwin-Williams Co/The	SHW	0.22%	0.72%	0.00%	10.50%	0.02%
West Pharmaceutical Services Inc	WST	0.09%	0.15%	0.00%	17.00%	0.02%
J M Smucker Co/The	SJM	0.04%	3.20%	0.00%	4.00%	0.00%
Snap-on Inc	SNA	0.03%	2.19%	0.00%	4.50%	0.00%
AMETEK Inc	AME	0.09%	0.59%	0.00%	10.00%	0.01%
Southern Co/The	SO	0.19%	4.02%	0.01%	6.00%	0.01%
Truist Financial Corp	TFC	0.21%	3.36%	0.01%	7.00%	0.01%
Southwest Airlines Co	LUV	0.08%	n/a	n/a	34.50%	0.03%
W R Berkley Corp	WRB	0.04%	0.69%	0.00%	14.50%	0.01%
Stanley Black & Decker Inc	SWK	0.09%	1.64%	0.00%	6.00%	0.01%
Public Storage	PSA	0.15%	2.47%	0.00%	2.50%	0.00%
Arista Networks Inc	ANET	0.08%	n/a	n/a	4.50%	0.00%
Sysco Corp	SYY	0.11%	2.36%	0.00%	10.00%	0.01%
Corteva Inc	CTVA	0.00%	1.27%	0.00%	n/a	n/a
Texas Instruments Inc	TXN	0.48%	2.14%	0.01%	8.50%	0.04%
Textron Inc	TXT	0.04%	0.11%	0.00%	8.00%	0.00%
Thermo Fisher Scientific Inc	TMO	0.59%	0.19%	0.00%	14.50%	0.09%
TJX Cos Inc/The	TJX	0.24%	1.43%	0.00%	12.00%	0.03%
Globe Life Inc	GL	0.03%	0.82%	0.00%	8.00%	0.00%
Johnson Controls International plc	JCI	0.14%	1.44%	0.00%	8.50%	0.01%
Ulta Beauty Inc	ULTA	0.06%	n/a	n/a	12.50%	0.01%
Union Pacific Corp	UNP	0.38%	1.97%	0.01%	10.00%	0.04%
Keysight Technologies Inc	KEYS	0.09%	n/a	n/a	17.00%	0.02%
UnitedHealth Group Inc	UNH	1.06%	1.39%	0.01%	12.00%	0.13%
Unum Group	UNM	0.01%	4.51%	0.00%	3.50%	0.00%
Marathon Oil Corp	MRO	0.03%	1.70%	0.00%	69.00%	0.02%
Bio-Rad Laboratories Inc	BIO	0.05%	n/a	n/a	11.50%	0.01%
Ventas Inc	VTR	0.06%	3.22%	0.00%	4.50%	0.00%
VF Corp	VFC	0.08%	2.56%	0.00%	5.50%	0.00%
Vornado Realty Trust	VNO	0.02%	5.06%	0.00%	-19.00%	0.00%
Vulcan Materials Co	VMC	0.07%	0.80%	0.00%	10.00%	0.01%
Weyerhaeuser Co	WY	0.07%	1.89%	0.00%	21.00%	0.02%
Whirlpool Corp	WHR	0.04%	2.53%	0.00%	5.50%	0.00%
Williams Cos Inc/The	WMB	0.08%	6.64%	0.01%	10.50%	0.01%
WEC Energy Group Inc	WEC	0.08%	2.87%	0.00%	6.50%	0.01%
Adobe Inc	ADBE	0.86%	n/a	n/a	15.50%	0.13%
AES Corp/The	AES	0.04%	2.52%	0.00%	24.00%	0.01%
Amgen Inc	AMGN	0.35%	3.12%	0.01%	5.50%	0.02%
Apple Inc	AAPL	6.79%	0.58%	0.04%	14.50%	0.98%
Autodesk Inc	ADSK	0.18%	n/a	n/a	18.00%	0.03%
Cintas Corp	CTAS	0.11%	0.96%	0.00%	12.50%	0.01%
Comcast Corp	CMCSA	0.75%	1.65%	0.01%	11.00%	0.08%
Molson Coors Beverage Co	TAP	0.03%	2.86%	0.00%	41.00%	0.01%
KLA Corp	KLAC	0.14%	1.24%	0.00%	18.00%	0.03%
Marriott International Inc/MD	MAR	0.12%	n/a	n/a	17.50%	0.02%
McCormick & Co Inc/MD	MKC	0.06%	1.58%	0.00%	6.00%	0.00%
PACCAR Inc	PCAR	0.08%	1.66%	0.00%	5.50%	0.00%
Costco Wholesale Corp	COST	0.54%	0.69%	0.00%	10.50%	0.06%
First Republic Bank/CA	FRC	0.10%	0.44%	0.00%	13.50%	0.01%
Stryker Corp	SYK	0.28%	0.91%	0.00%	11.00%	0.03%
Tyson Foods Inc	TSN	0.06%	2.27%	0.00%	6.00%	0.00%
Lamb Weston Holdings Inc	LW	0.03%	1.44%	0.00%	2.50%	0.00%
Applied Materials Inc	AMAT	0.33%	0.71%	0.00%	16.00%	0.05%
American Airlines Group Inc	AAL	0.00%	n/a	n/a	n/a	n/a
Cardinal Health Inc	CAH	0.04%	3.74%	0.00%	12.00%	0.00%
Cerner Corp	CERN	0.06%	1.15%	0.00%	11.00%	0.01%
Cincinnati Financial Corp	CINF	0.05%	2.04%	0.00%	13.50%	0.01%
ViacomCBS Inc	VIAC	0.07%	2.32%	0.00%	7.00%	0.00%
DR Horton Inc	DHI	0.09%	0.84%	0.00%	14.50%	0.01%
Electronic Arts Inc	EA	0.11%	0.47%	0.00%	12.50%	0.01%
Expeditors International of Washington Inc	EXPD	0.06%	0.93%	0.00%	10.00%	0.01%
Fastenal Co	FAST	0.09%	2.01%	0.00%	9.00%	0.01%
M&T Bank Corp	MTB	0.05%	3.14%	0.00%	8.00%	0.00%
Xcel Energy Inc	XEL	0.10%	2.66%	0.00%	6.00%	0.01%

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Name	Ticker	[4] Weight in Index	[5] Current Dividend Yield	[6] Cap-Weighted Dividend Yield	[7] Value Line Long-Term Growth Est.	[8] Cap-Weighted Long-Term Growth Est.
Fiserv Inc	FISV	0.21%	n/a	n/a	13.00%	0.03%
Fifth Third Bancorp	FITB	0.07%	2.78%	0.00%	8.00%	0.01%
Gilead Sciences Inc	GILD	0.25%	3.90%	0.01%	3.50%	0.01%
Hasbro Inc	HAS	0.04%	2.77%	0.00%	12.50%	0.00%
Huntington Bancshares Inc/OH	HBAN	0.06%	3.86%	0.00%	8.50%	0.01%
Welltower Inc	WELL	0.10%	2.79%	0.00%	-1.50%	0.00%
Biogen Inc	BIIB	0.14%	n/a	n/a	7.00%	0.01%
Northern Trust Corp	NTRS	0.07%	2.36%	0.00%	7.00%	0.00%
Packaging Corp of America	PKG	0.04%	2.64%	0.00%	5.00%	0.00%
Paychex Inc	PAYX	0.11%	2.31%	0.00%	7.00%	0.01%
People's United Financial Inc	PBCT	0.02%	4.44%	0.00%	4.00%	0.00%
QUALCOMM Inc	QCOM	0.45%	1.85%	0.01%	14.00%	0.06%
Roper Technologies Inc	ROP	0.14%	0.47%	0.00%	8.00%	0.01%
Ross Stores Inc	ROST	0.11%	0.96%	0.00%	7.50%	0.01%
IDEXX Laboratories Inc	IDXX	0.16%	n/a	n/a	14.50%	0.02%
Starbucks Corp	SBUX	0.37%	1.53%	0.01%	16.00%	0.06%
KeyCorp	KEY	0.05%	3.64%	0.00%	9.50%	0.00%
Fox Corp	FOXA	0.00%	1.28%	0.00%	n/a	n/a
Fox Corp	FOX	0.00%	1.39%	0.00%	n/a	n/a
State Street Corp	STT	0.09%	2.45%	0.00%	7.00%	0.01%
Norwegian Cruise Line Holdings Ltd	NCLH	0.00%	n/a	n/a	n/a	n/a
US Bancorp	USB	0.23%	2.93%	0.01%	6.50%	0.01%
A O Smith Corp	AOS	0.03%	1.43%	0.00%	9.50%	0.00%
NortonLifeLock Inc	NLOK	0.04%	1.88%	0.00%	7.00%	0.00%
T Rowe Price Group Inc	TROW	0.14%	1.93%	0.00%	8.00%	0.01%
Waste Management Inc	WM	0.18%	1.48%	0.00%	7.50%	0.01%
Constellation Brands Inc	STZ	0.10%	1.44%	0.00%	7.00%	0.01%
Xilinx Inc	XLNX	0.10%	n/a	n/a	7.50%	0.01%
DENTSPLY SIRONA Inc	XRAY	0.04%	0.71%	0.00%	5.50%	0.00%
Zions Bancorp NA	ZION	0.03%	2.63%	0.00%	8.50%	0.00%
Alaska Air Group Inc	ALK	0.02%	n/a	n/a	80.00%	0.02%
Invesco Ltd	IVZ	0.03%	2.69%	0.00%	15.00%	0.00%
Linde PLC	LIN	0.00%	1.35%	0.00%	n/a	n/a
Intuit Inc	INTU	0.42%	0.48%	0.00%	16.00%	0.07%
Morgan Stanley	MS	0.52%	2.68%	0.01%	8.50%	0.04%
Microchip Technology Inc	MCHP	0.12%	1.11%	0.00%	9.00%	0.01%
Chubb Ltd	CB	0.22%	1.74%	0.00%	12.50%	0.03%
Hologic Inc	HOLX	0.05%	n/a	n/a	25.00%	0.01%
Citizens Financial Group Inc	CFG	0.05%	3.56%	0.00%	8.50%	0.00%
O'Reilly Automotive Inc	ORLY	0.11%	n/a	n/a	11.00%	0.01%
Allstate Corp/The	ALL	0.11%	2.40%	0.00%	5.00%	0.01%
Equity Residential	EQR	0.09%	2.87%	0.00%	2.00%	0.00%
BorgWarner Inc	BWA	0.03%	1.59%	0.00%	5.50%	0.00%
Organon & Co	OGN	0.00%	3.30%	0.00%	n/a	n/a
Host Hotels & Resorts Inc	HST	0.03%	n/a	n/a	10.00%	0.00%
Incyte Corp	INCY	0.05%	n/a	n/a	58.50%	0.03%
Simon Property Group Inc	SPG	0.12%	4.46%	0.01%	1.50%	0.00%
Eastman Chemical Co	EMN	0.04%	2.44%	0.00%	10.50%	0.00%
Twitter Inc	TWTR	0.14%	n/a	n/a	35.00%	0.05%
AvalonBay Communities Inc	AVB	0.09%	2.77%	0.00%	1.00%	0.00%
Prudential Financial Inc	PRU	0.11%	4.34%	0.00%	4.50%	0.00%
United Parcel Service Inc	UPS	0.39%	2.09%	0.01%	10.50%	0.04%
Walgreens Boots Alliance Inc	WBA	0.12%	3.76%	0.00%	6.00%	0.01%
STERIS PLC	STE	0.06%	0.80%	0.00%	10.00%	0.01%
McKesson Corp	MCK	0.09%	0.92%	0.00%	9.00%	0.01%
Lockheed Martin Corp	LMT	0.27%	2.89%	0.01%	7.50%	0.02%
AmerisourceBergen Corp	ABC	0.07%	1.44%	0.00%	6.50%	0.00%
Capital One Financial Corp	COF	0.20%	1.45%	0.00%	5.50%	0.01%
Waters Corp	WAT	0.07%	n/a	n/a	6.00%	0.00%
Dollar Tree Inc	DLTR	0.06%	n/a	n/a	9.50%	0.01%
Darden Restaurants Inc	DRI	0.05%	2.92%	0.00%	19.00%	0.01%
Domino's Pizza Inc	DPZ	0.05%	0.73%	0.00%	15.00%	0.01%
NVR Inc	NVR	0.05%	n/a	n/a	8.00%	0.00%
NetApp Inc	NTAP	0.05%	2.25%	0.00%	6.50%	0.00%
Citrix Systems Inc	CTXS	0.03%	1.44%	0.00%	8.50%	0.00%
DXC Technology Co	DXC	0.03%	n/a	n/a	6.50%	0.00%
Old Dominion Freight Line Inc	ODFL	0.09%	0.28%	0.00%	9.50%	0.01%
DaVita Inc	DVA	0.04%	n/a	n/a	16.00%	0.01%
Hartford Financial Services Group Inc/The	HIG	0.06%	2.08%	0.00%	8.50%	0.01%
Iron Mountain Inc	IRM	0.04%	5.18%	0.00%	8.00%	0.00%
Estee Lauder Cos Inc/The	EL	0.21%	0.62%	0.00%	11.00%	0.02%
Cadence Design Systems Inc	CDNS	0.12%	n/a	n/a	9.50%	0.01%
Tyler Technologies Inc	TYL	0.05%	n/a	n/a	12.50%	0.01%
Universal Health Services Inc	UHS	0.03%	0.51%	0.00%	11.00%	0.00%
Skyworks Solutions Inc	SWKS	0.08%	1.22%	0.00%	13.50%	0.01%
NOV Inc	NOV	0.00%	n/a	n/a	n/a	n/a
Quest Diagnostics Inc	DGX	0.05%	1.62%	0.00%	7.50%	0.00%
Activision Blizzard Inc	ATVI	0.17%	0.57%	0.00%	13.00%	0.02%
Rockwell Automation Inc	ROK	0.10%	1.32%	0.00%	6.50%	0.01%
Kraft Heinz Co/The	KHC	0.12%	4.45%	0.01%	1.50%	0.00%
American Tower Corp	AMT	0.36%	1.74%	0.01%	9.50%	0.03%
Regeneron Pharmaceuticals Inc	REGN	0.19%	n/a	n/a	12.50%	0.02%
Amazon.com Inc	AMZN	4.76%	n/a	n/a	30.00%	1.43%
Jack Henry & Associates Inc	JKHY	0.04%	1.04%	0.00%	9.50%	0.00%
Ralph Lauren Corp	RL	0.02%	2.37%	0.00%	6.00%	0.00%
Boston Properties Inc	BXP	0.05%	3.47%	0.00%	-2.00%	0.00%
Amphenol Corp	APH	0.12%	0.76%	0.00%	10.50%	0.01%
Howmet Aerospace Inc	HWM	0.04%	0.25%	0.00%	12.00%	0.00%
Pioneer Natural Resources Co	PXD	0.10%	1.50%	0.00%	20.00%	0.02%
Valero Energy Corp	VLO	0.07%	5.91%	0.00%	13.00%	0.01%
Synopsys Inc	SNPS	0.14%	n/a	n/a	12.50%	0.02%

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Western Union Co/The	WU	0.02%	4.34%	0.00%	6.00%	0.00%
Etsy Inc	ETSY	0.07%	n/a	n/a	30.00%	0.02%
CH Robinson Worldwide Inc	CHRW	0.03%	2.27%	0.00%	8.00%	0.00%
Accenture PLC	ACN	0.58%	1.05%	0.01%	10.00%	0.06%
TransDigm Group Inc	TDG	0.09%	n/a	n/a	11.00%	0.01%
Yum! Brands Inc	YUM	0.10%	1.53%	0.00%	10.50%	0.01%
Prologis Inc	PLD	0.27%	1.87%	0.01%	8.50%	0.02%
FirstEnergy Corp	FE	0.06%	4.01%	0.00%	11.50%	0.01%
VeriSign Inc	VRSN	0.07%	n/a	n/a	8.50%	0.01%
Quanta Services Inc	PWR	0.04%	0.24%	0.00%	12.50%	0.00%
Henry Schein Inc	HSIC	0.03%	n/a	n/a	6.50%	0.00%
Ameren Corp	AEE	0.06%	2.51%	0.00%	6.50%	0.00%
ANSYS Inc	ANSS	0.09%	n/a	n/a	8.00%	0.01%
NVIDIA Corp	NVDA	1.51%	0.07%	0.00%	15.50%	0.23%
Sealed Air Corp	SEE	0.02%	1.31%	0.00%	13.50%	0.00%
Cognizant Technology Solutions Corp	CTSH	0.11%	1.26%	0.00%	6.50%	0.01%
SVB Financial Group	SIVB	0.09%	n/a	n/a	8.00%	0.01%
Intuitive Surgical Inc	ISRG	0.34%	n/a	n/a	15.00%	0.05%
Take-Two Interactive Software Inc	TTWO	0.05%	n/a	n/a	12.00%	0.01%
Republic Services Inc	RSG	0.11%	1.48%	0.00%	7.50%	0.01%
eBay Inc	EBAY	0.14%	0.94%	0.00%	16.50%	0.02%
Goldman Sachs Group Inc/The	GS	0.38%	1.93%	0.01%	7.00%	0.03%
SBA Communications Corp	SBAC	0.11%	0.65%	0.00%	45.00%	0.05%
Sempra Energy	SRE	0.11%	3.32%	0.00%	10.00%	0.01%
Moody's Corp	MCO	0.19%	0.65%	0.00%	8.50%	0.02%
Booking Holdings Inc	BKNG	0.26%	n/a	n/a	14.00%	0.04%
F5 Networks Inc	FFIV	0.03%	n/a	n/a	7.00%	0.00%
Akamai Technologies Inc	AKAM	0.05%	n/a	n/a	9.50%	0.00%
Charles River Laboratories International Inc	CRL	0.06%	n/a	n/a	7.00%	0.00%
MarketAxess Holdings Inc	MKTX	0.05%	0.55%	0.00%	14.00%	0.01%
Devon Energy Corp	DVN	0.05%	1.49%	0.00%	20.00%	0.01%
Bio-Techne Corp	TECH	0.05%	0.26%	0.00%	13.00%	0.01%
Alphabet Inc	GOOGL	0.00%	n/a	n/a	n/a	n/a
Teleflex Inc	TFX	0.05%	0.34%	0.00%	14.50%	0.01%
Allegion plc	ALLE	0.03%	1.00%	0.00%	8.50%	0.00%
Netflix Inc	NFLX	0.68%	n/a	n/a	23.50%	0.16%
Agilent Technologies Inc	A	0.14%	0.44%	0.00%	11.50%	0.02%
Trimble Inc	TRMB	0.06%	n/a	n/a	14.00%	0.01%
Anthem Inc	ANTM	0.25%	1.20%	0.00%	13.00%	0.03%
CME Group Inc	CME	0.20%	1.78%	0.00%	8.50%	0.02%
Juniper Networks Inc	JNPR	0.03%	2.76%	0.00%	7.00%	0.00%
BlackRock Inc	BLK	0.39%	1.75%	0.01%	9.50%	0.04%
DTE Energy Co	DTE	0.06%	2.74%	0.00%	6.00%	0.00%
Celanese Corp	CE	0.05%	1.72%	0.00%	6.50%	0.00%
Nasdaq Inc	NDAQ	0.09%	1.10%	0.00%	6.50%	0.01%
Philip Morris International Inc	PM	0.43%	4.66%	0.02%	6.50%	0.03%
Ingersoll Rand Inc	IR	0.00%	n/a	n/a	n/a	n/a
salesforce.com Inc	CRM	0.70%	n/a	n/a	20.00%	0.14%
Huntington Ingalls Industries Inc	HII	0.02%	2.23%	0.00%	7.00%	0.00%
MetLife Inc	MET	0.14%	3.10%	0.00%	6.50%	0.01%
Under Armour Inc	UA	0.00%	n/a	n/a	n/a	n/a
Tapestry Inc	TPR	0.03%	2.48%	0.00%	1.50%	0.00%
CSX Corp	CSX	0.20%	1.14%	0.00%	11.50%	0.02%
Edwards Lifesciences Corp	EW	0.20%	n/a	n/a	13.00%	0.03%
Ameriprise Financial Inc	AMP	0.08%	1.66%	0.00%	13.50%	0.01%
Zebra Technologies Corp	ZBRA	0.08%	n/a	n/a	12.50%	0.01%
Zimmer Biomet Holdings Inc	ZBH	0.09%	0.64%	0.00%	8.50%	0.01%
CBRE Group Inc	CBRE	0.09%	n/a	n/a	10.50%	0.01%
Mastercard Inc	MA	0.92%	0.51%	0.00%	12.50%	0.11%
CarMax Inc	KMX	0.06%	n/a	n/a	12.50%	0.01%
Intercontinental Exchange Inc	ICE	0.18%	1.10%	0.00%	8.00%	0.01%
Fidelity National Information Services Inc	FIS	0.21%	1.22%	0.00%	28.00%	0.06%
Chipotle Mexican Grill Inc	CMG	0.14%	n/a	n/a	22.00%	0.03%
Wynn Resorts Ltd	WYNN	0.03%	n/a	n/a	27.00%	0.01%
Live Nation Entertainment Inc	LYV	0.00%	n/a	n/a	n/a	n/a
Assurant Inc	AIZ	0.03%	1.55%	0.00%	11.50%	0.00%
NRG Energy Inc	NRG	0.03%	2.85%	0.00%	-1.50%	0.00%
Monster Beverage Corp	MNST	0.14%	n/a	n/a	11.50%	0.02%
Regions Financial Corp	RF	0.05%	3.33%	0.00%	9.50%	0.01%
Mosaic Co/The	MOS	0.03%	0.93%	0.00%	33.50%	0.01%
Expedia Group Inc	EXPE	0.00%	n/a	n/a	n/a	n/a
Evergy Inc	EVRG	0.04%	3.13%	0.00%	8.00%	0.00%
Discovery Inc	DISCA	0.01%	n/a	n/a	13.50%	0.00%
CF Industries Holdings Inc	CF	0.03%	2.64%	0.00%	19.50%	0.01%
APA Corp	APA	0.02%	0.51%	0.00%	72.50%	0.01%
Leidos Holdings Inc	LDOS	0.04%	1.47%	0.00%	9.00%	0.00%
Alphabet Inc	GOOG	2.52%	n/a	n/a	21.00%	0.53%
Cooper Cos Inc/The	COO	0.06%	0.01%	0.00%	14.50%	0.01%
TE Connectivity Ltd	TEL	0.13%	1.33%	0.00%	9.00%	0.01%
Discover Financial Services	DFS	0.10%	1.56%	0.00%	16.00%	0.02%
Visa Inc	V	1.05%	0.56%	0.01%	12.00%	0.13%
Mid-America Apartment Communities Inc	MAA	0.06%	2.13%	0.00%	0.50%	0.00%
Xylem Inc/NY	XYL	0.07%	0.82%	0.00%	10.50%	0.01%
Marathon Petroleum Corp	MPC	0.00%	3.91%	0.00%	n/a	n/a
Advanced Micro Devices Inc	AMD	0.36%	n/a	n/a	26.50%	0.10%
Tractor Supply Co	TSCO	0.06%	1.07%	0.00%	10.00%	0.01%
ResMed Inc	RMD	0.11%	0.58%	0.00%	8.50%	0.01%
Mettler-Toledo International Inc	MTD	0.10%	n/a	n/a	12.00%	0.01%
Copart Inc	CPRT	0.09%	n/a	n/a	10.00%	0.01%
Fortinet Inc	FTNT	0.14%	n/a	n/a	20.00%	0.03%
Albemarle Corp	ALB	0.07%	0.66%	0.00%	6.50%	0.00%

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Moderna Inc	MRNA	0.00%	n/a	n/a	n/a	n/a
Essex Property Trust Inc	ESS	0.06%	2.53%	0.00%	-0.50%	0.00%
Realty Income Corp	O	0.08%	3.91%	0.00%	6.00%	0.00%
Westrock Co	WRK	0.04%	1.84%	0.00%	8.00%	0.00%
IHS Markit Ltd	INFO	0.13%	0.66%	0.00%	10.50%	0.01%
Westinghouse Air Brake Technologies Corp	WAB	0.05%	0.53%	0.00%	9.50%	0.00%
Pool Corp	POOL	0.05%	0.65%	0.00%	15.00%	0.01%
Western Digital Corp	WDC	0.05%	n/a	n/a	1.00%	0.00%
PepsiCo Inc	PEP	0.58%	2.75%	0.02%	6.50%	0.04%
Diamondback Energy Inc	FANG	0.00%	2.33%	0.00%	n/a	n/a
ServiceNow Inc	NOW	0.35%	n/a	n/a	44.50%	0.15%
Church & Dwight Co Inc	CHD	0.06%	1.21%	0.00%	8.00%	0.00%
Duke Realty Corp	DRE	0.05%	1.94%	0.00%	-1.00%	0.00%
Federal Realty Investment Trust	FRT	0.03%	3.51%	0.00%	-2.00%	0.00%
MGM Resorts International	MGM	0.06%	0.02%	0.00%	25.00%	0.01%
American Electric Power Co Inc	AEP	0.12%	3.30%	0.00%	6.50%	0.01%
PTC Inc	PTC	0.00%	n/a	n/a	n/a	n/a
JB Hunt Transport Services Inc	JBHT	0.05%	0.68%	0.00%	8.00%	0.00%
Lam Research Corp	LRCX	0.23%	0.99%	0.00%	17.50%	0.04%
Mohawk Industries Inc	MHK	0.04%	n/a	n/a	6.50%	0.00%
Pentair PLC	PNR	0.03%	1.04%	0.00%	11.00%	0.00%
Vertex Pharmaceuticals Inc	VRTX	0.14%	n/a	n/a	17.00%	0.02%
Amcor PLC	AMCR	0.00%	3.66%	0.00%	n/a	n/a
Facebook Inc	FB	2.45%	n/a	n/a	18.50%	0.45%
T-Mobile US Inc	TMUS	0.46%	n/a	n/a	8.50%	0.04%
United Rentals Inc	URI	0.07%	n/a	n/a	10.50%	0.01%
Alexandria Real Estate Equities Inc	ARE	0.09%	2.17%	0.00%	13.00%	0.01%
Honeywell International Inc	HON	0.43%	1.60%	0.01%	9.50%	0.04%
ABIOMED Inc	ABMD	0.04%	n/a	n/a	9.50%	0.00%
Delta Air Lines Inc	DAL	0.07%	n/a	n/a	49.00%	0.03%
United Airlines Holdings Inc	UAL	0.00%	n/a	n/a	n/a	n/a
Seagate Technology Holdings PLC	STX	0.05%	3.06%	0.00%	4.00%	0.00%
News Corp	NWS	0.00%	0.91%	0.00%	n/a	n/a
Centene Corp	CNC	0.10%	n/a	n/a	9.50%	0.01%
Martin Marietta Materials Inc	MLM	0.06%	0.64%	0.00%	6.00%	0.00%
Teradyne Inc	TER	0.05%	0.33%	0.00%	13.00%	0.01%
PayPal Holdings Inc	PYPL	0.92%	n/a	n/a	16.00%	0.15%
Tesla Inc	TSLA	0.00%	n/a	n/a	n/a	n/a
DISH Network Corp	DISH	0.03%	n/a	n/a	2.50%	0.00%
Penn National Gaming Inc	PENN	0.03%	n/a	n/a	30.00%	0.01%
Dow Inc	DOW	0.00%	4.45%	0.00%	n/a	n/a
Everest Re Group Ltd	RE	0.03%	2.34%	0.00%	10.50%	0.00%
Teledyne Technologies Inc	TDY	0.06%	n/a	n/a	14.50%	0.01%
News Corp	NWSA	0.00%	0.89%	0.00%	n/a	n/a
Exelon Corp	EXC	0.13%	3.12%	0.00%	5.50%	0.01%
Global Payments Inc	GPN	0.13%	0.61%	0.00%	16.50%	0.02%
Crown Castle International Corp	CCI	0.23%	2.73%	0.01%	8.50%	0.02%
Aptiv PLC	APTV	0.11%	n/a	n/a	15.50%	0.02%
Advance Auto Parts Inc	AAP	0.03%	1.97%	0.00%	11.00%	0.00%
Align Technology Inc	ALGN	0.15%	n/a	n/a	17.00%	0.03%
Illumina Inc	ILMN	0.19%	n/a	n/a	14.00%	0.03%
LKQ Corp	LKQ	0.04%	n/a	n/a	12.00%	0.01%
Nielsen Holdings PLC	NLSN	0.00%	1.12%	0.00%	n/a	n/a
Garmin Ltd	GRMN	0.09%	1.54%	0.00%	9.00%	0.01%
Zoetis Inc	ZTS	0.26%	0.49%	0.00%	10.50%	0.03%
Digital Realty Trust Inc	DLR	0.13%	2.83%	0.00%	7.00%	0.01%
Equinix Inc	EQIX	0.20%	1.36%	0.00%	17.00%	0.03%
Las Vegas Sands Corp	LVS	0.09%	n/a	n/a	17.50%	0.02%
Discovery Inc	DISCK	0.00%	n/a	n/a	n/a	n/a

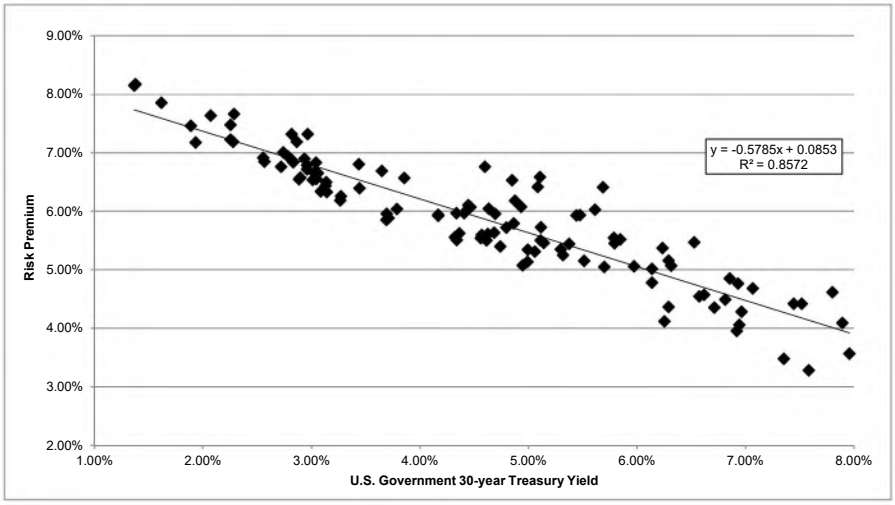
Notes:
[1] Equals Sum ([6])
[2] Equals Sum ([8])
[3] Equals ([1] x (1 + (0.5 x [2]))) + [2]
[4] Equals weight in S&P 500 based on market capitalization
[5] Source: Bloomberg Professional
[6] Equals [4] x [5]
[7] Source: Value Line
[8] Equals [4] x [8]

BOND YIELD PLUS RISK PREMIUM

	[1]	[2]	[3]
	Average Authorized Gas ROE	U.S. Govt. 30-year Treasury	Risk Premium
1992.1	12.42%	7.80%	4.62%
1992.2	11.98%	7.89%	4.09%
1992.3	11.87%	7.45%	4.42%
1992.4	11.94%	7.52%	4.42%
1993.1	11.75%	7.07%	4.68%
1993.2	11.71%	6.86%	4.85%
1993.3	11.39%	6.31%	5.07%
1993.4	11.16%	6.14%	5.02%
1994.1	11.12%	6.57%	4.55%
1994.2	10.84%	7.35%	3.48%
1994.3	10.87%	7.58%	3.28%
1994.4	11.53%	7.96%	3.57%
1995.2	11.00%	6.94%	4.06%
1995.3	11.07%	6.71%	4.35%
1995.4	11.61%	6.23%	5.37%
1996.1	11.45%	6.29%	5.16%
1996.2	10.88%	6.92%	3.96%
1996.3	11.25%	6.96%	4.29%
1996.4	11.19%	6.62%	4.58%
1997.1	11.31%	6.81%	4.49%
1997.2	11.70%	6.93%	4.77%
1997.3	12.00%	6.53%	5.47%
1997.4	10.92%	6.14%	4.78%
1998.2	11.37%	5.85%	5.52%
1998.3	11.41%	5.47%	5.94%
1998.4	11.69%	5.10%	6.59%
1999.1	10.82%	5.37%	5.44%
1999.2	11.25%	5.79%	5.46%
1999.4	10.38%	6.25%	4.12%
2000.1	10.66%	6.29%	4.36%
2000.2	11.03%	5.97%	5.06%
2000.3	11.33%	5.79%	5.55%
2000.4	12.10%	5.69%	6.41%
2001.1	11.38%	5.44%	5.93%
2001.2	10.75%	5.70%	5.05%
2001.4	10.65%	5.30%	5.35%
2002.1	10.67%	5.51%	5.15%
2002.2	11.64%	5.61%	6.03%
2002.3	11.50%	5.08%	6.42%
2002.4	11.01%	4.93%	6.08%
2003.1	11.38%	4.85%	6.53%
2003.2	11.36%	4.60%	6.76%
2003.3	10.61%	5.11%	5.50%
2003.4	10.84%	5.11%	5.73%
2004.1	11.06%	4.88%	6.18%
2004.2	10.57%	5.32%	5.25%
2004.3	10.37%	5.06%	5.31%
2004.4	10.66%	4.86%	5.79%
2005.1	10.65%	4.69%	5.96%
2005.2	10.54%	4.47%	6.07%
2005.3	10.47%	4.44%	6.03%
2005.4	10.32%	4.68%	5.63%
2006.1	10.68%	4.63%	6.05%
2006.2	10.60%	5.14%	5.46%
2006.3	10.34%	4.99%	5.34%
2006.4	10.14%	4.74%	5.40%
2007.1	10.52%	4.80%	5.72%
2007.2	10.13%	4.99%	5.14%
2007.3	10.03%	4.95%	5.08%
2007.4	10.12%	4.61%	5.50%
2008.1	10.38%	4.41%	5.97%
2008.2	10.17%	4.57%	5.60%
2008.3	10.55%	4.44%	6.11%
2008.4	10.34%	3.65%	6.69%
2009.1	10.24%	3.44%	6.81%
2009.2	10.11%	4.17%	5.94%
2009.3	9.88%	4.32%	5.56%
2009.4	10.31%	4.34%	5.97%
2010.1	10.24%	4.62%	5.61%
2010.2	9.99%	4.36%	5.62%
2010.3	10.43%	3.86%	6.57%
2010.4	10.09%	4.17%	5.93%
2011.1	10.10%	4.56%	5.54%
2011.2	9.85%	4.34%	5.51%
2011.3	9.65%	3.69%	5.96%
2011.4	9.88%	3.04%	6.84%
2012.1	9.63%	3.14%	6.50%
2012.2	9.83%	2.93%	6.90%
2012.3	9.75%	2.74%	7.01%
2012.4	10.06%	2.86%	7.19%

BOND YIELD PLUS RISK PREMIUM

	[1]	[2]	[3]
	Average Authorized Gas ROE	U.S. Govt. 30-year Treasury	Risk Premium
2013.1	9.57%	3.13%	6.44%
2013.2	9.47%	3.14%	6.33%
2013.3	9.60%	3.71%	5.89%
2013.4	9.83%	3.79%	6.04%
2014.1	9.54%	3.69%	5.85%
2014.2	9.84%	3.44%	6.39%
2014.3	9.45%	3.26%	6.19%
2014.4	10.28%	2.96%	7.32%
2015.1	9.47%	2.55%	6.91%
2015.2	9.43%	2.88%	6.55%
2015.3	9.75%	2.96%	6.79%
2015.4	9.68%	2.96%	6.72%
2016.1	9.48%	2.72%	6.76%
2016.2	9.42%	2.57%	6.85%
2016.3	9.47%	2.28%	7.19%
2016.4	9.67%	2.83%	6.84%
2017.1	9.60%	3.04%	6.56%
2017.2	9.47%	2.90%	6.58%
2017.3	10.14%	2.82%	7.32%
2017.4	9.70%	2.82%	6.88%
2018.1	9.68%	3.02%	6.66%
2018.2	9.43%	3.09%	6.34%
2018.3	9.71%	3.06%	6.65%
2018.4	9.53%	3.27%	6.26%
2019.1	9.55%	3.01%	6.54%
2019.2	9.73%	2.78%	6.94%
2019.3	9.95%	2.29%	7.66%
2019.4	9.73%	2.25%	7.48%
2020.1	9.35%	1.89%	7.46%
2020.2	9.55%	1.38%	8.17%
2020.3	9.52%	1.37%	8.15%
2020.4	9.47%	1.62%	7.86%
2021.1	9.71%	2.07%	7.64%
2021.2	9.48%	2.25%	7.22%
2021.3	9.11%	1.93%	7.18%
AVERAGE	10.45%	4.57%	5.88%
MEDIAN	10.34%	4.61%	5.94%



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.925840
R Square	0.857180
Adjusted R Square	0.855917
Standard Error	0.003892
Observations	115

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.010272	0.010272	678.208237	0.000000
Residual	113	0.001711	0.000015		
Total	114	0.011983			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.0853	0.001077	79.15	0.00000	0.08312	0.08739	0.08312	0.08739
U.S. Govt. 30-year Treasury	(0.5785)	0.022214	(26.04)	0.00000	(0.62251)	(0.53449)	(0.62251)	(0.53449)

	[7] U.S. Govt. 30-year Treasury	[8] Risk Premium	[9] ROE
Current 30-day average of 30-year U.S. Treasury bond yield [4]	1.91%	7.42%	9.33%
Blue Chip Consensus Forecast (Q4 2021 - Q4 2022) [5]	2.42%	7.13%	9.55%
Blue Chip Consensus Forecast (2023-2027) [6]	3.50%	6.50%	10.00%
AVERAGE			9.63%

Notes:
[1] Source: Regulatory Research Associates, rate cases through August 31, 2021
[2] Source: Bloomberg Professional, quarterly bond yields are the average of each trading day in the quarter
[3] Equals Column [1] − Column [2]
[4] Source: Bloomberg Professional, 30-day average as of August 31, 2021
[5] Source: Blue Chip Financial Forecasts, Vol. 40, No. 9, September 1, 2021, at 2
[6] Source: Blue Chip Financial Forecasts, Vol. 40, No. 6, June 1, 2021, at 14
[7] See notes [4], [5] & [6]
[8] Equals 0.084369 + (-0.562291 x Column [7])
[9] Equals Column [7] + Column [8]

DR. WON'S 2021 TWO-STEP DCF - FILED

Company	Ticker	[1] Annualized Dividend	[2] Stock Price	[3] Dividend Yield	[4] Expected Dividend Yield	[5] Value Line Earnings Growth	[6] Value Line Dividend Growth	[7] Weighted Average Short-term Growth	[8] Projected GDP Growth - Long-term Growth	[9] Weighted Average Growth Rate	[10] Mean ROE
Atmos Energy Corporation	ATO	$2.30	$100.20	2.30%	2.37%	7.00%	7.50%	7.36%	3.70%	6.14%	8.50%
New Jersey Resources Corporation	NJR	$1.27	$42.00	3.02%	3.09%	2.00%	5.50%	4.49%	3.70%	4.22%	7.31%
Northwest Natural Holding Company	NWN	$1.91	$54.17	3.53%	3.57%	5.50%	0.50%	1.95%	3.70%	2.53%	6.10%
ONE Gas, Inc.	OGS	$2.16	$77.30	2.79%	2.88%	6.50%	7.00%	6.86%	3.70%	5.80%	8.68%
South Jersey Industries	SJI	$1.20	$25.50	4.71%	4.84%	11.50%	4.50%	6.53%	3.70%	5.59%	10.42%
Southwest Gas Holdings, Inc.	SWX	$2.26	$68.29	3.31%	3.39%	9.00%	4.50%	5.81%	3.70%	5.10%	8.50%
Spire Inc.	SR	$2.49	$74.44	3.34%	3.43%	10.00%	4.50%	6.10%	3.70%	5.30%	8.73%
Mean				3.29%	3.37%	7.36%	4.86%	5.58%	3.70%	4.95%	8.32%

Notes:
[1] Source: Schedule SJW-13
[2] Source: Schedule SJW-13
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.5 x [9])
[5] Source: Schedule SJW-11
[6] Source: Schedule SJW-11
[7] Equals [5] x 0.3 + [6] x 0.7
[8] Source: Schedule SJW-11
[9] Equals [7] x (2/3) + [8] x (1/3)
[10] Equals [4] + [9]

DR. WON'S 2021 TWO-STEP DCF - EARNINGS GROWTH RATES ONLY

Company	Ticker	[1] Annualized Dividend	[2] Stock Price	[3] Dividend Yield	[4] Expected Dividend Yield	[5] Value Line Earnings Growth	[6] Projected GDP Growth - Long-term Growth	[7] Weighted Average Growth Rate	[8] Mean ROE
Atmos Energy Corporation	ATO	$2.30	$100.20	2.30%	2.36%	7.00%	3.70%	5.90%	8.26%
New Jersey Resources Corporation	NJR	$1.27	$42.00	3.02%	3.06%	2.00%	3.70%	2.57%	5.63%
Northwest Natural Holding Company	NWN	$1.91	$54.17	3.53%	3.61%	5.50%	3.70%	4.90%	8.51%
ONE Gas, Inc.	OGS	$2.16	$77.30	2.79%	2.87%	6.50%	3.70%	5.57%	8.44%
South Jersey Industries	SJI	$1.20	$25.50	4.71%	4.92%	11.50%	3.70%	8.90%	13.82%
Southwest Gas Holdings, Inc.	SWX	$2.26	$68.29	3.31%	3.43%	9.00%	3.70%	7.23%	10.66%
Spire Inc.	SR	$2.49	$74.44	3.34%	3.48%	10.00%	3.70%	7.90%	11.38%
Mean				3.29%	3.39%	7.36%	3.70%	6.14%	9.53%

Notes:
[1] Source: Schedule SJW-13
[2] Source: Schedule SJW-13
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.5 x [7])
[5] Source: Schedule SJW-11
[6] Source: Schedule SJW-11
[7] Equals [5] x (2/3) + [6] x (1/3)
[8] Equals [4] + [7]

DR. WON'S 2021 TWO-STEP DCF - EARNINGS GROWTH RATES ONLY & LONG-TERM PROJECTED NOMINAL GDP GROWTH

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line Earnings Growth	Projected GDP Growth - Long-term Growth	Weighted Average Growth Rate	Mean ROE
Atmos Energy Corporation	ATO	$2.30	$100.20	2.30%	2.37%	7.00%	5.56%	6.52%	8.89%
New Jersey Resources Corporation	NJR	$1.27	$42.00	3.02%	3.07%	2.00%	5.56%	3.19%	6.26%
Northwest Natural Holding Company	NWN	$1.91	$54.17	3.53%	3.62%	5.50%	5.56%	5.52%	9.14%
ONE Gas, Inc.	OGS	$2.16	$77.30	2.79%	2.88%	6.50%	5.56%	6.19%	9.07%
South Jersey Industries	SJI	$1.20	$25.50	4.71%	4.93%	11.50%	5.56%	9.52%	14.45%
Southwest Gas Holdings, Inc.	SWX	$2.26	$68.29	3.31%	3.44%	9.00%	5.56%	7.85%	11.29%
Spire Inc.	SR	$2.49	$74.44	3.34%	3.49%	10.00%	5.56%	8.52%	12.01%
Mean				3.29%	3.40%	7.36%	5.56%	6.76%	10.16%

Notes:
[1] Source: Schedule SJW-13
[2] Source: Schedule SJW-13
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.5 x [7])
[5] Source: Schedule SJW-11
[6] Source: Schedule AEB-D2, Attachment 5
[7] Equals [5] x (2/3) + [6] x (1/3)
[8] Equals [4] + [7]

DR. WON'S 2021 TWO-STEP DCF - FERC TWO-STEP DCF ANALYSIS

		[1]	[2]	[3]	[4]	[5]	[6]	[7]
Company	Ticker	Dividend Yield	Expected Dividend Yield	Yahoo! Finance Earnings Growth Rate	Projected GDP Growth - Long-term Growth	Weighted Average Growth Rate	Mean ROE	Outlier
Atmos Energy Corporation	ATO	2.62%	2.71%	7.17%	3.70%	6.48%	9.18%	
New Jersey Resources Corporation	NJR	3.34%	3.43%	6.00%	3.70%	5.54%	8.97%	
Northwest Natural Holding Company	NWN	3.81%	3.88%	3.80%	3.70%	3.78%	7.66%	
ONE Gas, Inc.	OGS	3.07%	3.14%	5.00%	3.70%	4.74%	7.88%	
South Jersey Industries	SJI	4.91%	5.02%	4.80%	3.70%	4.58%	9.60%	
Southwest Gas Holdings, Inc.	SWX	3.54%	3.61%	4.00%	3.70%	3.94%	7.55%	
Spire Inc.	SR	3.73%	3.85%	7.31%	3.70%	6.59%	10.44%	
Mean		3.57%	3.66%	5.44%	3.70%	5.09%	8.75%	

Upper Threshold [8]	17.94%
Zone of Reasonableness Low	7.55%
Lower Equal Third	8.51%
Median	8.97%
Upper Equal Third	9.47%
Zone of Reasonableness High	10.44%
Number of Companies in Proxy Group & Not Outlier	7

Low-end Outlier Test - Value Line EPS Growth Rates	
Moody's Public Utility Baa Bond Yield	3.47%
20% of CAPM MRP (Value Line)	1.91%
Low End Threshold	5.38%
High-end Outlier Test	
200% of Median	17.94%

Notes:
[1] Source: Schedule AEB-R1, Attachment 12
[2] Equals [1] x (1 + 0.5 x [5])
[3] Source: Yahoo! Finance
[4] Source: Schedule SJW-11
[5] Equals [3] x 0.8 + [4] x 0.2
[6] Equals [2] + [5]
[7] Outlier if [6] < 6-Mo. Average of Baa Utility Index + 20% * Market Risk Premium [5.38%] or [6] > [8]
[8] Equals Median of [6] * 2

DR. WON'S 2017 TWO-STEP DCF - FILED

Company	Ticker	[1] Annualized Dividend	[2] Stock Price	[3] Dividend Yield	[4] Expected Dividend Yield	[5] Value Line Earnings Growth	[6] Value Line Dividend Growth	[7] Weighted Average Short-term Growth	[8] Projected GDP Growth - Long-term Growth	[9] Weighted Average Growth Rate	[10] Mean ROE
Atmos Energy Corporation	ATO	$1.80	$81.74	2.20%	2.26%	6.50%	6.50%	6.50%	4.00%	5.67%	7.93%
New Jersey Resources Corporation	NJR	$1.04	$40.98	2.54%	2.58%	3.00%	3.50%	3.36%	4.00%	3.57%	6.15%
Northwest Natural Holding Company	NWN	$1.88	$60.21	3.12%	3.18%	7.00%	2.00%	3.45%	4.00%	3.63%	6.81%
ONE Gas, Inc.	OGS	$1.68	$69.66	2.41%	2.55%	9.50%	17.00%	14.83%	4.00%	11.22%	13.76%
South Jersey Industries	SJI	$1.10	$36.20	3.04%	3.11%	3.00%	6.50%	5.49%	4.00%	4.99%	8.10%
Southwest Gas Holdings, Inc.	SWX	$1.98	$80.65	2.46%	2.54%	7.00%	9.50%	8.78%	4.00%	7.18%	9.73%
Spire Inc.	SR	$2.10	$68.88	3.05%	3.12%	9.00%	3.50%	5.10%	4.00%	4.73%	7.85%
Mean				2.69%	2.76%	6.43%	6.93%	6.78%	4.00%	5.86%	8.62%

Notes:
[1] Source: Schedule SJW-13
[2] Source: Schedule SJW-13
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.5 x [9])
[5] Source: Schedule SJW-11
[6] Source: Schedule SJW-11
[7] Equals [5] x 0.3 + [6] x 0.7
[8] Source: Schedule SJW-11
[9] Equals [7] x (2/3) + [8] x (1/3)
[10] Equals [4] + [9]

DR. WON'S 2017 TWO-STEP DCF - EARNINGS GROWTH RATES ONLY

Company	Ticker	[1] Annualized Dividend	[2] Stock Price	[3] Dividend Yield	[4] Expected Dividend Yield	[5] Value Line Earnings Growth	[6] Projected GDP Growth - Long-term Growth	[7] Weighted Average Growth Rate	[8] Mean ROE
Atmos Energy Corporation	ATO	$1.80	$81.74	2.20%	2.26%	6.50%	4.00%	5.67%	7.93%
New Jersey Resources Corporation	NJR	$1.04	$40.98	2.54%	2.58%	3.00%	4.00%	3.33%	5.91%
Northwest Natural Holding Company	NWN	$1.88	$60.21	3.12%	3.22%	7.00%	4.00%	6.00%	9.22%
ONE Gas, Inc.	OGS	$1.68	$69.66	2.41%	2.50%	9.50%	4.00%	7.67%	10.17%
South Jersey Industries	SJI	$1.10	$36.20	3.04%	3.09%	3.00%	4.00%	3.33%	6.42%
Southwest Gas Holdings, Inc.	SWX	$1.98	$80.65	2.46%	2.53%	7.00%	4.00%	6.00%	8.53%
Spire Inc.	SR	$2.10	$68.88	3.05%	3.16%	9.00%	4.00%	7.33%	10.49%
Mean				2.69%	2.76%	6.43%	4.00%	5.62%	8.38%

Notes:
[1] Source: Schedule SJW-13
[2] Source: Schedule SJW-13
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.5 x [7])
[5] Source: Schedule SJW-11
[6] Source: Schedule SJW-11
[7] Equals [5] x (2/3) + [6] x (1/3)
[8] Equals [4] + [7]

DR. WON'S 2017 TWO-STEP DCF - EARNINGS GROWTH RATES ONLY & LONG-TERM PROJECTED NOMINAL GDP GROWTH

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line Earnings Growth	Projected GDP Growth - Long-term Growth	Weighted Average Growth Rate	Mean ROE
Atmos Energy Corporation	ATO	$1.80	$81.74	2.20%	2.27%	6.50%	5.50%	6.17%	8.44%
New Jersey Resources Corporation	NJR	$1.04	$40.98	2.54%	2.59%	3.00%	5.50%	3.83%	6.42%
Northwest Natural Holding Company	NWN	$1.88	$60.21	3.12%	3.22%	7.00%	5.50%	6.50%	9.72%
ONE Gas, Inc.	OGS	$1.68	$69.66	2.41%	2.51%	9.50%	5.50%	8.17%	10.68%
South Jersey Industries	SJI	$1.10	$36.20	3.04%	3.10%	3.00%	5.50%	3.83%	6.93%
Southwest Gas Holdings, Inc.	SWX	$1.98	$80.65	2.46%	2.53%	7.00%	5.50%	6.50%	9.03%
Spire Inc.	SR	$2.10	$68.88	3.05%	3.17%	9.00%	5.50%	7.83%	11.00%
Mean				2.69%	2.77%	6.43%	5.50%	6.12%	8.89%

Notes:
[1] Source: Schedule SJW-13
[2] Source: Schedule SJW-13
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.5 x [7])
[5] Source: Schedule SJW-11
[6] Source: Schedule AEB-R1, Attachment 11
[7] Equals [5] x (2/3) + [6] x (1/3)
[8] Equals [4] + [7]

DR. WON'S 2017 TWO-STEP DCF - FERC TWO-STEP DCF ANALYSIS

		[1]	[2]	[3]	[4]	[5]	[6]	[7]
Company	Ticker	Dividend Yield	Expected Dividend Yield	Yahoo! Finance Earnings Growth Rate	Projected GDP Growth - Long-term Growth	Weighted Average Growth Rate	Mean ROE	Outlier
Atmos Energy Corporation	ATO	2.28%	2.36%	7.00%	4.00%	6.40%	8.76%	
New Jersey Resources Corporation	NJR	2.60%	2.68%	6.00%	4.00%	5.60%	8.28%	
Northwest Natural Holding Company	NWN	3.15%	3.22%	4.50%	4.00%	4.40%	7.62%	
ONE Gas, Inc.	OGS	2.43%	2.49%	5.50%	4.00%	5.20%	7.69%	
South Jersey Industries	SJI	3.12%	3.21%	6.00%	4.00%	5.60%	8.81%	
Southwest Gas Holdings, Inc.	SWX	2.30%	2.35%	4.00%	4.00%	4.00%	6.35%	
Spire Inc.	SR	3.14%	3.20%	4.21%	4.00%	4.17%	7.37%	
Mean		2.72%	2.79%	5.32%	4.00%	5.05%	7.84%	

Upper Threshold [8]	15.38%
Zone of Reasonableness Low	6.35%
Lower Equal Third	7.17%
Median	7.69%
Upper Equal Third	7.99%
Zone of Reasonableness High	8.81%
Number of Companies in Proxy Group & Not Outlier	7

Low-end Outlier Test - Bloomberg EPS Growth Rates	
Moody's Public Utility Baa Bond Yield	4.52%
20% of CAPM MRP (Bloomberg)	1.78%
Low End Threshold	6.31%
High-end Outlier Test	
200% of Median	15.38%

Notes:
[1] Source: Schedule AEB-R1, Attachment 12
[2] Equals [1] x (1 + 0.5 x [5])
[3] Source: Yahoo! Finance
[4] Source: Schedule SJW-11
[5] Equals [3] x 0.8 + [4] x 0.2
[6] Equals [2] + [5]
[7] Outlier if [6] < 6-Mo. Average of Baa Utility Index + 20% * Market Risk Premium [6.31%] or [6] > [8]
[8] Equals Median of [6] * 2

Dr. Won - Proxy Group - 2021

Line No.						Indicated Annualized	
ATO	Atmos Energy Corporation		Low Price	High Price	Average Price	Dividend	Dividend Yield
1		Jun-21	95.67	101.84	98.76	2.50	2.53%
2		May-21	96.84	104.79	100.82	2.50	2.48%
3		Apr-21	97.08	104.99	101.04	2.50	2.47%
4		Mar-21	85.59	99.25	92.42	2.50	2.71%
5		Feb-21	84.59	94.30	89.45	2.50	2.80%
6		Jan-21	86.85	95.92	91.38	2.50	2.74%
7	Average						**2.62%**

						Indicated Annualized	
NJR	New Jersey Resources Corporation		Low Price	High Price	Average Price	Dividend	Dividend Yield
8		Jun-21	39.21	44.41	41.81	1.33	3.18%
9		May-21	41.59	43.94	42.77	1.33	3.11%
10		Apr-21	39.46	43.41	41.44	1.33	3.21%
11		Mar-21	39.01	42.57	40.79	1.33	3.26%
12		Feb-21	34.61	40.40	37.51	1.33	3.55%
13		Jan-21	33.32	38.39	35.86	1.33	3.71%
14	Average						**3.34%**

						Indicated Annualized	
NWN	Northwest Natural Holding Company		Low Price	High Price	Average Price	Dividend	Dividend Yield
15		Jun-21	51.37	55.70	53.54	1.92	3.59%
16		May-21	52.50	56.11	54.31	1.92	3.54%
17		Apr-21	52.61	56.75	54.68	1.92	3.51%
18		Mar-21	46.77	54.27	50.52	1.92	3.80%
19		Feb-21	43.12	50.18	46.65	1.92	4.12%
20		Jan-21	41.71	47.24	44.48	1.92	4.32%
21	Average						**3.81%**

						Indicated Annualized	
OGS	ONE Gas, Inc.		Low Price	High Price	Average Price	Dividend	Dividend Yield
22		Jun-21	73.20	78.96	76.08	2.32	3.05%
23		May-21	72.50	81.55	77.03	2.32	3.01%
24		Apr-21	75.69	81.90	78.80	2.32	2.94%
25		Mar-21	67.29	77.70	72.50	2.32	3.20%
26		Feb-21	66.77	74.78	70.78	2.32	3.28%
27		Jan-21	69.48	78.01	73.75	2.16	2.93%
28	Average						**3.07%**

						Indicated Annualized	
SJI	South Jersey Industries		Low Price	High Price	Average Price	Dividend	Dividend Yield
29		Jun-21	25.62	27.99	26.81	1.21	4.51%
30		May-21	24.60	26.87	25.74	1.21	4.70%
31		Apr-21	22.45	25.47	23.96	1.21	5.05%
32		Mar-21	21.13	29.24	25.19	1.21	4.80%
33		Feb-21	21.98	26.50	24.24	1.21	4.99%
34		Jan-21	20.82	24.20	22.51	1.21	5.38%
35	Average						**4.91%**

						Indicated Annualized	
SWX	Southwest Gas Holdings, Inc.		Low Price	High Price	Average Price	Dividend	Dividend Yield
36		Jun-21	62.54	68.20	65.37	2.38	3.64%
37		May-21	65.29	72.57	68.93	2.38	3.45%
38		Apr-21	67.61	73.54	70.58	2.28	3.23%
39		Mar-21	61.77	71.35	66.56	2.28	3.43%
40		Feb-21	58.91	66.64	62.78	2.28	3.63%
41		Jan-21	57.00	61.29	59.15	2.28	3.85%
42	Average						**3.54%**

						Indicated Annualized	
SR	Spire Inc.		Low Price	High Price	Average Price	Dividend	Dividend Yield
43		Jun-21	69.77	76.85	73.31	2.60	3.55%
44		May-21	71.48	77.87	74.68	2.60	3.48%
45		Apr-21	72.70	77.95	75.33	2.60	3.45%
46		Mar-21	65.79	75.78	70.79	2.60	3.67%
47		Feb-21	60.50	69.39	64.95	2.60	4.00%
48		Jan-21	59.29	64.54	61.92	2.60	4.20%
49	Average						**3.73%**

Dr. Won - Proxy Group - 2017

Line No.							
ATO	Atmos Energy Corporation		Low Price	High Price	Average Price	Indicated Annualized Dividend	Dividend Yield
1		Jun-17	82.14	85.61	83.88	1.80	2.15%
2		May-17	78.55	83.62	81.09	1.80	2.22%
3		Apr-17	78.42	82.07	80.25	1.80	2.24%
4		Mar-17	76.09	80.56	78.33	1.80	2.30%
5		Feb-17	72.58	78.76	75.67	1.80	2.38%
6		Jan-17	72.54	76.26	74.40	1.80	2.42%
7	Average						**2.28%**

NJR	New Jersey Resources Corporation		Low Price	High Price	Average Price	Indicated Annualized Dividend	Dividend Yield
8		Jun-17	39.50	43.50	41.50	1.02	2.46%
9		May-17	39.15	42.10	40.63	1.02	2.51%
10		Apr-17	38.95	42.65	40.80	1.02	2.50%
11		Mar-17	37.75	39.95	38.85	1.02	2.63%
12		Feb-17	36.40	39.71	38.06	1.02	2.68%
13		Jan-17	33.70	37.88	35.79	1.02	2.85%
14	Average						**2.60%**

NWN	Northwest Natural Holding Company		Low Price	High Price	Average Price	Indicated Annualized Dividend	Dividend Yield
15		Jun-17	59.35	63.40	61.38	1.88	3.06%
16		May-17	57.65	61.60	59.63	1.88	3.15%
17		Apr-17	58.00	61.25	59.63	1.88	3.15%
18		Mar-17	56.53	61.50	59.02	1.88	3.19%
19		Feb-17	57.35	61.70	59.52	1.88	3.16%
20		Jan-17	57.10	60.65	58.88	1.88	3.19%
21	Average						**3.15%**

OGS	ONE Gas, Inc.		Low Price	High Price	Average Price	Indicated Annualized Dividend	Dividend Yield
22		Jun-17	68.85	72.97	70.91	1.68	2.37%
23		May-17	67.31	70.92	69.11	1.68	2.43%
24		Apr-17	67.27	70.64	68.96	1.68	2.44%
25		Mar-17	63.60	68.79	66.20	1.68	2.54%
26		Feb-17	62.89	67.13	65.01	1.68	2.58%
27		Jan-17	61.42	65.20	63.31	1.40	2.21%
28	Average						**2.43%**

SJI	South Jersey Industries		Low Price	High Price	Average Price	Indicated Annualized Dividend	Dividend Yield
29		Jun-17	33.93	37.55	35.74	1.09	3.05%
30		May-17	34.46	37.70	36.08	1.09	3.02%
31		Apr-17	35.17	38.40	36.79	1.09	2.96%
32		Mar-17	32.70	35.97	34.34	1.09	3.17%
33		Feb-17	32.45	35.45	33.95	1.09	3.21%
34		Jan-17	31.39	34.38	32.88	1.09	3.31%
35	Average						**3.12%**

SWX	Southwest Gas Holdings, Inc.		Low Price	High Price	Average Price	Indicated Annualized Dividend	Dividend Yield
36		Jun-17	72.32	81.97	77.15	1.98	2.57%
37		May-17	76.58	85.24	80.91	1.98	2.45%
38		Apr-17	82.22	85.56	83.89	1.80	2.15%
39		Mar-17	80.11	86.59	83.35	1.80	2.16%
40		Feb-17	78.56	86.65	82.61	1.80	2.18%
41		Jan-17	75.63	80.76	78.20	1.80	2.30%
42	Average						**2.30%**

SR	Spire Inc.		Low Price	High Price	Average Price	Indicated Annualized Dividend	Dividend Yield
43		Jun-17	68.85	72.83	70.84	2.10	2.96%
44		May-17	63.84	71.05	67.45	2.10	3.11%
45		Apr-17	66.75	69.95	68.35	2.10	3.07%
46		Mar-17	63.85	68.30	66.08	2.10	3.18%
47		Feb-17	62.33	66.60	64.46	2.10	3.26%
48		Jan-17	63.35	66.10	64.73	2.10	3.24%
49	Average						**3.14%**

CONSTANT GROWTH DCF - CASE NOS. GR-2017-0215 and GR-2017-0216
AS OF AUGUST 31, 2021

Company	Ticker	[1] Annualized Dividend	[2] Stock Price	[3] Expected Dividend Yield
Atmos Energy Corporation	ATO	$2.67	$99.32	2.69%
NiSource Inc.	NI	$0.93	$25.26	3.68%
Northwest Natural Gas Company	NWN	$1.94	$52.87	3.67%
ONE Gas Inc.	OGS	$2.48	$74.22	3.34%
South Jersey Industries, Inc.	SJI	$1.25	$25.94	4.82%
Southwest Gas Corporation	SWX	$2.48	$68.72	3.61%
Spire, Inc.	SR	$2.73	$71.81	3.80%
Mean				3.66%
Proposed Long-term Growth Rate Range	[4]		4.20%	5.00%
Estimated Proxy Cost of Common Equity	[5]		7.86%	8.66%

Notes:
[1] Source: Schedule DM-D-3-1, ATO & SR - Annualized Dividend as of 3/31/2022, NI, NWN, OGS, SJI and SWX - Annualized Dividend as of 6/30/2022.
[2] Source: Schedule DM-D-3-1.
[3] Equals [1] / [2]
[4] File No. GR-2017-0215 and File No. GR-2017-0216, Staff Cost of Service Report (September 2017), at Schedule 10.
[5] Equals Proxy Group Average of [3] + [4]

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. GR-2021-0241
Its Revenues for Gas Service.	)	

AFFIDAVIT OF ANN E. BULKLEY

COMMONWEALTH OF MASSACHUSETTS	**)**
	) ss
TOWN OF SHREWSBURY	**)**

Ann E. Bulkley, being first duly sworn on her oath, states:

My name is Ann E. Bulkley, and on her oath declare that she is of sound mind and lawful age; that she has prepared the foregoing *Rebuttal Testimony*; and further, under the penalty of perjury, that the same is true and correct to the best of my knowledge and belief.

/s/ Ann E. Bulkley
Ann E. Bulkley

Sworn to me this 15th day of October, 2021.