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**MISSOURI PUBLIC SERVICE COMMISSION**

**FILE NO. ER-2022-0129 / 0130**

**REBUTTAL TESTIMONY**

**OF**

**ANN E. BULKLEY**

**ON BEHALF OF**

**EVERGY MISSOURI METRO and EVERGY MISSOURI WEST**

**Kansas City, Missouri**

**July 2022**

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**REBUTTAL TESTIMONY**

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**ANN E. BULKLEY**

**File No. ER-2022-0129 / 0130**

1       **I.       INTRODUCTION**

2       **Q:       Please state your name and business address.**

3       A:       My name is Ann E. Bulkley. I am a Principal at The Brattle Group (“Brattle”). My  
4       business address is One Beacon Street, Suite 2600, Boston, MA 02108.

5       **Q:       On whose behalf are you submitting this testimony?**

6       A:       I am submitting this testimony before the Missouri Public Service Commission  
7       (“Commission”) on behalf of Evergy Metro, Inc., d/b/a Evergy Missouri Metro (“Evergy  
8       Missouri Metro”) and Evergy Missouri West, Inc. d/b/a Evergy Missouri West (“Evergy  
9       Missouri West”)(collectively the “Companies”) both wholly-owned subsidiaries of  
10      Evergy, Inc. (“Evergy”).

11      **Q:       Did you previously provide Direct Testimony in this proceeding?**

12      A:       Yes. I submitted Direct Testimony regarding the appropriate Return on Equity (“ROE”)<sup>1</sup>  
13      and overall rate of return to be used for ratemaking purpose for Evergy Missouri Metro and  
14      Evergy Missouri West in this proceeding on January 7, 2022. I also addressed the  
15      appropriateness of the Company’s proposed capital structure, as supported by Company  
16      witness Kirkland B. Andrews.

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<sup>1</sup> Throughout my Direct Testimony, I interchangeably use the terms “ROE” and “cost of equity”.

1 **Q: What is the purpose of your Rebuttal Testimony?**

2 A: The purpose of my Rebuttal Testimony is to respond to the Missouri Public Service  
3 Commission Staff (“Staff”) witness Seoung Joun Won relating to the authorized return on  
4 equity (“ROE”), to the Direct Testimony of David Murray on behalf of the Missouri Office  
5 of Public Counsel (“OPC”), and the Midwest Energy Consumers Group (“MECG”)  
6 witness Greg R. Meyer relating to ROE. I have not attempted to respond to every argument  
7 made by Staff and the OPC witnesses. The fact that I may not have responded to any  
8 particular argument or statement made by either the Staff or OPC witnesses does not  
9 indicate my agreement with that argument or statement.

10 **Q: Are you sponsoring any schedules as part of your Rebuttal Testimony?**

11 A: Yes, I am sponsoring Schedules AEB-R1 through AEB-R10 to support my Rebuttal  
12 Testimony, which were prepared by me or under my direction.

13 **Q: Have you updated the ROE analyses you presented in your Direct Testimony to  
14 reflect current market conditions?**

15 A: Yes, as discussed in more detail in Section V, I have updated my ROE analyses based on  
16 market data through June 15, 2022. These results provide additional support for the  
17 Company’s requested ROE of 10.00 percent. In addition, while the analytical results of  
18 ROE estimation models provide a starting point, I continue to base my recommendation  
19 not only on consideration of the results of multiple cost of equity models, but also other  
20 factors, including capital market conditions, the capital attraction and comparable return  
21 standards, and the Companies’ specific risks.



1           ▪       In Section IX, I respond to MECG witness Mr. Meyer’s ROE analysis and  
2                        recommendations.

3           ▪       Finally, in Section X, I summarize my conclusions and recommendations.

4           **II.     SUMMARY AND OVERVIEW**

5   **Q:     What factors should be considered in evaluating the results of ROE models and**  
6   **establishing the authorized ROE?**

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

13 **Q:     What are your key conclusions and recommendations regarding the appropriate**  
14 **ROE and capital structure for Evergy Missouri Metro and Evergy Missouri West in**  
15 **this proceeding?**

16 A:     My key conclusions are as follows:

17           1.     Although Mr. Murray devotes many pages of testimony to discussing the  
18                        results of his various ROE estimation models and attempting to explain why  
19                        those models are producing reasonable results under current market  
20                        conditions, he essentially discards his flawed analyses in favor of less

1                   drastic recommendations that are not supported by his own ROE estimation  
2                   models.

3                   2.       While Dr. Won recognizes that higher interest rates and inflation should be  
4                   reflected in the cost of equity, his ROE recommendation, which is based on  
5                   a comparative analysis with analyses from the 2019 Empire Case is flawed  
6                   for several reasons;

7                   (a)       Dr Won's analysis does not accurately compare the analyses from  
8                   that case with his analysis in this proceeding. Rather he has relied  
9                   on only certain inputs from the 2019 Empire Case, coupled with  
10                  his current GDP growth assumptions to calculate the Two-Step  
11                  DCF. Therefore, the analysis does not truly compare market  
12                  conditions and ROE estimates across the time periods he suggests  
13                  he is considering.

14               (b)       The Two-Step DCF analysis was not used by Staff in the 2019  
15                  Empire Case. In the 2019 Empire Case Staff relied on Constant  
16                  Growth DCF and CAPM analyses. Therefore, the Commission did  
17                  not base the authorized ROE for the 2019 Empire Case on a Two-  
18                  Step DCF analysis. Dr. Won did not make any attempt to develop  
19                  models in this case that compare to the models actually developed  
20                  by Staff in the 2019 Empire case and considered by the Commission  
21                  in that case.

22               (c)       Dr. Won's attempt to recreate the Two-Step DCF as of the time  
23                  period of the 2019 Empire Case is flawed because all of the

1 assumptions used in his model are not from 2019. Rather, Dr. Won  
2 relies on market data for the proxy companies from 2019 coupled  
3 with a current long-term growth rate. This inconsistency renders the  
4 result of his Two-Step model unusable as a comparator to current  
5 model results.

6 (d) Dr. Won did not rely on market estimates of the cost of equity using  
7 reasonable assumptions in his current ROE estimation  
8 methodologies. Rather, he is relying on a Two-Step DCF analysis  
9 that suggests the cost of equity is 144 basis points below his  
10 recommendation.

11 The analytical value of Dr. Won's Two-Step DCF analysis  
12 is unclear since the results are so low as to be unreasonable  
13 compared to the authorized equity returns for electric utility  
14 companies in Missouri or any other jurisdiction, and Dr. Won's own  
15 ROE recommendation.

16 3. There is no evidence that the Commission established a relationship  
17 between Staff's DCF estimate and an authorized ROE in the 2019 Empire  
18 Case that would support Dr. Won's comparative approach to estimating the  
19 ROE. Further, the 2019 Empire case was based on the 2017 Spire Case  
20 Nos. GR-207-0215 and DR-2017-0216 ("2017 Spire Case"). In that case,  
21 the Commission clearly identified that they considered the  
22 recommendations of the ROE witnesses in the proceeding, authorized ROEs



1 for other utilities, and capital market conditions.<sup>2</sup> Therefore, since there is  
2 no direct relationship between Staff's analyses in these prior cases and the  
3 authorized ROEs established by the Commission, Dr. Won's attempt to  
4 develop an adjustment to the authorized ROE in the 2019 Empire case based  
5 on Staff's filings in that case would be entirely unsupported. However, as  
6 discussed previously, Dr. Won's comparison is even further removed from  
7 any analyses considered by the Commission in the 2019 Empire case  
8 because there was no Two-Step DCF model used in that case. Therefore,  
9 Dr. Won's "comparative analysis" is entirely unrelated to the decisions the  
10 2019 Empire Case, and by extension the 2017 Spire Case. As a result, Dr.  
11 Won's comparative methodology and the resulting recommendation should  
12 be rejected.

13 4. While I disagree with Dr. Won's comparative methodology for establishing  
14 an ROE, reasonable corrections to his approach demonstrate that the ROE  
15 would be in the range of 10.01 to 10.07 percent and using the FERC  
16 approach to the Two-Stage DCF would result in a range of 10.30 percent to  
17 11.51 percent. Relying solely on Dr. Won's projected EPS growth rates in  
18 his Two-Stage DCF analysis would result in a cost of equity estimate of  
19 10.34 percent.

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<sup>2</sup> *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 at 32 (Feb. 21, 2018).

1           5.     Mr. Murray’s Multi-Stage DCF analysis relies on a long-term growth rate  
2                     of 3.00 percent; however, current valuations of utilities are based in part on  
3                     the sustainability of current projections of earnings growth. Since Mr.  
4                     Murray’s long-term growth rate of 3.00 percent is much lower than current  
5                     earnings growth projections, the assumption implies much lower electric  
6                     utility valuations than the stock prices he relies on to calculate his Multi-  
7                     Stage DCF analysis. This results in Mr. Murray’s Multi-Stage DCF analysis  
8                     producing cost of equity estimates that are unreasonably low.

9           6.     As recognized by Dr. Won, current economic conditions include heightened  
10                    inflation rates and rising interest rates, both of which suggest that the cost  
11                    of equity is increasing. Dr. Won, Mr. Murray, and I agree that utility share  
12                    prices are inversely related to the yields on long-term government bonds.  
13                    Therefore, since interest rates are expected to increase over the near-term,  
14                    investors expect the utility sector to underperform the broader market. As  
15                    a result, the DCF results presented by Dr. Won and Mr. Murray, which rely  
16                    on current share prices, are likely understating the cost of equity during the  
17                    period that the Companies’ rates will be in effect.

18          7.     Recently authorized equity ratios for vertically-integrated electric utilities  
19                    support the Companies’ proposed capital structure of 51.19 percent  
20                    common equity, 48.81 percent long-term debt for Evergy Missouri Metro,  
21                    and 51.81 percent equity and 48.19 percent long-term debt for Evergy  
22                    Missouri West.

1           8.     Mr. Murray’s conclusion that Evergy Missouri Metro and Evergy Missouri  
2           West can increase each its leverage due to the Companies’ use of the Plant  
3           In Service Accounting Mechanism (“PISA”) to recover electric capital  
4           expenditure costs is unsupported. First, it is reasonable to evaluate the  
5           capital structure of Evergy Missouri Metro and Evergy Missouri West based  
6           on the capital structures of the companies in the proxy group and an  
7           assessment of the relative risk of the Companies to the proxy group.  
8           However, Mr. Murray has not considered the capital structures of the proxy  
9           group, nor has he determined if Evergy Missouri Metro and Evergy  
10          Missouri West have greater or less risk when compared to the proxy group.  
11          It is not reasonable to adjust the capital structure of Evergy Missouri Metro  
12          and Evergy Missouri West on the sole basis that the Companies have capital  
13          cost recovery mechanisms.

14          Updating the analyses as of June 15, 2022 demonstrates that the median DCF results, are  
15          between 9.29 percent and 9.43 percent and the median high DCF results are 9.83 percent  
16          to 10.02 percent.<sup>3</sup> Updated CAPM results range from 10.09 percent to 11.62 percent. The  
17          ECAPM results are between 10.80 percent and 11.95 percent. Finally, the Bond Yield Risk  
18          Premium results are between 10.00 percent to 10.29 percent. Taken together, these results  
19          support the Company’s requested ROE of 10.00 percent.

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<sup>3</sup> While I have calculated the Constant Growth DCF analysis using the low growth rates, results below the median are not reasonable estimates of the cost of equity for the Companies based on the risk profile of Evergy Missouri Metro and Evergy Missouri West.

1           **III. CAPITAL STRUCTURE**

2   **Q: Please summarize the Staff position with respect to the capital structure that should**  
3   **be applied to the Companies in this case.**

4   A: Dr. Won recognizes that Evergy Missouri Metro and Evergy Missouri West have separate  
5   credit ratings issued by Moody’s and S&P. In addition, Evergy Missouri Metro and Evergy  
6   Missouri West have stand-alone capital structures that support their individual credit  
7   ratings.<sup>4</sup> Furthermore, Dr. Won recognizes that Evergy, Inc’s assets do not secure Evergy  
8   Missouri Metro’s or Evergy Missouri West’s debt. Despite these facts, Dr. Won proposes  
9   to adjust the capital structures of the Companies and use a target capital structure for  
10   Evergy Missouri Metro and Evergy Missouri West that is composed of 50.00 percent  
11   common equity and 50.00 percent long-term debt.<sup>5</sup> Dr. Won recommends this capital  
12   structure the Companies because he suggests that a response to a Staff Data Request No.  
13   0120 indicates “Evergy Inc. would target specific capital structures of 50% equity and 50%  
14   debt for Evergy Inc., Evergy [Missouri] Metro and Evergy [Missouri] West”.<sup>6</sup>

15   **Q: Do you agree with Dr. Won’s characterization of the response to Staff Data Request**  
16   **No. 0120?**

17   A: No. The response to Staff’s Data Request No. 0120 states the following:

18           Evergy, Inc. and Evergy Missouri Metro do not have specific materials or  
19           documents regarding targeted capital structures or strategies as it relates to  
20           managing each company’s capital structure.

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<sup>4</sup> Direct Testimony of Dr. Won at 21.

<sup>5</sup> Direct Testimony of Dr. Won at 5.

<sup>6</sup> Direct Testimony of Dr. Won at 22 [clarification added].

1                   Evergy, Inc. and Evergy Metro target a capital structure that approximates  
2                   50% Equity and 50% Debt.

3                   Therefore, as discussed in the data response, Evergy, Inc., Evergy Missouri Metro and  
4                   Evergy Missouri West are seeking to approximate a 50 percent equity ratio. While Staff  
5                   suggests that the average capital structure for both Evergy Missouri Metro and Evergy  
6                   Missouri West have been at approximately 50 percent in 2020 and 2021, this ignores the  
7                   data presented in Schedule SJW-d5-2, which demonstrates that in prior years - specifically  
8                   2018 in the case of Evergy Missouri Metro, and 2019 for Evergy Missouri West - the  
9                   capitalizations of the operating companies have included significantly greater equity. As  
10                  shown in Schedule SJW-d5-2, prepared by Dr. Won, Evergy Missouri Metro's equity ratio  
11                  was 57.25 percent as of December 2018 whereas Evergy Missouri West's equity ratio was  
12                  54.17 percent in December 2018 and 55.92 percent in December 2019. Therefore, on  
13                  average, over the four-year period compiled by Dr. Won, the Evergy Missouri West equity  
14                  ratio has been approximately 52.51 percent, whereas the Evergy Missouri Metro equity  
15                  ratio has been 51.42 percent.

16   **Q:    Please summarize OPC's position with respect to the appropriate capital structure**  
17   **for the Companies.**

18   **A:**    OPC witness Murray proposes that Evergy Missouri Metro's and Evergy Missouri West's  
19            capital structures be composed of 48 percent common equity and 52 percent long-term  
20            debt.<sup>7</sup> Mr. Murray suggests that this recommendation is based on his analysis of Evergy,  
21            Inc's, Evergy Missouri West's, and Evergy Missouri Metro's quarterly capital structures

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<sup>7</sup> Direct Testimony of David Murray at 31.

1 from July 1, 2020 through December 31, 2021. Further, Mr. Murray suggests that the  
2 capital structures are based on the “interdependency of Evergy and its subsidiaries’ capital  
3 flows”.<sup>8</sup> According to Mr. Murray, the use of the consolidated capital structure is  
4 appropriate because he suggests that “other than MO West’s significant need for liquidity,  
5 i.e. short-term debt, during Storm-Uri, there is no compelling rationale for Evergy to target  
6 disparate capital structure for itself on a consolidated basis or for any one of its subsidiaries  
7 on a stand-alone basis.”<sup>9</sup> Despite suggesting that there is no reason for disparate capital  
8 structures for the operating companies and the parent company, Mr. Murray recommends  
9 two different bases for the capital structures for Evergy Missouri Metro and Evergy  
10 Missouri West in this proceeding. For Evergy Missouri Metro, Mr. Murray recommends  
11 the use of the consolidated capital structure of Evergy, which he suggests has typically  
12 included an equity ratio of approximately 45 percent, or 48 percent once short-term debt is  
13 excluded.<sup>10</sup> For Evergy Missouri West, Mr. Murray recommends a capital structure  
14 composed of 48 percent equity, but not greater than 50 percent equity for Evergy Missouri  
15 West’s capital structure based on a limited provision of an agreement that pertains to an  
16 assumed capital structure for the purpose of calculating an earnings sharing plan approved  
17 at the Kansas Corporation Commission.<sup>11</sup>

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<sup>8</sup> Direct Testimony of David Murray at 31.

<sup>9</sup> ER-2022-0130, Direct Testimony of David Murray at 31. This quotation applies only to Evergy Missouri West and does not appear in Mr. Murray’s testimony in ER-2022-0129.

<sup>10</sup> Direct Testimony of David Murray at 31.

<sup>11</sup> Direct Testimony of David Murray, ER-2022-0130 at 36.

1 **Q: Please describe the capital structure limitation approved by the Kansas Corporation**  
2 **Commission and cited by Mr. Murray.**

3 A: Mr. Murray is referring to the Settlement Agreement approved by the Kansas Corporation  
4 Commission in 2018. As a stipulation to the Settlement Agreement, the Company agreed  
5 to certain limitations on the calculation of the limited purpose of the Earnings Review and  
6 Sharing Plan. However, this particular condition had no effect on the company's rates, and  
7 in no way limited the company's actual capital structure. The order acknowledged a  
8 different limitation on the company's capital structure that was agreed to in the Settlement  
9 Agreement. Specifically, the company agreed "Holdco, KCP&L, and Westar will maintain  
10 separate capital structure and separate debt. Holdco's consolidated debt shall not exceed  
11 65% of total capital, and neither KCP&L nor Westar debt shall exceed 60% of total  
12 capital."<sup>12</sup>

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

16 A: The three options that are most often considered by commissions when setting a regulated  
17 utility's capital structure are as follows:  
18       ▪ The operating company's actual (or projected) capital structure per the  
19       financial books and records of the company when this capital structure is

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<sup>12</sup> State Corporation Commission of the State of Kansas, Docket No. 18-KCPE-095-MER, Order Approving Merger, at 9.

1 reflective of the way the company is operated and it is generally consistent  
2 with industry norms.

3       ▪ A hypothetical capital structure can be considered, especially if there are  
4 concerns that the actual per books capital structure is not reflective of the  
5 optimal capital structure for the company. The hypothetical capital  
6 structure can be based on comparable companies (e.g., set within the range  
7 of the proxy group) or determined by the Commission based on other risk  
8 factors.

9       ▪ Third, the parent company's consolidated capital structure may be used.  
10 This occurs most often when the operating company represents the vast  
11 majority of the parent holding company's operations, and therefore the  
12 financing for the operating company and the holding company would be  
13 similar.

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

17 **A:** Yes, it has. Similar to the current case, in the 2017 Spire Case, Mr. Murray, who was the  
18 witness for Staff at that time, proposed relying on the consolidated capital structure, and  
19 thus using an equity ratio of 45.56 percent.<sup>13</sup> In its decision in that case, the Commission

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<sup>13</sup> 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.



1 noted that it had formerly relied on the consolidated capital structure for Laclede Gas  
2 Company (the Missouri operating company prior to the Spire merger), when the operating  
3 company made up almost the entirety of the holding company; but that same capital  
4 structure was no longer appropriate in the 2017 Spire Case. The Commission explained  
5 that, since the merger, the parent company now had five operating utilities in three states,  
6 in addition to other investments. Therefore, it was not appropriate to use a consolidated  
7 capital structure as the utility-specific capital structure.<sup>14</sup>

8 **Q: What criteria has the Commission considered in determining the appropriate capital**  
9 **structure in recent cases?**

10 A: In a recent Spire Missouri case (GR-2021-0180), the Commission discussed the four  
11 guidelines relied upon by Staff in its assessment of the appropriateness of using a parent's  
12 capital structure. The cited guidelines used by Staff included:

- 13 a. Whether the subsidiary utility obtains all of its capital from its parent, or  
14 issues its own debt and preferred stock;
- 15 b. Whether the parent guarantees any of the securities issued by the subsidiary;
- 16 c. Whether the subsidiary's capital structure is independent of its parent (i.e.,  
17 existence of double leverage, absence of proper relationship between risk  
18 and leverage of utility and non-utility subsidiaries); and,

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<sup>14</sup> 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.



1 **Q: Is it reasonable to apply different methodologies to establish the capital structures for**  
2 **Evergy Missouri Metro and Evergy Missouri West?**

3 A: No, it is not. Both companies are financed on a stand-alone basis without financial support  
4 from the parent company. Mr. Murray's decision to rely on a single merger condition,  
5 applicable to only a Kansas subsidiary, which was part of the appears to be based on limited  
6 provision of an agreement that pertains to an assumed capital structure for the purpose of  
7 calculating an earnings sharing plan in another regulatory jurisdiction as the basis for his  
8 capital structure recommendation for Evergy Missouri Metro and Evergy Missouri West is  
9 unreasonable and should be rejected. Further, Mr. Murray's proposal to establish an equity  
10 ratio based on the consolidated capital structure, when the Companies are financed on a  
11 stand-alone basis has no basis in financial theory.

12 **Q: Do Mr. Murray's proposals regarding the capital structures and ROEs for Evergy**  
13 **Missouri West and Evergy Missouri Metro meet the comparable return standards?**

14 A: No. The overall return to shareholders considers both the return on equity and the overall  
15 capitalization and the risk created by the capital structure. Mr. Murray has recommended  
16 the same ROE for Evergy Missouri West and Evergy Missouri Metro but two different  
17 capitalizations that result in different leverage and financial risk. For Evergy Missouri  
18 Metro he recommends a 48 percent equity ratio, for Evergy Missouri West he recommends  
19 a 48 percent equity ratio, but no higher than 50 percent established by the KCC.

20 The comparable return standard established by *Hope* and *Bluefield* requires that a  
21 company be provided the opportunity to earn a return that is commensurate with the return  
22 on other investments of comparable risk. Mr. Murray's recommendations in this  
23 proceeding violate the comparable return standard because his capital structure

1 recommendations result in different equity ratios and therefore different financial risk  
2 profiles for Evergy Missouri West and Evergy Missouri Metro. Nonetheless, he proposes  
3 that investors accept the same return for those profiles. When reviewed together, Mr.  
4 Murray's recommendations for Evergy Missouri West or Evergy Missouri Metro are  
5 inconsistent with the comparable return standard.

6 **Q: Has Staff recommended the use of the consolidated capital structure for Evergy**  
7 **Missouri West or Evergy Missouri Metro?**

8 A: No. Dr. Won has proposed to use a target equity ratio for by Evergy Missouri West and  
9 Evergy Missouri Metro of 50 percent equity.

10 **Q: Is the 50 percent equity ratio proposed by Staff the appropriate equity ratio to be**  
11 **relied on for ratemaking purposes for either Evergy Missouri West or Evergy**  
12 **Missouri Metro?**

13 A: No. As discussed previously, this target does not consider all of the historical data  
14 compiled by Dr. Won. The four-year average equity ratio for the period of time reviewed  
15 by Dr. Won demonstrates that the requested equity ratios for Evergy Missouri Metro and  
16 Evergy Missouri West are within the historical range of capitalization of Evergy Missouri  
17 Metro and Evergy Missouri West.

18 **Q: Is Dr. Won's proposal consistent with Staff's prior testimony on capital structure?**

19 A: No, it is not. As discussed previously, Staff has recognized that Evergy Missouri Metro  
20 and Evergy Missouri West have independent credit ratings and stand-alone capital  
21 structures that support their individual credit ratings. Based on Staff's prior testimony in

1 the recent Evergy Missouri Metro and Evergy Missouri West case,<sup>17</sup> this would support  
2 the use of the stand-alone equity ratio. In this case, the stand-alone capital structure for  
3 Evergy Missouri Metro and Evergy Missouri West is appropriate because Evergy Missouri  
4 Metro and Evergy Missouri West operate as independent entities, each with its own credit  
5 rating and debt issuances that are secured by the Companies and not Evergy.

6 **Q: Are Evergy Missouri Metro's and Evergy Missouri West's capital structures**  
7 **consistent with industry norms and therefore reasonable for ratemaking purposes?**

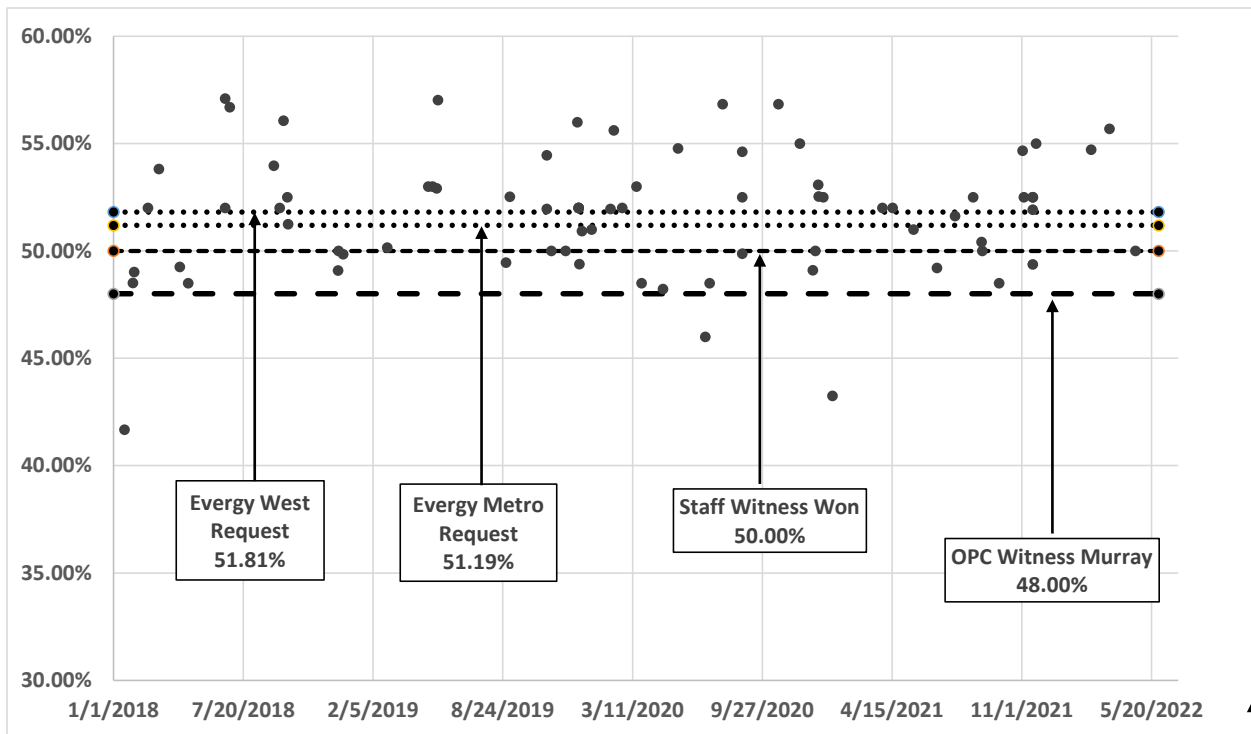
8 A: Yes, they are for several reasons. First, Evergy Missouri Metro's and Evergy Missouri  
9 West's capital structures are reflective of the way the Companies are financed.<sup>18</sup> Second, I  
10 also examined the capital structures that have recently been authorized for vertically-  
11 integrated electric utilities. As shown in Figure 1 below, the majority of the recently  
12 authorized equity ratios for electric utilities are in the range of 50 to 55 percent. Evergy  
13 Missouri Metro's proposed equity ratio of 51.19 percent and Evergy Missouri West's  
14 proposed equity ratio of 51.81 percent are well within the range of authorized equity ratios  
15 for companies of comparable risk. In contrast, Mr. Murray's proposed equity ratios for  
16 Evergy Missouri Metro and Evergy Missouri West of 48.00 are below 95 percent of the  
17 authorized equity ratio over this time period. Consequently, there is no reason to employ a  
18 capitalization that is different from the actual capital structure that Evergy Missouri Metro  
19 and Evergy Missouri West employ to finance their electric operations in Missouri.

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<sup>17</sup> No. ER-2018-0145 and No ER-2018-0146.

<sup>18</sup> SJW-d5-2

1 **Figure 1: Average Authorized Equity Ratios for Vertically-Integrated Electric Companies**  
 2 **– January 2018 through June 15, 2022<sup>19</sup>**



3  
4

5 **Q: Do you agree with Mr. Murray that increased leverage is reasonable due to the**  
 6 **reduction in business risk associated with the Companies' use of PISA?**

7 **A:** No, I do not. The comparable return standards established in *Hope* and *Bluefield* require  
 8 that the overall return for the subject company be comparable to the return that could be  
 9 obtained on alternative investments of comparable risk. Both Evergy Missouri Metro's and  
 10 Evergy Missouri West's electric operations utilize PISA for the timely cost recovery of  
 11 some capital expenditures between rate cases. Since the comparable return standard  
 12 requires that Evergy Missouri Metro's and Evergy Missouri West's authorized cost of

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<sup>19</sup> Source: S&P Capital IQ Pro. Chart excludes jurisdictions that include zero cost items in the capital structure: Arkansas, Indiana, Michigan, and Florida.

1 capital be based on the business and financial risk of the Companies individually, it is  
2 necessary to establish a group of companies that are both publicly traded and comparable  
3 to Evergy Missouri Metro and Evergy Missouri West in certain fundamental business and  
4 financial respects to serve as a “proxy” for determining the ROE and evaluating the  
5 appropriate capital structures. Therefore, the comparison with respect to a company’s risk  
6 is *not* how does the risk for the company change after the implementation of a cost recovery  
7 mechanism, but rather how does the company’s overall risk profile compare to the proxy  
8 group. Mr. Murray’s conclusion that increased leverage is reasonable because the  
9 Companies have implemented the PISA, without consideration of the relative risk to the  
10 proxy group companies, is inconsistent with the fundamental principle of comparability  
11 established in *Hope* and *Bluefield* and should be rejected.

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

14 A: No, he did not. Mr. Murray’s conclusion that Evergy Missouri Metro and Evergy  
15 Missouri West can increase leverage because both companies utilize a PISA for electric  
16 operations is without any analytical foundation. Mr. Murray has not conducted any  
17 financial analysis that demonstrates that an increase in leverage is necessary or appropriate  
18 as a result of the implementation of the PISA. Rather, this recommendation is nothing  
19 more than Mr. Murray’s unsubstantiated opinion.

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

3 A: Yes, I did. As shown in shown in Schedule AEB-9 of my Direct Testimony, 81.25 percent  
4 of the operating companies of the proxy group have some form of capital cost recovery  
5 mechanism and 67.50 include CWIP in rate base. Thus, the use of PISA does not reduce  
6 Evergy Missouri Metro's or Evergy Missouri West's regulatory risk, relative to the peer  
7 group. Rather, the implementation of PISA positions Evergy Missouri Metro and Evergy  
8 Missouri West closer to the risk profile of the operating utilities of the proxy group  
9 companies.

10 **Q: Did you consider any other business risks when evaluating the relative risk of Evergy**  
11 **Missouri Metro and Evergy Missouri West to the proxy group?**

12 A: Yes, I did. As discussed in my Direct Testimony, I considered the regulatory risk of Evergy  
13 Missouri Metro and Evergy Missouri West, which included the review of rate design,  
14 capital cost recovery mechanisms, and regulatory supportiveness of Evergy Missouri  
15 Metro and Evergy Missouri West as compared to the companies in the proxy group.<sup>20</sup>  
16 Ultimately, I concluded that the Companies faced increased business risk when compared  
17 to the proxy group as a result of: 1) the Companies' capital expenditure requirements; 2)  
18 Evergy Missouri West's retirement of the Sibley coal generating plant; 3) Evergy Missouri  
19 West's and Every Missouri Metro's planned investments in renewable generation assets  
20 compared to its current generation portfolio; and 4) the regulatory environment in which  
21 the Companies operate.

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<sup>20</sup> Direct Testimony of Ann E. Bulkley, Schedules AEB 9 through 12.



1 **Q: How does the elevated level of business risk affect Evergy Missouri Metro's and**  
2 **West's capital structure?**

3 A: The increased risk of the Companies relative to the proxy group indicates that the  
4 Companies' equity ratios should be greater than the proxy group average equity ratio.  
5 Conversely, the equity ratio proposed by Mr. Murray of 48 percent and Dr. Won's  
6 recommended 50 percent equity ratio are well below the average authorized equity ratio  
7 for the proxy group and therefore are not reasonable as they would result in a substantial  
8 increase in the financial risk of Evergy Missouri Metro and Evergy Missouri West.

9 **IV. OVERVIEW OF RETURN ON EQUITY RECOMMENDATIONS AND**  
10 **COMPARABLE RETURN STANDARD**

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

13 A: Figure 2 summarizes the results of the ROE analyses presented by the other witnesses in  
14 this proceeding and their final recommendations. Dr. Won's Two-Step DCF analysis,  
15 CAPM analysis, and Rule of Thumb analysis indicate a cost of equity from 5.83 percent to  
16 8.96 percent, while OPC witness Mr. Murray's Multi-Stage DCF, CAPM and Rule of  
17 Thumb results suggest a cost of equity of 7.00 percent to 7.76 percent. It is interesting that  
18 while Dr. Won and Mr. Murray abandon the results of their models when establishing their  
19 recommendations, neither of these witnesses reconsider the validity of the inputs and  
20 assumptions used in their respective models. Rather, Dr. Won recommends an ROE for  
21 Evergy Missouri Metro and Evergy Missouri West of 9.62 percent, which is 144 basis  
22 points higher than the average results of his Two-Step DCF model and 155 basis points

1 higher than the midpoint results of his CAPM analyses. Similarly, Mr. Murray’s ROE  
 2 recommendation of 9.00 percent is 124 to 200 basis points higher than his Multi-Stage  
 3 DCF model results and 125 to 182 basis points higher than his CAPM results. Since their  
 4 ultimate recommendations are not based on their model results, it is apparent that both  
 5 witnesses do not believe that their models are producing reasonable estimates of the ROE.

6 **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	Average All: 7.34% Average Mostly Regulated: 7.23% Average Common Companies: 7.00%
Multi-Stage (Evergy only)	N/A	7.45%-7.76%
Two-Step DCF <sup>21</sup>	7.40%-8.96% Mean: 8.18%	N/A
CAPM	5.83%-8.62% Mean: 8.07% <sup>22</sup>	7.18% - 7.75%
Rule of Thumb	7.16%-9.43% <sup>23</sup>	7.60%
Recommendation	9.62%	9.00%
Difference between recommendation and model results	1.44%-1.55%	1.24%-2.00%

7

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<sup>21</sup> Schedule SJW-d13

<sup>22</sup> Schedule SJW-d14. The referenced CAPM range is established by the upper and lower bound of Dr. Won’s analysis.

<sup>23</sup> Won Direct Testimony, at 29.

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

3 A: Yes. As discussed previously, the *Hope* and *Bluefield* cases establish that authorized ROEs  
4 be comparable to other investments of commensurate risk. Therefore, the regulatory  
5 decisions of other commissions provide a basic test of reasonableness and a benchmark  
6 that investors have considered in assessing the authorized ROE of one utility against the  
7 returns available from other regulated utilities with comparable risk. It is important to  
8 recognize, however, that recently authorized ROEs have been established by regulatory  
9 commissions based on the market conditions that existed over the duration of the rate  
10 proceeding. Therefore, to the extent that market conditions have changed significantly  
11 since the time of any particular rate proceeding, it would be important to consider the  
12 necessary changes in the ROE.

13 **Q: Are the equity return recommendations of OPC witness Mr. Murray and Staff**  
14 **witness Dr. Won consistent with the comparable return standard?**

15 A: No, they are not. Both Dr. Won and Mr. Murray claim that one of the economic guidelines  
16 they used in determining the cost of equity for the Companies was the comparable return  
17 standard established by the Court in *Hope* and *Bluefield*.<sup>24</sup> While Dr. Won considers a  
18 rising interest rate, high inflationary market and recently authorized ROEs for electric  
19 utilities in other jurisdiction across the U.S., he relies on the simple average authorized

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<sup>24</sup> Direct Testimony of Dr. Won, at 6, and Direct Testimony of David Murray, at 5.

1 ROEs to suggest that his recommendation of 9.62 percent is consistent with ROEs recently  
2 authorized around the country.<sup>25</sup>

3 **Q: Please explain why you say that Dr. Won's analysis does not meet the comparable**  
4 **return standard.**

5 A: Dr. Won does not consider the comparability of the cases that he includes in his review of  
6 authorized ROEs. Dr. Won simply takes the average of all recently authorized ROEs for  
7 electric utilities. He does not consider the risk profile of the companies, nor does he  
8 research the returns to determine whether the final return includes adjustments, such as  
9 penalties. Finally, he does not distinguish the formula rate determinations, which are based  
10 on a methodology that is inconsistent with the data presented by any witness in this  
11 proceeding or the methodologies used by the Commission in its prior ROE determinations.

12 **Q: How would the result of Dr. Won's analysis change if he had considered these factors?**

13 A: Refining the sample group to consider comparability, I conclude that the ROE in 2022 was  
14 15 basis points higher than what Dr. Won's analysis suggests. I also conclude that there is  
15 not sufficient data available in 2022 to use as a benchmark for the Companies' ROEs.  
16 Adjusting the 2022 authorized ROE data to include only vertically-integrated electric  
17 utilities limits the 30 reported cases to 11 cases. Further review of those cases reveals that  
18 the authorized ROEs were only publicly disclosed in five of those cases, and only one of  
19 the five was a fully litigated decision where the Commission authorized an ROE of 9.50  
20 percent. While one data point is not a sufficient sample on which to benchmark the

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<sup>25</sup> Direct Testimony of Dr. Won at 32.

1 Companies' ROEs, it is important to note that this is 15 basis points higher than the average  
2 that Dr. Won calculated for the electric cases.

3 **Q: How did Mr. Murray consider recently authorized ROEs?**

4 A: Mr. Murray claims he considered "recent average allowed ROEs for electric utilities" in  
5 the development of his recommended range; however, Mr. Murray does not provide any  
6 support to indicate that authorized ROEs would support the low end of his range of 8.50  
7 percent.<sup>26</sup> Further, Mr. Murray sets his return at 9.00 percent, which is well below the  
8 average of recently authorized ROEs, without providing any information to demonstrate  
9 that the Companies have less risk on average than the companies "considered" in his review  
10 of authorized ROEs.

11 **Q: Have you developed a comparison of the recommended ROEs of Dr. Won and Mr.  
12 Murray proposed rates of return by other utility regulatory commissions across the  
13 U.S.?**

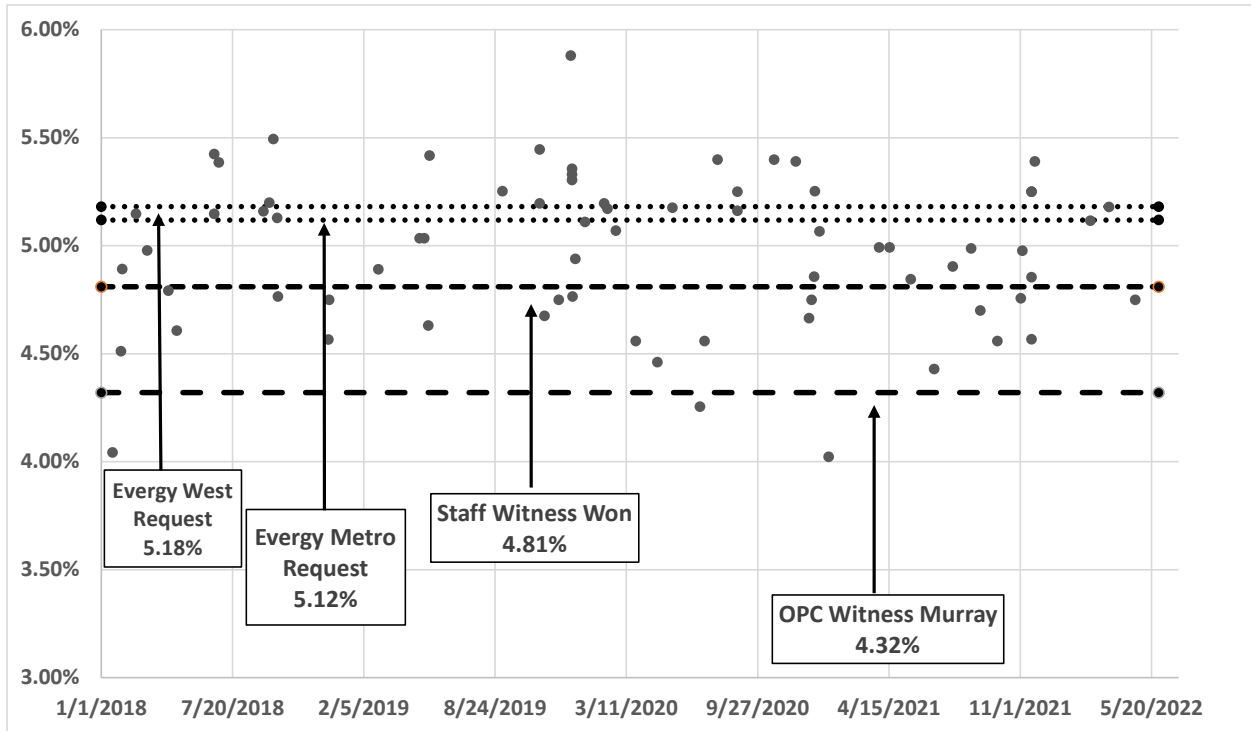
14 A: Yes. Figure 3 shows the weighted equity returns for vertically integrated electric utilities  
15 in other jurisdictions since January 2018, compared to the weighted equity return  
16 recommended by Dr. Won of 4.81 percent, the 4.32 percent recommendation proposed by  
17 Mr. Murray, and Evergy Missouri Metro's and Evergy Missouri West's respective  
18 requests.

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<sup>26</sup> Direct Testimony of David Murray at 4.

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**Figure 3: Weighted U.S. Authorized Equity Returns – Vertically Integrated Electric Companies<sup>27</sup>**



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Recent comparable authorized ROEs for vertically-integrated electric utilities weighted by authorized equity ratios range from 3.75 percent to 5.88 percent, with an average of 4.87 percent.<sup>28</sup> Figure 3 demonstrates that Mr. Murray’s recommended weighted equity return of 4.32 percent, is below more than 98 percent of the recent cases. Therefore, Mr. Murray is selecting a weighted ROE from a range that is largely inconsistent with the comparable return standard.

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<sup>27</sup> Source: S&P Capital IQ. Data through June 15, 2022. Chart excludes jurisdictions where the ROE is set by a formula (Illinois and Vermont) and zero-cost states (jurisdictions that include zero-cost items in the capital structure: Arkansas, Indiana, Michigan, and Florida). Formula rates 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.

<sup>28</sup> *Ibid.*

1 The majority of weighted authorized equity returns for vertically-integrated electric  
2 companies (149 out of 173 decisions) from 2018 through June 15, 2022 have been above  
3 Dr. Won's recommendation of 4.81 percent. This range is consistent with the Company's  
4 requested weighted ROE of 5.12 percent for Evergy Missouri Metro and 5.18 percent for  
5 Evergy Missouri West in this proceeding. The recommendations offered by Dr. Won and  
6 Mr. Murray are both below the average of comparable authorized weighted ROEs for  
7 vertically-integrated electric utilities since 2018. This would indicate that both Dr. Won  
8 and Mr. Murray believe Evergy Missouri Metro and Evergy Missouri West have less risk  
9 than other comparable vertically-integrated electric utilities across the U.S. However,  
10 neither Dr. Won nor Mr. Murray provide any evidence to support this conclusion because  
11 they do not consider the relative risk of Evergy Missouri Metro or Evergy Missouri West,  
12 as I discuss at the end of Section III above. Given the risk profile of the Companies,  
13 recommending an equity return that is below the average of comparable authorized  
14 weighted ROEs for vertically-integrated electric utilities since 2018, as Dr. Won and Mr.  
15 Murray have done, is unsubstantiated and inconsistent with the comparable return standard  
16 provided in *Hope* and *Bluefield*.

17 **Q: Have Dr. Won or Mr. Murray considered recently authorized ROEs in the context of**  
18 **the market conditions that existed at the time of the decision and considering current**  
19 **market conditions?**

20 A: No. Dr. Won recognizes that current market conditions are framed by higher interest rates,  
21 and significant inflation. However, neither witness has considered their recommendations  
22 and recently authorized weighted ROEs in the context of current market conditions. As  
23 discussed in more detail in Section VI of my Rebuttal Testimony, in determining the

1 appropriate ROE for Evergy Missouri Metro and Evergy Missouri West, it is necessary to  
2 consider current inflationary pressures and the expectations for rising interest rates over  
3 the near-term, which will increase the cost of equity for utilities going forward.

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

6 A: Yes. Credit rating agencies take the authorized ROE into consideration in the overall risk  
7 analysis of a company. For example, Moody's downgraded ALLETE, Inc. in 2019 from  
8 A3 to Baa1 for reasons that included the less than favorable outcome in Minnesota Power's  
9 last rate case in Minnesota. Moody's viewed Minnesota Power's recent rate case decision  
10 as credit negative for reasons which included: (1) the below average authorized ROE of  
11 9.25 percent, which resulted in a reduction of approximately \$20 million between the  
12 requested and approved revenue requirement; (2) the disallowance of certain expenses such  
13 as prepaid pension expenses; and (3) the decision not to adopt the annual rate review  
14 mechanism which would have mitigated the effect of industrial customers scaling back  
15 production in response to changes in economic conditions.<sup>29</sup>

16 The credit rating agencies also reacted negatively to the recent rate case decision  
17 for Puget Sound Energy ("PSE") in Washington. In July 2020, PSE received a rate  
18 determination that included an authorized ROE of 9.40 percent, which represented a 10  
19 basis point decrease in the prior authorized ROE and a common equity ratio of 48.5 percent,  
20 resulting in an overall rate of return of 7.39 percent (and an equity rate of 4.559 percent).

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<sup>29</sup> Moody's Investors Service, Credit Opinion: "ALLETE, Inc., Update following downgrade" at 3 (April 3, 2019).



1 Each of the rating agencies responded negatively to this decision. Fitch Ratings  
2 downgraded the outlook on PSE and its parent company Puget Energy (“PE”) to negative,  
3 indicating that the rate order would:

4 [s]ignificantly impair PE’s consolidated credit metrics, raising FFO  
5 leverage to be approximately 6.0x through 2021, exceeding the downgrade  
6 guideline ratio of 5.5x. PE and PSE could be downgraded if mitigating  
7 actions are not forthcoming or **insufficient** to strengthen their credit  
8 metrics. Sustained lack of constructive regulatory relationship will also be  
9 a catalyst for a downgrade.<sup>30</sup>

10 S&P’s ratings outlook for PSE and PE is negative, reflecting expectations that the FFO to  
11 debt ratio for PE would be 13 percent. S&P also stated that “[t]he decision is inconsistent  
12 with our current assessment and should the company continue to exhibit substantial  
13 regulatory lag, we would likely revise our assessment of the company’s business risk  
14 profile downward.”<sup>31</sup> Moody’s indicated that the outcome of the rate case was credit  
15 negative, recognizing a below average return on equity that was lower than the prior  
16 authorized ROE.<sup>32</sup>

17 Further, the market has responded negatively to a recent rate determination  
18 authorized by the Arizona Corporation Commission (“ACC”), which included a return that  
19 was well below the average authorized for electric utilities. The Recommended Opinion  
20 and Order (“ROO”) issued in the Arizona Public Service (“APS”) rate proceeding on  
21 August 2, 2021 recommended an ROE of 9.16 percent. In October 2021, that

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<sup>30</sup> Fitch Ratings, Rating Action Commentary, “Fitch Affirms Puget Energy and Puget Sound Energy; Outlook Revised to Negative, July 27, 2020.

<sup>31</sup> S&P Global Market Intelligence, S&P removes Puget Energy, Puget Sound Energy from CreditWatch, August 24, 2020.

<sup>32</sup> Moody’s Investor Service, Puget Sound Energy, Inc. Puget Sound Energy’s rate case outcome is credit negative, July 17, 2020.

1 recommendation was amended to reduce the company’s ROE to 8.70 percent.<sup>33</sup> The final  
2 ROE that was established for APS was 8.70 percent, and the market reacted strongly to the  
3 proposed order and subsequent amendment and final decision. Guggenheim Securities  
4 LLC, an equity analyst that follows Pinnacle West Capital Corporation, the parent  
5 company of APS, informed its clients that:

6 [T]he “Arizona Corporation Commission is now confirmed to be the single  
7 most value destructive regulatory environment in the country as far as  
8 investor-owned utilities are concerned.”<sup>34</sup>

9 S&P Global Market Intelligence (Regulatory Research Associates) noted  
10 that this decision was “among the lowest ROEs RRA had encountered in its  
11 coverage of vertically integrated electric utilities in the past 30 years.”<sup>35</sup>

12 As shown in **Error! Reference source not found.**, Pinnacle West Capital Corporation’s  
13 stock price declined approximately 24 percent from August 2, 2021 to November 4, 2021  
14 following the issuance of the ROO, which recommended an ROE of 9.16 percent, and then  
15 the subsequent amendment to that opinion recommending the 8.70 percent ROE ultimately  
16 adopted by the ACC.

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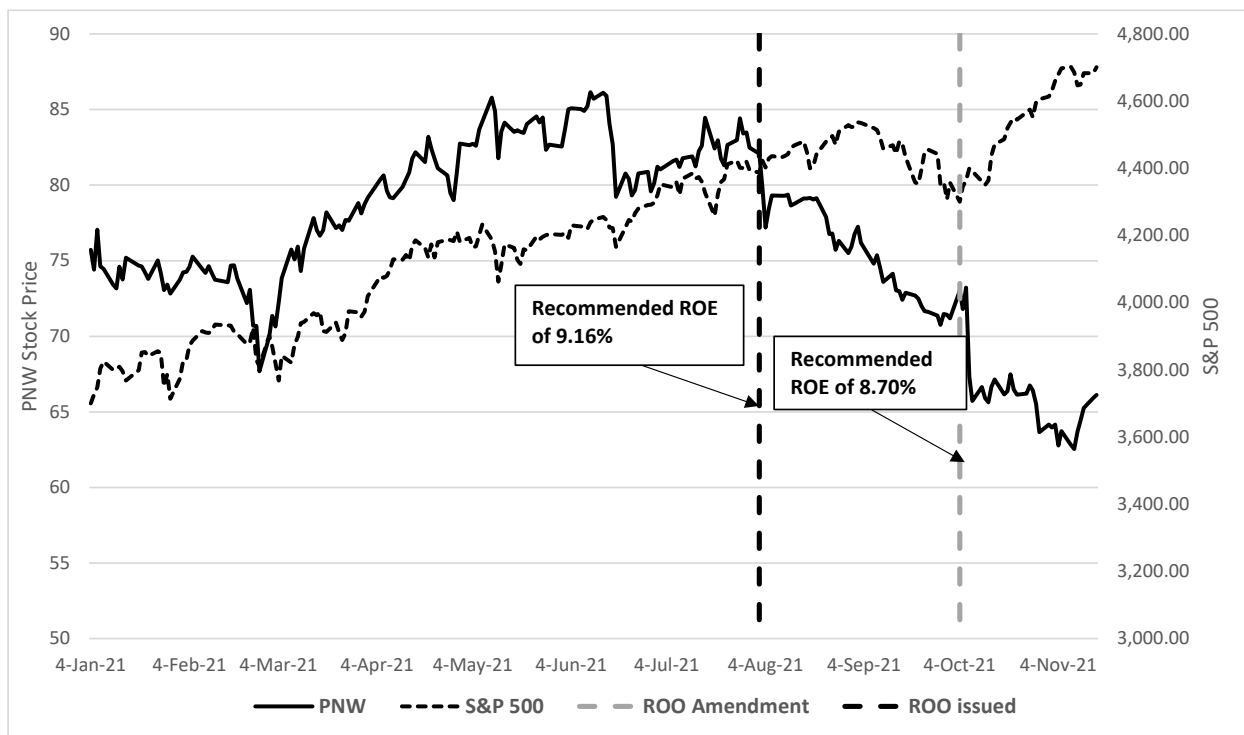
<sup>33</sup> Arizona Corporation Commission Docket No. E-01345A-19-0236, Commissioner Olson Proposed Amendment No. 1 to the Recommended Opinion and Order. October 4, 2021.

<sup>34</sup> S&P Global Market Intelligence, “Pinnacle West shares tumble after regulators slash returns in rate case,” October 7, 2021.

<sup>35</sup> S&P Global Market Intelligence, RRA Regulatory Focus, “Commission accords Arizona Public Service Company a well below average ROE,” October 8, 2021.

1

**Figure 4:Pinnacle West Capital Stock Price vs. S&P 500 utilities**



2

3 **Q: Why is the APS decision important to consider in this proceeding?**

4 **A:** The model results developed by Dr. Won and Mr. Murray are significantly below the ROE  
5 determination in the APS decision. Based on the market's overall reaction to this decision,  
6 it is reasonable to conclude that the 8.70 percent ROE that was determined in that  
7 proceeding did not reflect the investor-required return, which further supports my opinion  
8 that the results of Dr. Won and Mr. Murray's ROE estimation methodologies are  
9 unreasonably low and cannot be relied upon, even in a benchmarking approach, for setting  
10 an ROE in this proceeding.

1 **Q: What is your conclusion regarding the ROE recommendations of Dr. Won and Mr.**  
2 **Murray?**

3 A: Mr. Murray's ROE recommendation of 9.00 percent is unreasonably low and would not  
4 meet the comparable return standard of *Hope* and *Bluefield*. While Dr. Won recognizes a  
5 rising interest rate environment in his analysis, his estimation methodologies place his  
6 return in the middle of a range of authorized ROEs that were decided prior to the onset of  
7 the rising interest rates and high inflation that now exist in the current market environment.  
8 This suggests that Dr. Won's estimate understates the investor-required return over the  
9 forward-looking period when the rates for Evergy Missouri Metro and Evergy Missouri  
10 West will be in effect.

11 **V. UPDATED RETURN ON EQUITY MARKET DATA**

12 **Q: Have you updated your ROE analyses?**

13 A: Yes, I have updated my ROE analyses using market data as of June 15, 2022. As part of  
14 updating the analyses for current market conditions, I have also made one modification to  
15 the proxy group based on changes in market information.<sup>36</sup> Figure 5 below (see also  
16 Schedule AEB-R1 through AEB-R8) summarizes the results of my updated analyses for  
17 the proxy group.

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<sup>36</sup> I updated my proxy group to exclude Pinnacle West Capital based on volatility in the market data for that company following the decision in the APS rate case.

1

**Figure 5: Summary of Updated Cost of Equity Results**

<b>Constant Growth DCF – Median</b>			
	Median Low	Median	Median High
30-Day Average Price	8.37%	9.29%	9.83%
90-Day Average Price	8.38%	9.35%	9.89%
180-Day Average Price	8.42%	9.43%	10.02%
<b>Constant Growth DCF – Average w/ exclusions</b>			
	Median Low	Median	Median High
30-Day Average Price	8.77%	9.54%	10.28%
90-Day Average Price	8.79%	9.54%	10.28%
180-Day Average Price	8.87%	9.62%	10.36%
<b>Capital Asset Pricing Model</b>			
	Current Risk-Free Rate (3.12%)	Q3 2022 – Q3 2023 Projected Risk-Free Rate (3.48%)	2024-2028 Projected Risk-Free Rate (3.80%)
Value Line Beta	11.52%	11.57%	11.62%
Bloomberg Beta	10.86%	10.94%	11.01%
Long-term Avg. Beta	10.09%	10.23%	10.32%
<b>Empirical Capital Asset Pricing Model</b>			
Value Line Beta	11.88%	11.92%	11.95%
Bloomberg Beta	11.39%	11.44%	11.50%
Long-term Avg. Beta	10.80%	10.91%	10.98%
<b>Bond Yield Plus Risk Premium</b>			
	Current Risk-Free Rate (3.12%)	Q3 2022 – Q3 2023 Projected Risk-Free Rate (3.48%)	2024-2028 Projected Risk-Free Rate (3.80%)
Risk Premium Analysis	10.00%	10.15%	10.29%

2

3 **Q: Do the updated results continue to support the Company’s requested ROE of 10.00**  
4 **percent in this proceeding?**

5 **A:** Yes. The results of the cost of equity estimation models are generally consistent with the  
6 analysis in my Direct Testimony, which was performed using market data through

1 September 30, 2021. Therefore, in addition to all of the other factors that I have considered,  
2 the updated results reflecting market data through June 15, 2022, provide additional  
3 support for my recommended ROE range of 9.90 percent to 10.50 percent and within that  
4 range the Company's requested ROE of 10.00 percent.

5  
6 **VI. UPDATED CAPITAL MARKET CONDITIONS**

7 **Q: Do Dr. Won and Mr. Murray adequately consider current capital market conditions**  
8 **in their estimates of the investor-required ROE?**

9 A: No, they do not. While Dr. Won recognizes that interest rates have increased, he does not  
10 consider that the Federal Reserve has clearly indicated the expectation for additional rate  
11 increases over the remainder of 2022 and into 2023 in order to address persistently high  
12 inflation. Mr. Murray's recommendation also does not adequately reflect current and  
13 projected market conditions. Mr. Murray also acknowledges that the yields on long-term  
14 government bonds and utility bonds have increased recently and are close to the levels  
15 achieved prior to the pandemic, however without any evidence to support his assertion, Mr.  
16 Murray suggests that investors expect authorized ROEs to remain at recently observed  
17 levels.<sup>37</sup> Mr. Murray is even more specific in his unsupported view suggesting that while  
18 the cost of equity has increased for broader markets, the cost of equity for utilities has not  
19 changed despite increases in interest rates. This viewpoint contradicts his own  
20 acknowledgement of the inverse relationship between utility stock prices and interest rates  
21 as well as his reliance on the DCF model.

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<sup>37</sup> Direct Testimony of David Murray, at 9-10 and 15.

1 **Q: How have interest rates and inflation changed since you filed your Direct Testimony?**

2 A: At the time that I filed my Direct Testimony, using market data as of December 2021, the  
3 yield on the 30-year Treasury bond was 1.93 percent and the year-over-year change in  
4 inflation was 6.88 percent. As of June 15, 2022, the 30-day average yield on the 30-year  
5 Treasury bond was 3.12 percent and inflation was 8.56 percent. Therefore, interest rates  
6 have steadily increased, which Staff has recognized in Everygy Missouri West's  
7 securitization case,<sup>38</sup> and inflation has certainly not subsided.

8 **Q: Please summarize the Federal Reserve's response to inflation.**

9 A: The Federal Reserve has outlined plans to normalize monetary policy in response to  
10 sustained elevated levels of inflation. As of the June 15, 2022 meeting, the Federal  
11 Reserve:

- 12       ▪ Completed its taper of Treasury bond and mortgage-backed securities  
13       purchases;
- 14       ▪ Increased the target federal funds rate from 0.00 – 0.25 percent to 0.25 –  
15       0.50 percent at the March 16, 2022 meeting, from 0.25 – 0.50 percent to  
16       0.75 to 1.00 percent at the May 4, 2022 meeting, and then from 0.75 to 1.00  
17       percent to 1.50 percent to 1.75 percent at the June 15, 2022 meeting;
- 18       ▪ Forecasted a total of seven additional 25 basis point rate increases in 2022  
19       and two 25 basis point rate increases in 2023, which resulted in a median

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<sup>38</sup> Rebuttal Testimony of Mark Davis, Ducera Partners, LLC at 5-6. No. EF-2022-0155 (filed June 30, 2022).

1 forecast of the federal funds rate of 3.4 percent and 3.8 percent, respectively;

2 and

- 3 ■ Started reducing its holdings of Treasury and mortgage-backed securities  
4 on June 1, 2022. Specifically, the Federal Reserve will reduce the size of  
5 its balance sheet by only reinvesting principal payments on owned securities  
6 after the total amount of payments received exceeds a defined cap. For  
7 Treasury securities, the cap will be set at \$30 billion per month for the first  
8 three months and \$60 billion per month after the first three months, while  
9 for mortgage-backed securities the cap will be set at \$17.5 billion per month  
10 for the first three months and \$35 billion per month after the first three  
11 months.<sup>39</sup>

12 **Q: Has the Federal Reserve provided any indications as to future plans to address**  
13 **inflation?**

14 **A:** Yes. Federal Reserve Chairman Powell noted at his press conference on June 15, 2022 that  
15 reducing inflation to the long-term goal of 2 percent was the primary objective and that  
16 additional rate increases will be necessary with a 50 or 75 basis point increase likely needed  
17 at the next meeting:

18 Over coming months, we will be looking for compelling evidence that  
19 inflation is moving down, consistent with inflation returning to 2 percent.  
20 We anticipate that ongoing rate increases will be appropriate; the pace of  
21 those changes will continue to depend on the incoming data and the  
22 evolving outlook for the economy. Clearly, today's 75 basis point increase  
23 is an unusually large one, and I do not expect moves of this size to be

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<sup>39</sup> Federal Reserve, Press Release: Plans for Reducing the Size of the Federal Reserve's Balance Sheet, May 4, 2022.



1 common. From the perspective of today, either a 50 or 75 basis point  
2 increase seems most likely at our next meeting. We will, however, make  
3 our decisions meeting by meeting, and we will continue to communicate  
4 our thinking as clearly as we can. Our overarching focus is using our tools  
5 to bring inflation back down to our 2 percent goal and to keep longer-term  
6 inflation expectations well anchored.

7 Making appropriate monetary policy in this uncertain environment requires  
8 a recognition that the economy often evolves in unexpected ways. Inflation  
9 has obviously surprised to the upside over the past year, and further  
10 surprises could be in store. We therefore will need to be nimble in  
11 responding to incoming data and the evolving outlook. And we will strive  
12 to avoid adding uncertainty in what is already an extraordinarily challenging  
13 and uncertain time. We are highly attentive to inflation risks and determined  
14 to take the measures necessary to restore price stability. The American  
15 economy is very strong and well positioned to handle tighter monetary  
16 policy.<sup>40</sup>

17 **Q: What is the effect of inflation on long-term interest rates?**

18 A: Persistent inflation and the Federal Reserve's normalization of monetary policy will likely  
19 result in continued increases in long-term interest rates. This is because inflation will  
20 reduce the purchasing power of the future interest payments from Treasury bonds; thus,  
21 investors will require higher yields to compensate for the increased risk of inflation, which  
22 means interest rates will increase.

23 **Q: How do current Treasury bond yields compare with the projections that you relied  
24 upon in your Direct Testimony?**

25 A: At the time that I filed my Direct Testimony, the short-term projected yield on the 30-year  
26 Treasury bond yields through the first quarter of 2023 was estimated to be 2.50 percent.  
27 The long-term projected yield on the 30-year Treasury bond, for the period from 2023-

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<sup>40</sup> Federal Reserve, Transcript of Chair Powell's Press Conference Opening Statement, June 15, 2022, at 4-5.

1 2027 was 3.50 percent. As of June 15, 2022, the 30-day average yield on the 30-day  
2 Treasury bond was 3.12 percent, which is 62 basis points higher than the near-term  
3 projection at the time I filed my Direct Testimony.

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

6 A: As discussed previously, Dr. Won's ROE recommendation is not based on the results of  
7 his models using current market data. Rather, Dr. Won's recommended ROE is based on  
8 a comparison of current market conditions with the market conditions that existed when  
9 the Commission issued its decision in the 2019 Empire Case, which in turn, is based on the  
10 2017 Spire Case. Dr. Won compares yields on government bonds, dividend yields and  
11 DCF results for the current period to the same market indicators in the 2019 Empire Case  
12 and concludes that market conditions support increasing the ROE for the Companies  
13 slightly above the return of 9.25 percent that was authorized in the 2019 Empire Case.<sup>41</sup>

14 Similarly, Mr. Murray notes that while the yields on long-term government bonds  
15 and utility bonds have increased recently and are close to the levels achieved prior to the  
16 pandemic, he thinks that investors "expect that regulators may at least hold the line on  
17 awarded ROEs."<sup>42</sup> Additionally, Mr. Murray suggests that while the cost of equity has  
18 increased for broader markets, the cost of equity for utilities has not changed despite  
19 increases in interest rates.<sup>43</sup>

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<sup>41</sup> Won Direct Testimony, at 4-5.

<sup>42</sup> Direct Testimony of David Murray, at 9-10 and 15.

<sup>43</sup> Direct Testimony of David Murray, at 15.

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

3 A: Yes, I do. Dr. Won and Mr. Murray have both acknowledged that interest rates and utility  
4 share prices are inversely correlated, which means, for example, that an increase in interest  
5 rates will result in a decline in the share prices of utilities.<sup>44</sup> A decline in the share prices  
6 of utilities, in turn, means that an increase in the cost of equity is occurring.

7 **Q: Do you agree with Mr. Murray that investors expect authorized ROEs to hold at**  
8 **current levels despite the rising interest rate environment?**<sup>45</sup>

9 A: No, I do not. The yield on the 30-year Treasury Bond reached a low in August 2020 of  
10 1.32 percent<sup>46</sup>; however, 30-year Treasury Bond yields have increased to as high as 3.45  
11 percent in June 2022. As Mr. Murray acknowledges, “changes in utility stock valuation  
12 levels typically have a strong inverse correlation to changes in bond yields, i.e., as bond  
13 yields decline, utility stock prices increase.”<sup>47</sup> Based on this acknowledgement, and his  
14 reliance on the DCF model, it is disingenuous for Mr. Murray to conclude, now that interest  
15 rates are increasing, that the cost of equity for utilities has not changed.

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<sup>44</sup> Direct Testimony of Dr. Won, at 14-15, and Direct Testimony of David Murray, at 7-8.

<sup>45</sup> Direct Testimony of David Murray, at 15.

<sup>46</sup> Bloomberg Professional, as of August 31, 2021.

<sup>47</sup> Direct Testimony of David Murray at 8.

1 **Q: What are your conclusions about the effect of current market conditions on the**  
2 **investor-required ROE?**

3 A: As Dr. Won recognizes,<sup>48</sup> the current market conditions suggest an increase in the cost of  
4 equity. As interest rates increase in response to persistently high inflation, it is reasonable  
5 to expect that the positive correlation between interest rates and utility equity returns shown  
6 in the Bond Yield Risk Premium analysis would result in an increase in the investor-  
7 required return on equity, as has been the case in past rising interest rate environments.

8 Further, in reviewing the results of the ROE models, it is important to consider how  
9 current market conditions affect these models. Over the near-term, investors expect long-  
10 term interest rates to increase in response to continued elevated levels of inflation and the  
11 Federal Reserve's normalization of monetary policy. Because the share prices of utilities  
12 are inversely correlated to interest rates, an increase in long-term government bond yields  
13 will likely result in a decline in utility share prices, which is the reason a number of equity  
14 analysts expect the utility sector to underperform over the near-term. The expected  
15 underperformance of utilities means that DCF models using recent historical data likely  
16 underestimate investors' required return over the period that rates will be in effect.

17 The increase in interest rates is directly included in the assumptions used in other  
18 ROE estimation methodologies, specifically the CAPM, the ECAPM, and the Bond Yield  
19 Risk Premium, which may better reflect expected market conditions.

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<sup>48</sup> Direct Testimony of Dr. Won at 14-15.

1 **Q: What are your conclusions regarding the effect of capital market conditions on the**  
2 **cost of equity for Evergy Missouri Metro and Evergy Missouri West?**

3 A: There are several important conclusions regarding the effect of capital market conditions  
4 for the Companies:

- 5 1. The share prices of utilities are inversely related with the interest rates.  
6 Investors expect interest rates to increase over the near-term, which will  
7 likely result in a decline in the share prices of utilities. A decline in share  
8 prices will increase the dividend yield and thus the cost of equity estimate  
9 of the DCF model. Therefore, current DCF results are likely understating  
10 the cost of equity during the period that the Companies' rates will be in  
11 effect.
- 12 2. Market conditions have affected the results of the ROE estimation models  
13 requiring consideration of the results of multiple models and exercised  
14 judgment.
- 15 3. While the ROE estimation models use some historical data (i.e., stock prices  
16 and dividends in the DCF model, and bond yields in the CAPM), based on  
17 the clear expectation that interest rates will increase, it is also appropriate to  
18 consider near-term projections in the ROE estimation models.
- 19 4. While Dr. Won recognizes that interest rates and inflation are affecting the  
20 cost of equity, his DCF results do not reflect reasonable estimates of the  
21 cost of equity. Further, Dr. Won's comparative DCF analysis which he uses  
22 to form his recommended ROE does not capture the effects of increases in

1 interest rates that are planned by the Federal Reserve to address the current  
2 high inflation. Therefore, Dr. Won's adjustment to the ROE that was  
3 authorized in the 2019 Empire Case understates the cost of equity over the  
4 period that the rates that are decided in this proceeding will be in effect.

5 5. Mr. Murray's assumption that the cost of equity for utilities remains  
6 unchanged despite the increase in interest rates is inconsistent with his own  
7 testimony regarding the inverse relationship between interest rates and  
8 utility stock valuation levels. As such, the recent increase in interest rates  
9 – which Mr. Murray does not dispute – supports a higher cost of equity.

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

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

12 A: Dr. Won develops multiple methodologies including the DCF, CAPM and Rule of Thumb  
13 methodologies and estimates a range of results from each methodology. However, Dr.  
14 Won's recommendation is not based on the cost of equity implied by his Two-Step DCF  
15 based on analysis of current market conditions, but rather an irrelevant comparison of a  
16 Two-Step DCF analysis at the time of the 2019 Empire Case. It is important to note that  
17 in the 2019 Empire Case, Staff's ROE recommendation was based in part on a comparison  
18 to an earlier 2017 Spire Case decision – a natural gas utility case.<sup>49</sup> Figure 6 demonstrates  
19 changes in capital market conditions since the 2019 Empire Case, including factors that,  
20 while important in the estimation of the investor-required return, are not explicitly

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<sup>49</sup> Spire Missouri Case Nos. GR-2017-0215 and GR-2017-0216.

1 considered in the DCF model, and therefore are not considered in Dr. Won’s comparative  
 2 analysis. Figure 7 summarizes the results of Dr. Won’s ROE estimation methodologies  
 3 and compares his ROE results to the ROE results that were filed by Staff in the 2019  
 4 Empire Case.

5 **Figure 6: Comparison of Current Capital Markets to Capital Markets during the Empire**  
 6 **2019 Case**

Methodology	2019 Empire Case	Current Everygy Missouri Metro and Everygy Missouri West Case
30-day Average yield on 30-year Treasury Bond	2.21% (3-month ending November 2019) <sup>50</sup> 2.25% (30-day ending January 31, 2020) <sup>51</sup>	2.25% (3-month ending March 31, 2022) <sup>52</sup> 2.37% (30-day ending March 31, 2022) <sup>53</sup> 3.12% (30-day ending June 15, 2022) <sup>54</sup>
Inflation (as measured by Y-o-Y change in CPI) <sup>55</sup>	2.5% (as of January 2020)	8.5% (as of March 31, 2022) 8.6% (as of May 31, 2022)
Long-term Growth Rate Assumption	N/A Won GDP interpretation: 3.90% (as of May 2022) Dividend-based: 4.2%-5.0% <sup>56</sup> GDP: 4.10%-4.40% <sup>57</sup>	GDP: 3.90% <sup>58</sup> GDP: 6.22% <sup>59</sup>

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<sup>50</sup> Empire District Case No. ER-2019-0374, Staff Direct Testimony, at 8.  
<sup>51</sup> Bloomberg Professional as of March 31, 2022.  
<sup>52</sup> Schedule SJW-d14.  
<sup>53</sup> Bloomberg Professional as of March 31, 2022.  
<sup>54</sup> Bloomberg Professional as of June 15, 2022.  
<sup>55</sup> Consumer Price Index for All Urban Consumers: All Items in U.S. City Average (12-month percent change). Available [here](#).  
<sup>56</sup> Empire District Case No. ER-2019-0374, Amended Report and Order at 29.  
<sup>57</sup> Empire District Case No. ER-2019-0374. Chari Rebuttal at 7 and Staff Direct Report at 16.  
<sup>58</sup> Empire District Case No. ER-2019-0374, Staff Direct Testimony Appendix 2, Schedule PC-10-1.  
<sup>59</sup> Schedule AEB-R10 GDP Growth

1 **Figure 7: Comparison of Dr. Won’s ROE Results to Staff’s Estimation in Empire’s 2019**  
 2 **Case**

Methodology	2019 Empire Case	Dr. Won’s Range
Staff Two-Step DCF <sup>60</sup>	Won’s reinterpretation: 6.79%-8.82% Mean: 7.80% <sup>61</sup>	7.40%-8.96% Mean: 8.18%
Staff Constant Growth DCF	Staff Direct Electric PG: 7.34%-8.14% <sup>62</sup> Mean: 7.74% Staff Direct Gas PG: 6.65%-7.45% Mean: 7.05%	
Staff CAPM	Staff Direct Electric PG: 4.63%-5.43%, Mean: 5.03% <sup>63</sup> Staff Direct Gas PG: 4.91%-5.81%, Mean: 6.21%	5.83%-8.62% Mean: 8.07% <sup>64</sup>
Risk Premium or “Rule Thumb”	N/A	7.16%-9.43% <sup>65</sup>
Recently Authorized ROEs for Electric Utilities <sup>66</sup>	2019 Fully Litigated: 9.82% 2019 Settled: 9.74% 2019 All: 9.77%	2022 Fully Litigated: 9.50% 2022 Settled: 9.46% 2022 All: 9.47%
Witness Recommended Range	Staff Direct Report: 9.05%-9.80% Recommendation: 9.25%	9.37%-9.87% <sup>67</sup> Recommendation: 9.62%

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<sup>60</sup> Schedule SJW-d13.

<sup>61</sup> SJW-d13.

<sup>62</sup> Case No. ER-2019-0374. Staff Direct, Appendix 2, Schedule PC-12. January 15, 2020.

<sup>63</sup> Case No. ER-2019-0374. Staff Direct, Appendix 2, Schedule PC-12. January 15, 2020.

<sup>64</sup> Schedule SJW-d14. The referenced CAPM range is established by the upper and lower bound of Dr. Won’s analysis.

<sup>65</sup> Direct Testimony of Dr. Won at 29.

<sup>66</sup> S&P Global, Direct Testimony of Dr. Won at 31, adjusted to include only vertically-integrated electric utility rate cases, and removes formula rate states (Illinois and Vermont).

<sup>67</sup> Direct Testimony of Dr. Won at 4.



1 **Q: Is Dr. Won’s ROE recommendation based on the results of his ROE estimation**  
2 **models?**

3 A: No, it is not. Dr. Won essentially disregards the results of the majority of his ROE  
4 estimation methodologies and establishes his ROE recommendation based entirely on the  
5 results of his “comparative analysis,” calculating ROEs using the Two-Step DCF model  
6 and current data as compared with the ROE resulting from a Two-Step DCF model using  
7 data from the time of the 2019 Empire Case. Staff’s ROE recommendation in that *electric*  
8 case was based on a comparative analysis to the earlier 2017 Spire Case, which is a *gas*  
9 utility.<sup>68</sup> In the case of the 2019 data, Dr. Won attempted to measure a difference in the  
10 ROE from 2019 to the current time-period using his Two-Step DCF model results. He  
11 develops his recommendation in this case by relying on the authorized ROE of 9.25 percent  
12 from the 2019 Empire Case and adjusting the authorized ROE to reflect the change in the  
13 result of his current DCF results and 2019 DCF results. The inputs used in Dr. Won’s  
14 analysis are inconsistent with Staff’s analysis in the 2019 Empire Case. Specifically, Dr.  
15 Won relies on a 3.90 percent Gross Domestic Product (“GDP”) growth rate in his 2019  
16 DCF analysis, rather than the GDP growth rate, estimate that Staff actually relied upon in  
17 the Empire 2019 Case of 4.10 percent to 4.40 percent.<sup>69</sup> Based on Dr. Won’s comparative  
18 Two-Step DCF analysis, Staff assumes that the cost of equity has increased 37-basis points

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<sup>68</sup> Spire Missouri Case Nos. GR-2017-0215 and GR-2017-0216.

<sup>69</sup> Empire District Case No. ER-2019-0374, Staff Direct Testimony at 7, and Ex. 108, Chari Rebuttal, page 7. See also In the Matter of The Empire District Electric Company’s Request for Authority to File Tariffs Increasing Rates for Electric Service Provided to Customers in its Missouri Service Area, No. ER-2019-0374. Amended Report and Order at 29 (July 23, 2020).

1 and therefore recommends a 9.62 percent ROE for Evergy Missouri Metro and Evergy  
2 Missouri West.

3 **Q: Do you agree with Dr. Won's reliance on a single model in developing his specific**  
4 **ROE recommendation?**

5 A: No, I do not. Consistent with FERC's recent determinations in Opinion No. 569-A, 171  
6 FERC ¶ 61,154 (May 21, 2020) I believe it is important to give some weight to the results  
7 of many financial models to estimate the cost of equity for the Companies. In addition, by  
8 relying on a single analytical approach, Dr. Won's ROE recommendation is unreliable due  
9 to flaws in the specification of his DCF model.

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

12 A: I have many areas of disagreement on the technical aspects of Dr. Won's analysis and the  
13 assumptions he relies on in each of his methodologies. As a practical matter, however, Dr.  
14 Won does not actually rely on any of those analyses to support his recommendation for the  
15 Companies, as they all produce results that are significantly below his recommended ROE  
16 of 9.62 percent. Rather, Dr. Won's ROE recommendation is based on a comparison of the  
17 results of his Two-Step DCF model in the current market with the Two-Step DCF results  
18 based on market data at the time for the 2019 Empire Case. This analysis is flawed because  
19 Dr. Won has applied the same GDP growth rate assumption to both analyses. While I do  
20 not believe that this comparative approach is the best estimator of the cost of equity, it  
21 would have been more reasonable if Dr. Won had truly compared the results of the models  
22 using the data from two different time periods; the 2019 Empire case and the current market

1 data. While I disagree with many aspects of Dr. Won’s DCF, CAPM and other  
2 benchmarking analyses, the fact is that Dr. Won has not relied on those models in the  
3 development of his recommendation. Therefore, while my response to Dr. Won will  
4 address each methodology at a high level, I will focus more specifically on the Two-Step  
5 DCF methodology and the comparison underlying his recommended return.

6 **A. Response to Dr. Won’s Two-Step DCF Analysis**

7 **Q: Please summarize Dr. Won’s specification of the Two-Step DCF model.**

8 A: Dr. Won’s DCF analysis is a two-stage model where he relies on projected earnings growth  
9 rates from Value Line as the estimate of the short-term growth rate, and projected GDP  
10 growth as the long-term growth rate at the current rate of 3.90 percent, rather than that  
11 proposed by Staff in the 2019 Empire Case of 4.10 percent to 4.40 percent.<sup>70 71</sup> As support  
12 for the use of a two-stage model, Dr. Won cites to the DCF model relied on by FERC.<sup>72</sup>  
13 Dr. Won relies on the three-month average of the high and low stock prices for his electric  
14 utility proxy companies for January through March 2022.<sup>73</sup> As shown in Schedule SJW-  
15 d11, Dr. Won relies on the nominal GDP growth rate published by the Congressional  
16 Budget Office (“CBO”) of 3.90 percent as his estimate of the long-term growth rate.  
17 Schedule SJW-13 shows the results of Dr. Won’s Two-Step DCF analysis, which range  
18 from 7.40 percent to 8.96 percent, with an average DCF result of 8.18 percent.

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<sup>70</sup> Schedule SJW-d13.

<sup>71</sup> Empire District Case No. ER-2019-0374, Staff Direct Testimony at 7, and Ex. 108, Chari Rebuttal, page 7. See also In the Matter of The Empire District Electric Company’s Request for Authority to File Tariffs Increasing Rates for Electric Service Provided to Customers in its Missouri Service Area, File No. ER-2019-0374. Amended Report and Order (July 23, 2020), at 29.

<sup>72</sup> Won Direct Testimony, at 25.

<sup>73</sup> Schedule SJW-d12.

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

2 A: No, they are not. The results of Dr. Won's Two-Step DCF analysis are so low as to be  
3 unreasonable compared to the authorized equity returns for electric utility companies in  
4 other jurisdictions. The mean result of Dr. Won's Two-Step DCF analysis is 8.18 percent,  
5 which is below any authorized ROE for an electric utility company in the last 40 years.<sup>74</sup>  
6 The *Hope* and *Bluefield* decisions, which Dr. Won acknowledges are standards to be  
7 followed in setting a just and reasonable return,<sup>75</sup> require the authorized return to be  
8 comparable to other returns available to investors in companies with similar risk. Dr.  
9 Won's Two-Step DCF results clearly violate this standard.

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

12 A: The major areas of concern that I have with Dr. Won's Two-Step DCF analysis are: 1) the  
13 development of the short-term growth rate; 2) the development of the long-term growth  
14 rate; 3) the misapplication of FERC's Two-Step DCF model; and 4) the development of  
15 his ROE recommendation, which relies on the comparison of the DCF results from 2019  
16 and 2022 to adjust the authorized ROE from the 2019 Empire Case for an electric utility,  
17 which in turn is based on the 2017 Spire Case - a natural gas utility rate proceeding.

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<sup>74</sup> S&P Capital IQ Pro, excluding formula-based rate determinations and authorizations including penalties.

<sup>75</sup> Won Direct Testimony, at 6.

1                   1. Development of the Short-term Growth Rate

2   **Q:    Are the results of Dr. Won’s comparison of his 2019 and 2022 Two-Step DCF results**  
3       **biased by his selection of the short-term growth rate?**

4   A:    Yes. As noted above, Dr. Won indicated that the proxy group average DCF result increased  
5       37-basis points from 2019 to 2022, indicating that the cost of equity has increased 37 basis  
6       points. However, Dr. Won’s DCF results are understated inclusion of the projected  
7       dividend per share (“DPS”) and book value per share (“BVPS”) growth rates from Value  
8       Line in his calculation of the short-term growth rate. As shown in Figure 8 below, the  
9       proxy group average DPS growth rate declined 40 basis points between 2019 and 2022 and  
10      BVPS growth rates declined by 10 basis points. This is directionally inconsistent with the  
11      40-basis point *increase* in earnings per share (“EPS”) growth rates relied upon by Dr. Won.  
12      As I discuss in more detail below, it is more appropriate to rely solely on projected EPS  
13      growth as the short-term growth estimate in the Two-Step DCF model than to include  
14      projected DPS growth rates. As shown in Schedule AEB-R9, had Dr. Won relied  
15      exclusively on projected EPS growth rates from his DCF analysis, the difference between  
16      2019 DCF results and 2022 DCF results in Dr. Won’s analysis would have suggested a 109  
17      basis point increase in the cost of equity rather than a 37 basis point increase.

1 **Figure 8: Comparison of 2019 and 2022 inputs to Dr. Won’s Two-Step DCF analysis**

	[1]	[2]	[3]
<b>Two-Step DCF Input</b>	<b>Q1 2022</b>	<b>2019</b>	<b>Difference [1] – [2]</b>
Dividend Yield	3.49%	2.97%	0.52%
Value Line Projected Earnings Growth Rate	5.03%	4.73%	0.30%
Value Line Projected Dividend Growth Rate	4.70%	5.10%	-0.40%
Value Line Projected Book Value Growth Rate	4.37%	4.47%	-0.10%
Average of Value Line Projected Earnings, Dividend, and Book Value Growth	4.70%	4.77%	-0.07%

2  
3 **Q: Why should Dr. Won have relied solely on projected EPS growth as the estimate of**  
4 **short-term growth in the Two-Step DCF model?**

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

8 Growth in dividends occurs primarily as a result of growth in earnings per share  
9 (EPS). Earnings growth, in turn, results from a number of factors, including (1) inflation,  
10 (2) the amount of earnings the company retains and invests, and (3) the rate of return the  
11 company earns on its equity (ROE).<sup>76</sup>

12 In contrast, changes in a company’s dividend payments are based on management  
13 decisions related to cash management and other factors. For example, a company may

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<sup>76</sup> Eugene F. Brigham and Joel F. Houston, *Fundamentals of Financial Management*, at 317 (Concise Fourth Edition, Thomson South-Western, 2004).

1           decide to retain certain earnings rather than include those earnings in a dividend issuance.  
2           As a result, changes in management decisions can cause large fluctuations in the dividend  
3           growth of a utility. Therefore, dividend growth rates are less likely than earnings growth  
4           rates to reflect investor perceptions of a company's growth prospects.

5           Furthermore, investment analysts report predominant reliance on EPS growth  
6           projections. In a survey completed by 297 members of the Association for Investment  
7           Management and Research, the majority of respondents ranked earnings as the most  
8           important variable in valuing a security (more important than cash flow, dividends, or book  
9           value).<sup>77</sup>

10           Academic research also supports the use of EPS growth estimates. A 2002 study  
11           in the *Journal of Accounting Research*, examined "the valuation performance of a  
12           comprehensive list of value drivers" finding that "forward earnings explain stock prices  
13           remarkably well" and were generally superior to other value drivers analyzed.<sup>78</sup> A 2012  
14           study from the journal *Contemporary Accounting Research* found that the sell-side analysts  
15           with the most accurate stock price targets were those whom the researchers found to have  
16           more accurate earnings forecasts.<sup>79</sup>

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<sup>77</sup> Block, Stanley B., "A Study of Financial Analysts: Practice and Theory", *Financial Analysts Journal* (July/August 1999).

<sup>78</sup> Liu, Jing, et al., "Equity Valuation Using Multiples," *Journal of Accounting Research*, Vol. 40 No. 1, March 2002.

<sup>79</sup> Gleason, C.A., et al., "Valuation Model Use and the Price Target Performance of Sell-Side Equity Analysts," *Contemporary Accounting Research*.

1 **Q: Do you have any other concerns with Dr. Won’s reliance on Value Line projected**  
2 **DPS growth rates?**

3 A: Yes, I do. In addition to the theoretical basis for the use of earnings growth rates, there is  
4 the practical consideration of the availability of market data. The source for all of Dr.  
5 Won’s growth rates is Value Line. Dr. Won’s reliance on Value Line’s projected DPS,  
6 BVPS, and EPS growth rates unnecessarily introduces “sole source” bias into his  
7 calculations. By contrast, my DCF analysis uses earnings growth rates from multiple  
8 sources in addition to Value Line, including Zack’s and Yahoo! Finance, both of which  
9 provide consensus estimates from multiple analysts.

10 **Q: Has Staff consistently relied upon projected DPS and BVPS growth rates from Value**  
11 **Line to develop its Two-Step DCF analysis?**

12 A: No, Staff has not. In Ameren Missouri’s Case No. ER-2021-0240, Staff witness Mr. Chari  
13 relied on projected earnings growth rates from Value Line and S&P Global Market  
14 Intelligence as the estimate of short-term growth in his Two-Step DCF analysis.

15 2. Development of the Long-term Growth Rate

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

18 A: Dr. Won relied on the current projected GDP growth rate of 3.90 percent reported by the  
19 CBO as the estimate of long-term growth in his Two-Step DCF model.<sup>80</sup> In calculating  
20 the DCF results from 2019, he has applied that same projected 3.90 percent GDP growth

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<sup>80</sup> Won Direct Testimony, at Schedule SJW-11.



1 rate estimate rather than the projections of 4.10 percent to 4.40 percent that were published  
2 by the CBO at the time of the 2019 Empire Case.

3 Further, Dr. Won does not state the time-period of the GDP growth rate in either  
4 his testimony or schedules, but it appears to be based on a review of the data published by  
5 the CBO for the period of 2027-2032.<sup>81</sup> Therefore, Dr. Won is relying on a long-term  
6 growth rate that only reflects growth for a five-year period. Furthermore, the CBO has  
7 advised that the forecasts should be used with caution considering the uncertainty involved  
8 in the forecasting process:

9 The current projections are subject to *an unusually high degree of*  
10 *uncertainty*, which stems from the *ongoing pandemic and other world*  
11 *events*. The agency develops its projections so that they fall in the middle of  
12 the range of likely outcomes, given the baseline assumptions about federal  
13 tax and spending policies, while recognizing that actual outcomes will  
14 typically differ to some degree from any such projections [emphasis  
15 added].<sup>82</sup>

16 **Q: Do you agree with Dr. Won’s reliance on a May 2022 estimate of 3.90 percent as the**  
17 **GDP growth rate in recalculating the 2019 DCF results for Empire District?**

18 A: No, I do not. Staff filed a GDP growth in that case of 4.10 percent to 4.40 percent, while  
19 my own analysis indicates a growth rate of 5.53 percent. Dr. Won thereby underestimates  
20 the cost of equity for the period in which the Companies’ rates will be set which reflects  
21 high inflation, interest rate increases, and likely increases in dividend yields. In addition,  
22 Dr. Won’s projected GDP growth rate of 3.90 percent is 232 basis points below the long-  
23 term projected GDP growth rate that I estimate at 6.22 percent, which considers long-term

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<sup>81</sup> Congressional Budget Office, An Update to the Budget and Economic Outlook: 2022 to 2032, <https://www.cbo.gov/system/files/2022-05/57950-Outlook.pdf> May 2022. Table 2-1.

<sup>82</sup> *Id.*, at 16.

1 historical growth in real GDP as reported by the Bureau of Economic Analysis (“BEA”)  
2 from 1929 to 2021 and projected inflation rates from Blue Chip Financial Forecasts and  
3 the Energy Information Administration (“EIA”).<sup>83</sup> As shown in Schedule AEB-R9, using  
4 these more appropriate growth rates would indicate an increase in ROE of 51 to 82 basis  
5 points above 2019 DCF results when also updating the 2022 DCF results to reflect the  
6 current long-term projected GDP growth rate of 6.22 percent. Therefore, it is likely that  
7 Dr. Won’s estimate of projected GDP growth understates a reasonable expectation of long-  
8 term economic growth.

9 3. Misapplication of FERC’s Two-Step DCF Analysis

10 **Q: Does Dr. Won’s Two-Step DCF analysis follow FERC’s current methodology?**

11 A: No, it does not. Dr. Won references FERC’s ROE methodology from Opinion No. 569,  
12 issued in November 2019, as support for his use of a short-term and long-term growth rate  
13 in his Two-Step DCF analysis.<sup>84</sup> Dr. Won’s methodology, however, is not consistent with  
14 FERC’s most recent determination in Opinion No. 569-A, issued in May 2020. In addition  
15 to changing its overall methodology for setting the ROE to rely on an equal weighting of  
16 the DCF, CAPM and Risk Premium methodologies, FERC also adjusted its application of  
17 the two-stage DCF model in Opinion No. 569-A. The following revisions that were  
18 specified by FERC were not applied by Dr. Won in his Two-Step DCF model:

- 19       ▪ FERC has consistently relied on earnings growth rates from International  
20       Brokers’ Estimate System (“I/B/E/S”) (which are consistent with those

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<sup>83</sup> Schedule AEB-R10 GDP Growth

<sup>84</sup> Won Direct Testimony, at 3.

1 reported on First Call / Yahoo! Finance), not Value Line, as Dr. Won has  
2 used in his Two-Step DCF analysis.

3       ▪ FERC relies on six months of high and low stock prices for the proxy group  
4 companies to compute the dividend yield, not the three months of stock  
5 price data that Dr. Won has relied upon.

6       ▪ FERC uses IHS Global Insights, the Energy Information Administration,  
7 and the Social Security Administration as the source of its projected GDP  
8 growth rate estimate, rather than the CBO upon which Dr. Won has relied  
9 in his Two-Step DCF analysis.

10       ▪ Finally, FERC excludes high and low outliers from the results of the DCF,  
11 CAPM and Risk Premium methodologies. Dr. Won has not indicated  
12 whether he has excluded outliers and, if so, how that determination was  
13 made.

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

17 **A:** No. The FERC has recognized that exclusive reliance on the results of the DCF model is  
18 not appropriate based on recent market conditions. Therefore, Dr. Won’s reliance on  
19 FERC’s DCF methodology, without recognizing that FERC is only giving this  
20 methodology one third to one half of the weight in its ROE analysis, is not appropriate. As  
21 discussed in Opinion No. 569-A, in prior electric transmission ROE cases, FERC sought  
22 to depart from its prior approach of relying exclusively on the DCF model because it was  
23 less confident that the midpoint of its zone of reasonableness reflected an ROE that would  
24 meet the *Hope* and *Bluefield* standards as a result of “anomalous capital market conditions”

1 and bond yields that were at historic lows.<sup>85</sup> Therefore, FERC determined that it would  
2 rely on multiple models, weighting the results of the DCF, CAPM and Risk Premium  
3 models equally in electric transmission cases, and the DCF and the CAPM equally in  
4 natural gas pipeline cases.<sup>86</sup>

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

7 A: As shown in Schedule AEB-R9 Adj Staff DCF, if Dr. Won had followed FERC's  
8 methodology in his Two-Step DCF analysis, using the FERC approach to GDP growth, the  
9 range of reasonableness for his proxy group would be from 7.23 percent to 9.51 percent,  
10 with a midpoint of 8.94 percent and a median of 9.72 percent. While 8.94 percent and 9.72  
11 percent are below reasonable estimates of the cost of equity for Evergy Missouri Metro  
12 and Evergy Missouri West, it is important to view the FERC DCF methodology in the  
13 context of FERC's overall methodology. DCF estimates of 8.94 percent to 9.72 percent  
14 would receive no more than one-third weight under the methodology adopted in FERC  
15 Opinion 569-A. In addition, Dr. Won's comparative DCF analysis to the 2019 Empire Case  
16 understates the magnitude of the increase in the cost of equity by failing to adhere to  
17 FERC's DCF approach.

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<sup>85</sup> FERC Opinion No. 569-A, Para. 4 (May 21, 2020).

<sup>86</sup> FERC Policy Statement on Determining Return on Equity for Natural Gas and Oil Pipelines at 17 (May 2020).

1 **Q: How do the changes that you made to Dr. Won’s Two-Step DCF analysis affect the**  
 2 **results of his comparison between his current Two-Step DCF results and the results**  
 3 **as of 2019?**

4 A: As shown in Figure 9, in each case the DCF results increased from 2019 to 2022. For  
 5 example, if Dr. Won had relied on the correct specification of FERC’s Two-Step DCF  
 6 analysis, his DCF results would have increased between 105 and 226 basis points from a  
 7 midpoint of 7.89 percent to 8.94 percent, or a median of 7.46 percent to 9.72 percent. As  
 8 a result, making reasonable adjustments to Dr. Won’s Two-Step DCF analysis results in  
 9 the conclusion that the cost of equity has increased since Empire District’s 2019 rate case.

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

	<b>2022 Proxy Group Mean</b>	<b>2019 Proxy Group Mean</b>	<b>Difference (2022 – 2019)</b>
As Filed	8.18%	7.80%	0.37%
Adjusted for Dr. Won’s Projected EPS Growth Only	8.62%	7.53%	1.09%
Bulkley projected GDP growth rate as the long-term growth rate and 4.10%-4.40% for the 2019 GDP growth rate	8.65%	7.83%-7.89%	0.76%-0.82%
FERC Two-Step DCF (Median)	Midpoint: 8.94%  Median: 9.72%	Midpoint: 7.89%  Median: 7.46%	1.05%-2.26%

11  
 12 4. Adjustment to Empire District’s 2019 Authorized ROE

13 **Q: How does Dr. Won attempt to reconcile his Two-Step DCF model results with his**  
 14 **recommended ROE?**

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

1 compares the DCF results in Empire District’s 2019 rate case, which is itself a comparison  
2 to the 2017 Spire Case, and his DCF results in this case. Dr. Won suggests that the  
3 authorized ROE that was approved by the Commission can be interpreted as its perspective  
4 on the relationship between the cost of equity and the ROE. Based on that unfounded  
5 assumption, Dr. Won suggests that, as long as that relationship has not changed, it is  
6 appropriate to rely on a comparison of his DCF results from 2019 to his current DCF results  
7 and to adjust the authorized ROE from 2019 to reflect changes in the cost of equity.<sup>87</sup>

8 **Q: Do you agree with Dr. Won on this point?**

9 A: No, I do not. As Dr. Won notes in his testimony, we are experiencing a “rapidly changing  
10 economic outlook.”<sup>88</sup> Applying a benchmarking analysis that assumes that all conditions  
11 are held constant but for the inputs to a Two Step DCF analysis when comparing the ROEs  
12 across different companies and different time periods is oversimplified and does not take  
13 into account several other relevant variables. Such a comparison is not appropriate. This  
14 is particularly true given the capital markets changes since 2019, as well as the different  
15 risk profiles for Evergy Missouri Metro and Evergy Missouri West compared to Empire  
16 District Electric Company.

17 **Q: Did Staff rely on a Two-Step DCF analysis in the 2019 Empire Case or the 2017 Spire**  
18 **Case?**

19 A: No. Staff performed a Constant Growth DCF analysis in the 2017 Spire Case, as well as  
20 the 2019 Empire Case.

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<sup>87</sup> SJW-d13.

<sup>88</sup> Won Direct Testimony, at 32.

1 **Q: Did the Commission rely on the Constant Growth DCF results calculated by Staff in**  
2 **the determination of the authorized ROE in the 2017 Spire Case or the 2019 Empire**  
3 **Case?**

4 A: No. In the 2017 Spire Case, the Commission did not rely on the model results developed  
5 by the ROE witnesses in the case but instead considered the recommendations presented  
6 which ranged from 9.2 percent to 10.35 percent. In addition, the Commission considered  
7 recently authorized ROEs, capital market conditions including economic growth and  
8 anticipated increases in short-term interest rates by the Federal Reserve, and the business  
9 and financial risks of the company.<sup>89</sup> Based on these considerations, the Commission  
10 awarded Spire Missouri an authorized ROE of 9.80 percent. In the 2019 Empire Case, the  
11 Commission found the Staff and OPC recommendation of 9.25 percent ROE to be  
12 appropriate.<sup>90</sup> However, the 9.25 percent ROE recommendation was not based on the  
13 Constant Growth DCF analysis presented by either Staff or the OPC witnesses.

14 **Q: What is your response to Dr. Won's use of the ROE set in the 2019 Empire Case to**  
15 **set his ROE recommendation for Evergy Missouri Metro and Evergy Missouri West?**

16 A: Dr. Won's use of the 2019 Empire Case to estimate the ROE for the Companies is not a  
17 meaningful indicator of the investor required return on equity. In reviewing the 2017 Spire  
18 Case, on which the 2019 Empire Case is based, it is clear that the Commission considered  
19 an approach that was developed by Staff that was very similar to the comparative

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<sup>89</sup> *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.

<sup>90</sup> *In the Matter of The Empire District Electric Company's Request for Authority to File Tariffs Increasing Rates for Electric Service Provided to Customers in its Missouri Service Area*, File No. ER-2019-0374. Amended Report and Order (July 23, 2020), at 38.

1 methodology relied on by Dr. Won. There is no evidence in that record that supports Dr.  
2 Won's theory that the Commission has established any relationship between the results  
3 from Staff's DCF model in the 2017 Spire Case and the ROE that was authorized. In fact,  
4 the Commission noted that Staff witness Murray's recommendation of 9.5 percent (which  
5 was substantially higher than his DCF results of 6.90 percent to 7.70 percent) was too low  
6 because Mr. Murray relied on Commission decisions that had test years in 2014 and 2015  
7 and did not consider the improving economy and the expectation that the Federal Reserve  
8 would increase short-term interest rates.<sup>91</sup> Dr. Won's analysis presented in this case to  
9 estimate the ROE for the Companies suffers from the same deficiencies that Commission  
10 outlined in the 2017 Spire Case. Dr. Won is also comparing capital market conditions  
11 today to those that existed in 2019 for a Commission decision that had a test year which  
12 was trued-up through March 2019. Dr. Won also failed to consider macroeconomic  
13 conditions including that the economy is entering a period of sustained economic growth,  
14 rising long-term interest rates, and currently high inflation. Using the same approach that  
15 the Commission rejected in the 2017 Spire Case, Dr. Won suggests, without support, that  
16 there is a relationship between the Commission authorized ROE and Staff's estimate of the  
17 cost of equity in order to justify his benchmarking methodology rather than address the  
18 unreasonably low results derived from his Two-Step DCF model.

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<sup>91</sup> *Id.*, at 30-31.



1 **Q: Please summarize your conclusions regarding the analyses that Dr. Won uses to**  
2 **support his recommended ROE of 9.62 percent.**

3 A: First, it is important to recognize that Dr. Won's Two-Step DCF model did not result in  
4 any estimates that he relied on to develop his recommended ROE. Further, when  
5 benchmarked against recently authorized ROEs, it is clear that the results of Dr. Won's  
6 Two-Step DCF model do not meet the *Hope* and *Bluefield* principles, because there are no  
7 instances in recently authorized ROEs where a regulatory commission has determined that  
8 the cost of equity for a vertically-integrated electric utility is 8.18 percent, as suggested by  
9 Dr. Won's model.

10 Second, I do not agree with Dr. Won's conclusion that the cost of equity has  
11 increased by only 37 basis points since the 2019 Empire Case. As shown in Figure 9,  
12 above, when reasonable adjustments are made to Dr. Won's Two-Step DCF analysis, such  
13 as relying on earnings growth rates as the estimate of short-term growth or calculating the  
14 Two-Step DCF model as specified by the FERC, the DCF results have increased by 105 to  
15 226 basis points since Empire District's 2019 rate case. Applying this change to the ROE  
16 that was determined in the 2019 Empire Case would result in an ROE of 10.30 percent to  
17 11.51 percent for the Companies.

18 Third, while Dr. Won relies on FERC precedent to support his DCF methodology,  
19 his analysis is not consistent with FERC's current approach for calculating the DCF  
20 methodology. In addition, by relying entirely on his DCF result, he has ignored the FERC's  
21 broader conclusion that it is no longer appropriate to rely only on the DCF model.

22 Regarding the benchmarking analysis performed using the 2019 Empire Case, I  
23 conclude that this analysis is not at all meaningful. Moreover, it is based on the analysis

1 that Staff presented to the Commission in the 2017 Spire Case and that was rejected by the  
2 Commission.

3 Consistent with FERC’s recent determinations in Opinion No. 569-A, it is  
4 important to give weight to the results of many financial models to estimate the cost of  
5 equity for the Companies. As shown in Figure 3, the range of equity-weighted authorized  
6 returns for vertically-integrated electric utilities is very broad, which makes it important to  
7 recognize, as the Commission did in the 2019 Empire Case, that a simple review of returns  
8 from historical periods is insufficient without consideration of the current market  
9 conditions.

#### 10 **B. Capital Asset Pricing Model**

11 **Q: Please summarize Dr. Won’s application of the CAPM.**

12 A: Dr. Won states that he develops the CAPM as a test of the reasonableness of his DCF  
13 results.<sup>92</sup> Dr. Won’s CAPM analysis uses a risk-free rate based on the average yield on the  
14 30-year Treasury bond for the three months ending March 31, 2022, Value Line Beta  
15 coefficients for the electric proxy group, and four measures of the market risk premium  
16 (“MRP”). The first two estimates of the MRP are the long-term geometric and arithmetic  
17 average MRPs of 4.61 percent and 6.03 percent, respectively, calculated as the difference  
18 between the return on large company stocks and long-term government bonds from 1926  
19 to 2021.<sup>93</sup> Similarly, the second two estimates of the MRP are the long-term geometric and  
20 arithmetic average MRPs of 6.24 percent and 6.71 percent, respectively, but these estimates

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<sup>92</sup> Won Direct Testimony, at 25.

<sup>93</sup> SJW-d14.

1 of the MRP are calculated as the difference between the return on the S&P 500 and long-  
2 term government bonds from 1928 to 2021.<sup>94</sup> The results of Dr. Won's CAPM analyses  
3 range from 5.83 percent to 8.62 percent. Dr. Won concludes that the results of his CAPM  
4 analysis support the range of results produced by his DCF analysis.<sup>95</sup>

5 **Q: Does Dr. Won rely on his CAPM analysis to establish his recommended ROE for**  
6 **Evergy Missouri Metro and Evergy Missouri West?**

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

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

11 A: No. The high-end of each of the ranges is below any authorized ROE for the vast majority  
12 of vertically-integrated electric utility companies over the past 40 years.<sup>96</sup> As such, Dr.  
13 Won's CAPM results do not meet the comparable return standard of *Hope* and *Bluefield*.

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

15 A: Dr. Won relies on a current risk-free rate of 2.25 percent, which was the three-month  
16 average yield on the 30-year Treasury bond as of March 31, 2022.

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<sup>94</sup> Won Direct Testimony, at 29.

<sup>95</sup> Won Direct Testimony, at 29.

<sup>96</sup> S&P Capital IQ Pro.

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

2 A: No. My primary concern with Dr. Won's historical risk-free rate is that the estimation of  
3 the cost of equity is intended to be a forward-looking analysis. As discussed in Section VI,  
4 investors expect interest rates to increase considerably over the near term amidst a high  
5 period of inflation. For example, according to Blue Chip, financial markets are expecting  
6 interest rates on 30-year government bonds to increase to 3.48 percent over the third quarter  
7 of 2022 through the third quarter of 2023, and to approximately 3.80 percent during the  
8 period from 2024-2028.<sup>97</sup> As equity investors consider their return requirements, they must  
9 factor in expectations for higher interest rates on government bonds. Dr. Won's exclusive  
10 reliance on current government bond yields does not reflect the market's expectations  
11 regarding interest rates. Since interest rates are expected to increase, it would be more  
12 appropriate to consider a CAPM analysis which relies on projected yields on the 30-year  
13 Treasury Bond which better reflect capital market conditions during the period that the  
14 Companies' rates will be in effect.

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

16 A: Dr. Won estimates a MRP range of 4.61 percent to 6.71 percent using four separate  
17 estimates of the historical MRP. The first two estimates of the MRP are the long-term  
18 geometric and arithmetic average MRPs of 4.61 percent and 6.03 percent, respectively,  
19 calculated as the difference between the return on large company stocks and long-term  
20 government bonds from 1926 to 2021.<sup>98</sup> Similarly, the second two estimates of the MRP

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<sup>97</sup> Blue Chip Financial Forecasts, Vol. 41, No 6, June 1, 2022, at 2 and 14.

<sup>98</sup> SJW-d14.

1 are the long-term geometric and arithmetic average MRPs of 5.13 percent and 6.71 percent,  
2 respectively, but these estimates of the MRP are calculated as the difference between the  
3 return on the S&P 500 and long-term government bonds from 1928 to 2021.<sup>99</sup>

4 **Q: Why do you disagree with Dr. Won's estimated MRP range of 4.61 percent to 6.71**  
5 **percent?**

6 A: Because Dr. Won does not rely on his CAPM methodology, which demonstrates that his  
7 assumptions are unreasonable, I do not address in detail the concerns I have for the  
8 methodology that Dr. Won used to estimate the MRP. Further, many of the assumptions  
9 Dr. Won uses to estimate his MRP were also relied upon by OPC witness Murray and are  
10 addressed in my response to his direct testimony. However, it is important to note a  
11 practical concern I have with the range of MRPs relied on by Dr. Won. In each of the four  
12 MRP scenarios Dr. Won has relied on a long-term historical average of the MRP.  
13 However, given the current low yields on Treasury bonds, and the inverse relationship  
14 between interest rates and the MRP that is shown in the Bond Yield Plus Risk Premium  
15 analysis that I presented in Direct Testimony, Dr. Won's use of a historical MRP will  
16 understate the MRP in the current market environment. For example, the historical  
17 income-only return on government bonds over the period 1926 to 2021 (which is the same  
18 period Dr. Won used to estimate two of his estimates of the MRP) has been approximately  
19 4.91 percent,<sup>100</sup> while the 30-day average risk-free rate on long-term government bonds as  
20 of June 15, 2022 is 3.12 percent. Because interest rates on long-term government bonds

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<sup>99</sup> SJW-d14.

<sup>100</sup> Duff & Phelps, Valuation Handbook: Guide to Cost of Capital, 2021.

1 are well below the historical average of 4.91 percent, the inverse relationship between  
2 interest rates and the MRP implies that the MRP should be well above the long-term  
3 historical averages of 4.61 percent to 6.71 percent that Dr. Won calculates. Therefore, Dr.  
4 Won's incorrect use of the historical MRP given current market conditions is the primary  
5 reason his CAPM analysis produced estimates of the cost of equity that are below the vast  
6 majority of authorized ROE for a vertically-integrated electric utility in the last 40 years.

7 **Q: Does Dr. Won compare the results of his CAPM analysis to Staff's CAPM analysis in**  
8 **the 2019 Empire Case?**

9 A: No, he does not. To develop his adjustment to the ROE authorized in the 2019 Empire  
10 Case, Dr. Won only compares the results of his 2022 and 2019 Two-Step DCF analysis.  
11 Dr. Won does not consider the changes in the CAPM analysis between 2019 and 2022.  
12 However, Staff witness Chari in the 2019 Empire Case calculated a CAPM result of 4.63  
13 percent using the geometric average historical MRP and 5.43 percent using the arithmetic  
14 average historical MRP for the Electric Proxy Group.<sup>101</sup> In the current proceeding for  
15 Evergy Missouri Metro and Evergy Missouri West, Dr. Won estimated a proxy group  
16 average CAPM range of 6.24 percent to 8.07 percent relying on the arithmetic and  
17 geometric average historical MRP range of 4.61 percent to 6.71 percent.<sup>102</sup>

18 **Q: What does this comparison suggest?**

19 A: While I do not believe the authorized ROE in this case should be determined on a  
20 comparative basis with prior ROE determinations, had Dr. Won compared the CAPM

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<sup>101</sup> Case No. ER-2019-0374, Staff Cost of Service Report, January 15, 2020, at 17.

<sup>102</sup> SJW-d14.

1 results in the current case to the 2019 Empire Case, he would have concluded that the cost  
2 of equity has increased by 161 to 264 basis points since 2019.

3 **C. Rule of Thumb Methodology**

4 **Q: Please summarize Dr. Won’s “Rule of Thumb” analysis.**

5 A: The “Rule of Thumb” methodology presented by Dr. Won is a form of the risk premium  
6 methodology that adds an average utility bond yield to an estimate of the market risk  
7 premium. In this approach, Dr. Won relies on the three-month average yield on the A and  
8 Baa rated long-term utility bonds that had average yields of 3.66 percent and 3.93 percent,  
9 respectively, and to that added a risk premium range of 3.50 to 5.50 percent. This results  
10 in a range of returns from 7.16 percent to 8.96 percent.<sup>103</sup>

11 **Q: Do you agree with this methodology?**

12 A: I agree that it is generally appropriate to rely on properly-specified risk premium  
13 methodologies. However, Dr. Won appears to have changed the assumptions used in the  
14 “Rule of Thumb” from his recent prior testimony. This unsupported change has the effect  
15 of lowering the ROE that results from his risk premium approach. Specifically, Dr. Won  
16 recently filed testimony in Case No. WR-2020-0334 for Missouri-American Water  
17 Company (“MAWC”) on November 24, 2020 and indicated that the estimated MRP range  
18 for the “Rule of Thumb” was 4.00 percent to 6.00 percent.<sup>104</sup> For Evergy Missouri Metro  
19 and Evergy Missouri West, Dr. Won is recommending a range for the MRP of 3.50 percent

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<sup>103</sup> Won Direct Testimony, at 29.

<sup>104</sup> Case No. WR-2020-0344, Staff Cost of Service Report, November 2020, at 27.

1 to 5.50 percent, lowering his estimated MRP range for the “Rule of Thumb” analysis by  
2 50 basis points.

3 **Q: Is it reasonable to expect that the MRP would change significantly over time?**

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

7 **Q: Did other assumptions in his Rule of Thumb calculation change?**

8 A: Yes. The yields on the Moody’s A-rated and Baa-rated utility bonds moved from 3.67  
9 percent and 3.94 percent, respectively, for Q1 2022 to 4.76 percent and 5.10 percent,  
10 respectively, based on a 30-day average as of June 15, 2022. This was an increase of 109-  
11 116 basis points between just the time he filed his testimony in this case and current market  
12 rates. The difference between market rates during the Empire 2019 proceeding and current  
13 rates indicates a further disparity, of 136-137 basis points between Q4 2019 and 30-day A  
14 and Baa Moody’s rates.

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

17 A: If Dr. Won had relied on the MRP range of 4.00 percent to 6.00 percent from his testimony  
18 in the case for MAWC, the results of his “Rule of Thumb” methodology would have been  
19 of 7.66 percent to 9.46 percent.



1 **Q: Do these corrected results support Dr. Won’s Two-Step DCF analysis?**

2 A: No, they do not. Comparing the corrected results discussed above to Dr. Won’s Two-  
3 Growth DCF result range of 7.40 percent of 8.96 percent demonstrates that the Rule of  
4 Thumb approach supports a higher cost of equity and thus does not support his Two-Step  
5 DCF results.

6 **Q: Do you have any other concerns with Dr. Won’s “Rule of Thumb” analysis?**

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

13 **D. Authorized Returns in Other Jurisdictions**

14 **Q: Please summarize Dr. Won’s analysis of authorized returns in other jurisdictions.**

15 A: Dr. Won summarizes the authorized returns for all rate cases, fully litigated rate cases only  
16 and settled rate cases only for electric and natural gas distribution companies in other  
17 jurisdictions from 2010 to May 2, 2022.<sup>105</sup> Dr. Won’s data indicate that the average  
18 authorized ROE for electric utilities in both fully litigated and settled proceedings has been  
19 in the range of 9.35 percent to 10.37 percent over this period.

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<sup>105</sup> SJW-d17.

1 **Q: What are your conclusions about these authorized returns?**

2 A: Dr. Won's analysis is flawed in that it he is considering authorized ROEs for utilities that  
3 are not risk-comparable to the Companies. Considering the authorized ROEs for a risk  
4 comparable group of companies, vertically integrated electric utilities, Dr. Won's  
5 recommended ROE of 9.62 percent is 21 basis points below the average authorized ROE  
6 over the period that he analyzed, from 2010-2022 of 9.83 percent.<sup>106</sup>

7 Additionally, as shown in Figure 3, Dr. Won's recommendation is towards the low  
8 end of the equity-weighted authorized ROEs for vertically-integrated electric utilities since  
9 2018. As noted above, 149 of the 173 vertically-integrated electric utility authorized  
10 equity-weighted ROEs awarded since 2018 were greater than Dr. Won's recommendation  
11 of 4.81 percent.<sup>107</sup> As noted previously, reviewing the authorized ROEs in 2022, there is  
12 only one fully litigated decision for a vertically-integrated electric utility, at 9.50 percent.  
13 This is higher than the average reported by Dr. Won but is an insufficient sample size from  
14 which to draw any meaningful conclusions.

15 **Q: Has Dr. Won provided any evidence to suggest that Evergy Missouri Metro and**  
16 **Evergy Missouri West are below-average risk utilities?**

17 A: No. Dr. Won has presented no evidence regarding the relative risk of the Companies and  
18 other electric utilities across the U.S., or his proxy group companies.

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<sup>106</sup> Source: S&P Capital IQ. 2022 data as of June 15, 2022 and excludes ROE formula states (Illinois and Vermont).

<sup>107</sup> Source: S&P Capital IQ. Data through June 15, 2022. Chart excludes jurisdictions where the ROE is set by a formula (Illinois and Vermont) and zero-cost states (jurisdictions that include zero-cost items in the capital structure: Arkansas, Indiana, Michigan, and Florida). Formula rates 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.

1 **Q: Is it important to conduct an analysis of the relative risk of Evergy Missouri Metro**  
2 **and Evergy Missouri West and the proxy companies?**

3 A: Yes, it is, and the Commission has specifically considered relative risk in assessing the  
4 sufficiency of ROE recommendations. In its decision in the 2017 Spire Case, the  
5 Commission concluded that the ROE recommendation of 9.20 percent proposed by the  
6 OPC was too low because the OPC did not consider the fact that Spire Missouri faced  
7 increased business risk when compared to OPC's proxy group.<sup>108</sup>

8 **Q: Have you conducted a risk analysis for Evergy Missouri Metro and Evergy Missouri**  
9 **West?**

10 A: Yes, as discussed in my Direct Testimony, I considered the regulatory risks of the  
11 Companies, capital expenditure requirements, planning investments in renewable  
12 generation assets, regulatory environment, generation ownership risks, and the Sibley coal  
13 plant retirement risks as compared to the companies in the proxy group. I concluded that  
14 Evergy Missouri Metro and Evergy Missouri West have greater business risk than the  
15 proxy group.<sup>109</sup> Based on this analysis, authorizing an ROE that is below the average  
16 authorized ROE for electric utilities since 2018, would not sufficiently compensate  
17 investors for the added risk faced by the Companies.

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<sup>108</sup> *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.

<sup>109</sup> Direct Testimony of Ann E. Bulkley, at 53-85.

1                   **E. Conclusions**

2   **Q:    What is your response to the approach used by Dr. Won to develop his recommended**  
3   **ROE for Evergy Missouri Metro and Evergy Missouri West?**

4   **A:**    While I have discussed each of Dr. Won’s models, he discards the cost of equity estimates  
5           produced by the DCF and CAPM analyses he has prepared. His recommendation is based  
6           entirely on an analysis that compares the DCF results at the time of the 2019 Empire Case  
7           to his current DCF results as a basis for adjusting the ROE that was authorized in the 2019  
8           Empire Case to recommend an ROE for the Companies in the current proceeding. The  
9           Commission has already considered and rejected this approach for setting the ROE in the  
10          2017 Spire Case. In that proceeding, the Commission clearly identified the flaws in Staff’s  
11          methodology and Dr. Won has done nothing in his analysis in this case to correct those  
12          flaws.    Therefore, it would be appropriate to place no weight on Dr. Won’s  
13          recommendations.

14                 Even if Dr. Won’s Two-Step DCF comparison is considered, when reasonable  
15                 adjustments are made to Dr. Won’s Two-Step DCF analysis, his DCF results show that the  
16                 cost of equity has significantly increased since the 2019 Empire Case. A more appropriate  
17                 comparison of Dr. Won’s DCF and CAPM analyses to those presented by Staff in Empire  
18                 District’s 2019 rate case also shows that the cost of equity has increased since 2019. While  
19                 I do not agree with the “comparative analysis” that Dr. Won has developed to adjust the  
20                 authorized ROE of 9.25 percent from Empire District’s 2019 rate case, reasonable  
21                 adjustments to Dr. Won’s analyses show that the cost of equity has increased and is within  
22                 the range of 9.90 to 10.50 percent proposed by the Companies.

1 **VIII. OPC WITNESS MR. MURRAY’S ROE ANALYSIS**

2 **Q: Please summarize Mr. Murray’s ROE analyses.**

3 A: Mr. Murray develops several cost of equity analyses including the multi-stage DCF and  
 4 the CAPM. He relies on a proxy group of comparable companies and separately calculates  
 5 the ROE for Evergy. In addition, Mr. Murray develops a Rule of Thumb approach and  
 6 considers recently authorized ROEs. As shown in Figure 10 the results of Mr. Murray’s  
 7 ROE estimation methodologies range from 7.00 percent to 7.76 percent.

8 **Figure 10: Results of Mr. Murray’s ROE Estimation Methodologies**

Methodology	Range
Multi-Stage DCF (Evergy, 3.5% long-term growth rate) <sup>110</sup>	7.75%-7.76%
Multi-Stage DCF (Evergy, 3.0% long-term growth rate) <sup>111</sup>	7.60%-7.61%
Multi-Stage DCF (Evergy, 2.5% long-term growth rate) <sup>112</sup>	7.45%
Multi-Stage DCF (Electric Utility Proxy Group, 3% long-term <sup>113</sup> growth rate)	Average All: 7.34% Average Mostly Regulated: 7.23%      Average Average Common Companies: 7.00%
CAPM <sup>114</sup>	Evergy: 7.18%-7.50% Average All: 7.41%-7.75% Average Mostly Regulated: 7.18%-7.50% Average Average Common Companies: 7.29%-7.62%
Rule of Thumb <sup>115</sup>	7.60%

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<sup>110</sup> Direct Testimony of David Murray, at DM-D-2-1 and DM-D-2-2.

<sup>111</sup> Direct Testimony of David Murray, at DM-D-2-1 and DM-D-2-2.

<sup>112</sup> Direct Testimony of David Murray, at DM-D-2-1 and DM-D-2-2.

<sup>113</sup> Direct Testimony of David Murray, at 24 and DM-D-4-1.

<sup>114</sup> Direct Testimony of David Murray, at DM-D-6-1 through DM-D-6-3.

<sup>115</sup> Direct Testimony of David Murray, at 29-30.

1 **Q: Is Mr. Murray’s ROE recommendation based on the results of his ROE models?**

2 A: As a practical matter, not at all. Mr. Murray establishes a range that he suggests the  
3 Commission consider in this case of 8.50 percent to 9.50 percent, however he provides no  
4 basis for that range in his testimony or workpapers. Within that range, Mr. Murray’s  
5 recommendation of an ROE of 9.00 percent is based on the Commission’s acceptance of  
6 his proposed 48 percent equity ratio.<sup>116</sup> While Mr. Murray suggests that he considers his  
7 cost of equity (“COE”) estimates, the results of Mr. Murray’s models do not support his  
8 recommended range. Mr. Murray’s ROE recommendation of 9.00 percent is 150 to 200  
9 basis points above the COE range that he determines based on the results of his models of  
10 7.00 percent to 7.50 percent.<sup>117</sup> Mr. Murray states that his recommendation is also based  
11 on consideration of the Commission’s authorized ROE for Empire District Electric, the  
12 authorized ROE for Evergy’s Kansas electric utility operations, capital market conditions,  
13 and an approximation of the “Zone of Reasonableness” that the Commission would  
14 consider.

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

16 A: Mr. Murray uses his essentially discarded Multi-Stage DCF analysis to conclude that the  
17 cost of equity is low and, therefore, the Companies’ previously authorized ROEs should be  
18 reduced.<sup>118</sup> Thus, Mr. Murray recommends an ROE of 9.00 percent for Evergy Missouri  
19 Metro and Evergy Missouri West, which is lower than the Companies’ last authorized ROE

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<sup>116</sup> Direct Testimony of David Murray, at 2.

<sup>117</sup> Direct Testimony of David Murray, at 2.

<sup>118</sup> Direct Testimony of David Murray, at 6.

1 of 9.50 percent (Case No. ER-2016-0285 and Case No. ER-2014-0370).<sup>119</sup> Having  
2 presented no evidence to support his claim, Mr. Murray is essentially relying on his own  
3 personal opinions that authorized ROEs are greater than the cost of equity in order to claim  
4 that he has considered his model results in his final recommendations. Without this  
5 baseless claim, Mr. Murray cannot ultimately rely on his Multi-Stage DCF analysis due to  
6 the unreasonably low results produced by the model. The irrationality of his claim and  
7 arbitrary nature of the recommendation is, however, readily apparent.

8 **Q: What are your primary conclusions regarding Mr. Murray's analyses and**  
9 **conclusions?**

10 A: While there are many assumptions and methodologies relied on by Mr. Murray, with which  
11 I disagree, and will be discussed in the remainder of my Rebuttal Testimony, it is important  
12 to recognize that, as was the case with Dr. Won, because Mr. Murray's models produce  
13 results that are 124 to 200 basis points below his recommended ROE of 9.00 percent, it is  
14 unreasonable to suggest that he has relied on any of his analyses. Therefore, Mr. Murray's  
15 recommendation is essentially his unsupported personal opinion of what he believes should  
16 be the ROE for the Companies.

17 **A. Proxy Group Composition**

18 **Q: Please summarize the composition of Mr. Murray's proxy group.**

19 A: Mr. Murray relies on a broad proxy group of utilities classified as "regulated and "mostly  
20 regulated" as compiled by Edison Electric Institute ("EEI").<sup>120</sup> In addition, he develops

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<sup>119</sup> Direct Testimony of David Murray, at 6.

<sup>120</sup> Direct Testimony of David Murray, at 23-24.

1 model scenarios that consider the subsets of this broad proxy group that have less than 10  
2 percent of their operations exposed to competitive markets and also the companies that he  
3 has consistently followed in electric rate cases since 2012. The specific companies that  
4 compose these two smaller proxy groups are not disclosed in his testimony.

5 **Q: What is your conclusion regarding Mr. Murray's proxy group for Evergy Missouri**  
6 **Metro and Evergy Missouri West?**

7 A: My primary conclusion is that the composition of the proxy group is not a significant driver  
8 in the development of Mr. Murray's ROE estimation models. While the proxy group relied  
9 upon is broad and includes companies that may be less comparable to Evergy, particularly  
10 those that are only distribution companies, I do not believe that the proxy group is the  
11 primary cause of the differences in our results. Therefore, I have limited my response on  
12 this issue to narrow the issues to those that are causing the unreasonably low ROE results  
13 of Mr. Murray's Multi-Stage DCF and CAPM analyses.

#### 14 **B. Multi-Stage DCF Analysis**

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

16 A: Mr. Murray's Multi-Stage DCF analysis includes three stages, the first two of which have  
17 defined time horizons, while the third assumes cash flows in perpetuity. In the first stage,  
18 Mr. Murray relies on analysts' three- to four-year projected estimates of annual DPS and  
19 EPS. In the final year of the first stage (i.e., 2026), Mr. Murray calculates the estimated  
20 dividend payout ratio based on the analysts' estimated annual DPS and EPS. His second  
21 stage then models an equal percentage change in the dividend payout ratio from the end of  
22 the first stage until the terminal year (i.e., 2036), where Mr. Murray assumes a payout ratio



1 that retains sufficient earnings to ensure each company in his group maintains a perpetual  
2 growth rate of 3.0 percent.<sup>121</sup> Mr. Murray's Multi-Stage DCF results for the proxy group  
3 are 7.23 percent for the companies that Mr. Murray has defined as "mostly regulated" and  
4 7.34 percent for all of the companies included in his electric proxy group.<sup>122</sup>

5 Mr. Murray conducts scenarios on the long-term growth rate in his DCF analysis  
6 for Evergy ranging from 2.5 percent to 3.5 percent. Mr. Murray's Multi-Stage DCF  
7 analysis produces an ROE estimate for Evergy of 7.45 percent to 7.76 percent.<sup>123</sup>

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

9 A: No. The results of Mr. Murray's Multi-Stage DCF analysis are so low as to be  
10 unreasonable and are not reflective of the cost of equity. Not a single regulatory jurisdiction  
11 has authorized an ROE as low as the results of Mr. Murray's Multi-Stage DCF model. The  
12 *Hope* and *Bluefield* decisions, which Mr. Murray acknowledges are standards to be upheld,  
13 require the authorized return to be just and reasonable, as well as comparable to other  
14 returns available to investors in companies with similar risk.<sup>124</sup> Mr. Murray's Multi-Stage  
15 DCF results clearly violate this standard.

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

18 A: Mr. Murray attempts to reconcile the difference between the results of his ROE estimation  
19 models and his recommendation by suggesting that average authorized ROEs have been

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<sup>121</sup> Direct Testimony of David Murray, at 20.

<sup>122</sup> Direct Testimony of David Murray, at DM-D-3-1.

<sup>123</sup> Direct Testimony of David Murray, at DM-D-2-1 and DM-D-2-2.

<sup>124</sup> Direct Testimony of David Murray, at 3.

1 greater than the cost of equity. Therefore, according to Mr. Murray, the results of the  
2 modern financial models must be reconciled with the principles of *Hope* and *Bluefield*,  
3 which require the return to be commensurate to the returns available to investors in assets  
4 of similar risk.<sup>125</sup> Thus, Mr. Murray develops a zone of reasonableness based on recent  
5 authorized returns and prior Commission guidance.

6 **Q: Do you agree with Mr. Murray that authorized ROEs are overstating the cost of**  
7 **equity?**

8 A: No, I do not. Mr. Murray's conclusion relies solely on the assumption that he has  
9 appropriately specified the Multi-Stage DCF model, the result of which he does not use in  
10 setting his recommended ROE. Mr. Murray's specification of and reliance on the Multi-  
11 Stage DCF model to estimate the cost of equity is, however, incorrect for several reasons.  
12 First, as Mr. Murray and I agree, utility share prices are inversely related to interest rates.<sup>126</sup>  
13 As interest rates increase, which is expected over the near term, the share prices of utility  
14 stocks will decline. A decline in share prices will result in an increase in the cost of equity  
15 estimate of the DCF model. Therefore, Mr. Murray's Multi-Stage DCF results are likely  
16 understating the cost of equity during the period that the Companies' rates will be in effect.  
17 Second, Mr. Murray references equity analyst reports as support for the inputs in his Multi-  
18 Stage DCF model such as the long-term growth rate. However, equity analysts' current  
19 views on the valuation of utilities are strongly based on the projections of earnings growth,  
20 which are in turn based in part on the ROEs that are authorized for the operating

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<sup>125</sup> *Ibid.*

<sup>126</sup> Direct Testimony of David Murray, at 8.

1 subsidiaries of the utility. As noted above a decline in the valuation of the company would  
2 result in an increase in the DCF results. Had Mr. Murray assumed a growth rate greater  
3 than his long-term growth rate assumption of 2.5 percent to 3.5 percent, he would have  
4 arrived at a higher estimate of the cost of equity for Evergy. Investors would not pay for  
5 the current valuation of Evergy for a growth rate that is well below the growth rate they  
6 expect.

7 **Q: What are equity analysts' current recommendations regarding electric utility stocks**  
8 **and Evergy, given the current market environment?**

9 A: Since utility share prices are inversely related to interest rates and interest rates are expected  
10 to increase, investors expect utilities to underperform over the near term. Zacks Investment  
11 Research ("Zacks") has specifically ranked the "utility – electric power" industry as 156  
12 out of 251 industries.<sup>127</sup> As Zacks notes, a ranking in the bottom half of the industry  
13 rankings indicates that it expects the electric utility industry to underperform over the next  
14 three to six months.<sup>128</sup> Furthermore, as shown in Figure 11, Zacks' recommendation for  
15 investors is "hold" for Evergy with an average combined Value, Growth, and Momentum  
16 ("VGM") rating of "D". While Zacks has noted that stocks ranked as "Hold" have  
17 historically only slightly underperformed the S&P 500, the combination of the "Hold"  
18 rating with a low VGM rating indicates Zacks expects Evergy to underperform over the  
19 near-term.<sup>129</sup>

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<sup>127</sup> Zacks Investment Research, "Utility – Electric Power Industry Overview," June 27, 2022.

<sup>128</sup> Ibid.

<sup>129</sup> Zacks Investment Research, "The Zacks Rank Guide," 2021.

1 **Figure 11: Zacks' Ranking as of June 2022**

Company	Zacks Recommendation <sup>130</sup>	Zacks Value Growth Momentum ("VGM") Score <sup>131</sup>			
		Value	Growth	Momentum	VGM
Evergy	Hold	C	D	D	D

2  
3 **Q: What is your opinion of the long-term growth rate used in Mr. Murray's Multi-Stage**  
4 **DCF model?**

5 A: Mr. Murray relies on a long-term growth rate range of 2.5 percent to 3.5 percent, which he  
6 notes is based on his review of historical growth rate data from the Moody's electric utility  
7 index, a sample of electric utility companies whose data is available from Value Line and  
8 reports from equity analysts.<sup>132</sup> This long-term growth rate range appears to be similar to  
9 the range relied on by Evercore ISI in the calculation of their Dividend Discount Model  
10 ("DDM") for the regulated utilities covered by the bank.<sup>133</sup> Mr. Murray's long-term growth  
11 rate assumption, however, is not consistent with the stock prices that he relies on to  
12 calculate his Multi-Stage DCF model. In fact, the basis for the current valuation of utilities  
13 is the expectation that utilities will sustain current earnings growth rates for the foreseeable  
14 future. If equity analysts expected the long-term growth rate to decline to a range of 2.5  
15 percent to 3.5 percent, then they would likely reduce their estimated price targets.

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<sup>130</sup> Zacks' Ranking consist of strong buy, buy, hold, sell and strong sell.

<sup>131</sup> 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.

<sup>132</sup> Direct Testimony of David Murray, at 22.

<sup>133</sup> Durgesh Chopra, et al., "Reshuffling the Deck – Changing Ratings," Evercore ISI, April 19, 2020, at 16.

1 **Q: What is the effect of Mr. Murray’s long-term growth rate assumption on his Multi-**  
2 **Stage DCF results?**

3 A: Mr. Murray acknowledged in his testimony on behalf of Staff in Ameren Missouri’s rate  
4 case No. ER-2014-0258 that “[c]ost of equity estimates using multi-stage DCF  
5 methodologies are **extremely sensitive** to the assumed perpetual growth rate”.<sup>134</sup> As I have  
6 demonstrated above, investors expect the long-term growth rate for Mr. Murray’s proxy  
7 group and Evergy to exceed the long-term growth rate range of 2.50 percent to 3.50 percent  
8 that he has relied on for his Multi-Stage DCF model. This is important to note because in  
9 his Multi-Stage DCF analysis, Mr. Murray assumes this low long-term growth rate with  
10 the current prices of Evergy and the companies in his proxy group. This results in an  
11 understated cost of equity estimate. If Mr. Murray were to assume a long-term growth rate  
12 more consistent with current earnings growth projections, he would have obtained a much  
13 higher ROE estimate for Evergy and the proxy group.

14 **Q: Please summarize your conclusions regarding Mr. Murray’s Multi-Stage DCF**  
15 **analysis.**

16 A: Mr. Murray abandons his Multi-Stage DCF analysis due to the unreasonably low results  
17 produced by the model. However, despite his lack of confidence in his own model results,  
18 he asks the Commission to find that it is appropriate to use these results to demonstrate  
19 changes in the cost of equity between time periods and to generally support a lower overall  
20 ROE. It stands to reason that if the results of the model are unreliable and cannot be used  
21 to estimate the ROE, then their results are unreliable for any other attempt to measure the

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<sup>134</sup> File No. ER-2014-0258, Staff Cost of Service Report (December 5, 2014), at 34.

1 cost of equity, including Mr. Murray’s comparisons to historical model results from other  
2 proceedings and his comparison to recently authorized ROEs.

3 Reviewing Mr. Murray’s Multi-Stage Model specification identifies two primary  
4 flaws: 1) the growth rates that Mr. Murray relies on of 2.5 percent to 3.5 percent are  
5 significantly understated based on analysts’ projections, thus depressing the results of his  
6 DCF analysis; and 2) while Mr. Murray acknowledges that share prices are related to  
7 interest rates, he fails to consider the effect of a rising interest rate environment on the  
8 valuations of electric utilities, which also contributes to his unreasonably low DCF results.

### 9 C. Capital Asset Pricing Model

10 **Q: Please summarize Mr. Murray’s application of the CAPM.**

11 A: Mr. Murray develops three separate specifications of the CAPM analysis. The first CAPM  
12 analysis uses a risk-free rate that appears to be based on the average yield on the 20-year  
13 Treasury bond for the three months ending May 31, 2022,<sup>135</sup> recalculated Betas for Evergy  
14 and the electric utility proxy groups, and a MRP of 6.00 percent, which Mr. Murray  
15 contends is “similar to historical spreads and estimates provided by sources, such as Duff  
16 & Phelps”.<sup>136</sup> The second CAPM analysis uses a risk-free rate based on the average yield  
17 on the 30-year Treasury bond for the three months ending May 31, 2022,<sup>137</sup> recalculated  
18 Betas for Betas for Evergy and the electric utility proxy groups, and a MRP of 6.00 percent,

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<sup>135</sup> DM-D-6-1 note for Column 1 cites to the St. Louis Federal Reserve for the GS20 series. The three-month average of the 20-year Treasury yield as of May 31, 2022, based on that series is 2.92 percent, which compares to most closely with Mr. Murray’s estimate of 2.92 percent.

<sup>136</sup> DM-D-6-1 note for Column 3.

<sup>137</sup> DM-D-6-2 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 May 31, 2022, based on that series is 2.94 percent, which compares most closely with Mr. Murray’s estimate of 2.94 percent.

1 which Mr. Murray contends is “similar to historical spreads and estimates provided by  
2 sources, such as Duff & Phelps”.<sup>138</sup> Finally, the third CAPM analysis uses the normalized  
3 risk-free rate reported by Duff and Phelps, recalculated Betas for Evergy and the electric  
4 utility proxy group, and a MRP of 5.50 percent as reported by Duff and Phelps. The results  
5 of Mr. Murray’s CAPM analyses range from 7.18 percent to 7.75 percent.<sup>139</sup> Ultimately,  
6 Mr. Murray concludes that his CAPM analyses support a COE “of around 7.5%.”<sup>140</sup>

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

8 A: While I do not specifically dispute the normalized risk-free rate of 3.00 percent that Mr.  
9 Murray relies on in one of his CAPM analyses, I do not agree with Mr. Murray’s reliance  
10 on the three-month average 20-year and 30-year Treasury Bond yields without  
11 consideration for expectations for interest rates in his remaining CAPM analyses. The cost  
12 of equity is being estimated for the forward-looking period when the Companies’ rates will  
13 be in effect. Therefore, it is equally important that the risk-free rate reflect the expected  
14 risk-free rate during Evergy’s rate period. As discussed in Section VI of my Rebuttal  
15 Testimony, government bond yields are expected to increase over the near term and, in  
16 fact, have consistently increased since November 2021. I believe it is also important to  
17 rely on, as I have in my Direct Testimony, interest rate projections that reflect the views of  
18 economists regarding the interest rates that are expected to prevail during the period that  
19 the Companies’ rates will be in effect.

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<sup>138</sup> DM-D-6-2 note for Column 3.

<sup>139</sup> DM-D-6-1, DM-D-6-2, and DM-D-6-3

<sup>140</sup> Direct Testimony of David Murray, at 29.

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

2 A: Yes. In addition to the yield on the 30-year Treasury bond, Mr. Murray has also relied on  
3 the yield on the 20-year Treasury bonds as the estimate of the risk-free rate. However, in  
4 determining the security most relevant to the application of the CAPM, it is important to  
5 select the term (or maturity) that best matches the life of the underlying investment. As  
6 noted by Morningstar:

7 The traditional thinking regarding the time horizon of the chosen Treasury security  
8 is that it should match the time horizon of whatever is being valued... Note that the horizon  
9 is a function of the investment, not the investor. If an investor plans to hold stock in a  
10 company for only five years, the yield on a five-year Treasury note would not be  
11 appropriate since the company will continue to exist beyond those five years.<sup>141</sup>

12 Because electric, natural gas and water utility assets represent long-duration  
13 investments, it is appropriate to use yields on long-term Treasury bonds as the risk-free  
14 rate component of the CAPM. In my view, the 30-year Treasury bond is the appropriate  
15 security for that purpose. Therefore, I do not agree with Mr. Murray's consideration of the  
16 20-year Treasury bond as the estimate of the risk-free rate in his CAPM analysis.

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

18 A: Mr. Murray calculates raw Beta coefficients for Evergy and the companies in his electric  
19 utility proxy groups using a template provided by S&P Market Intelligence, and then  
20 attempts to adjust those Betas using the Blume formula. The result of that analysis suggests

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<sup>141</sup> Morningstar Inc., Ibbotson SBBI 2013 Valuation Yearbook, at 44.



1 a Beta for Evergy of 0.760 and for the proxy group of 0.760 to 0.802 depending on the  
2 subset of the proxy group considered.<sup>142</sup>

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

5 A: Mr. Murray has relied on Value Line as the source of his Beta coefficients in his CAPM  
6 analysis for many years.<sup>143</sup> Mr. Murray offers no explanation as to why he has decided not  
7 to rely on Value Line in this case and instead to recalculate his own estimates of Beta in  
8 this proceeding. Furthermore, while Mr. Murray indicates that he calculated the Beta  
9 coefficients for his proxy group companies based on Value Line’s approach, the result of  
10 his calculation is a proxy group average Beta of as low as 0.760, which is much lower than  
11 the average of the Value Line Beta coefficients for the proxy group of 0.85 as of June 15,  
12 2022, as shown in Schedule AEB-R4.

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

14 A: Mr. Murray uses two separate MRPs in his CAPM analysis: (a) a MRP of 6.00 percent,  
15 which he contends is “similar to historical spreads and estimates provided by sources, such  
16 as Duff & Phelps”,<sup>144</sup> and (b) a MRP of 5.50 percent, as reported by Duff and Phelps.<sup>145</sup>

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<sup>142</sup> DM-D-6-1, DM-D-6-2, and DM-D-6-3.

<sup>143</sup> Empire District Case No. ER-2019-0374, Direct Testimony of David Murray at 38, Schedules DM-d-7.

<sup>144</sup> DM-D-6-2 note for Column 3.

<sup>145</sup> DM-D-6-3.

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

2 A: Given the current low yields on Treasury bonds, and the inverse relationship between  
3 interest rates and the MRP, and the higher Betas for the proxy group, Mr. Murray's range  
4 of MRPs from 5.50 percent to 6.00 percent is understated. First, from a practical  
5 standpoint, the results of his CAPM analysis are significantly below any return that has  
6 been authorized by any U.S. regulatory jurisdiction in at least 40 years. The primary reason  
7 for the unreasonably low results from Mr. Murray's CAPM is due to his selection of the  
8 MRP. Based on historical data from Duff & Phelps, the market risk premium from 1926-  
9 2020 is 7.25 percent.<sup>146</sup> The historical income-only return on government bonds used to  
10 calculate the historical MRP over the same period has been approximately 4.91 percent,  
11 while the 30-day average risk-free rate on long-term government bonds as of June 15, 2022  
12 is 3.12 percent. Because interest rates on long-term government bonds are below the  
13 historical average of 4.91 percent, the inverse relationship between interest rates and the  
14 MRP implies that the MRP should be well above the long-term historical average of 7.25  
15 percent. The MRP range used by Mr. Murray of 5.50 percent to 6.00 percent suggests that  
16 the expected MRP is currently 125 to 175 basis points lower than the historical average  
17 MRP of 7.25 percent.

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

19 A: Yes. As shown in Figure 12, the implied market returns for the MRPs cited by Mr. Murray  
20 range from 8.50 percent to 8.94 percent. These returns are unreasonably low especially

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<sup>146</sup> 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.

1 when compared to the recent historical returns for large company stocks. As shown in  
2 Figure 13, the actual average market return for large company stocks from 2009 to 2020  
3 (i.e., the period after the Great Recession of 2008-2009) was 15.53 percent, as reported by  
4 Duff & Phelps. Therefore, the range of implied market returns considered by Mr. Murray  
5 of 8.50 percent to 8.94 percent is well below and cannot be reconciled with recent returns  
6 for the market.

7 **Figure 12: Mr. Murray’s Implied Market Returns<sup>147</sup>**

Source	Implied MRP	Risk-Free Rate	Implied Market Return
Historical MRP & 20-year Treasury Bond yield	6.00%	2.92%	8.92%
Historical MRP & 30-year Treasury Bond yield	6.00%	2.94%	8.94%
Duff & Phelps MRP and Normalized Risk-free Rate	5.50%	3.00%	8.50%

8

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<sup>147</sup> Source: DM-D-6-1 through DM-D-6-3.

1 **Figure 13: Duff and Phelps – Total Return for Large Company Stocks – 2009-2020<sup>148</sup>**

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%
<b>Average</b>	<b>15.53%</b>

2

3 **Q: What is your conclusion regarding Mr. Murray’s CAPM analysis?**

4 A: My conclusion is that Mr. Murray’s CAPM results of 7.18 percent to 7.75 percent are not  
5 reasonable estimates of the cost of equity for Evergy and should not be relied upon. Similar  
6 to his Multi-Stage DCF analysis, Mr. Murray’s mis-specification of the CAPM has resulted  
7 in the incorrect conclusion that the cost of equity is well below recently authorized ROEs  
8 for electric utilities. In particular, Mr. Murray’s CAPM analysis fails to take into  
9 consideration the inverse relationship between interest rates and the MRP. This results in:  
10 1) an MRP that is well below the historical MRP using large company stocks (7.25  
11 percent); and 2) an implied market return that is well below the long-term average total  
12 return for large company stocks since 1926, as reported by Duff & Phelps, of 12.16 percent

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<sup>148</sup> Source: Duff and Phelps, Cost of Capital Navigator.

1 and recent market returns for large company stocks since 2009 of 15.61 percent. As such,  
2 the results of Mr. Murray’s CAPM analysis are not representative of the forward-looking  
3 cost of equity for Evergy and thus, I recommend the Commission reject Mr. Murray’s  
4 CAPM analysis.

#### 5 **D. Rule of Thumb Methodology**

6 **Q: Please summarize Mr. Murray’s “Rule of Thumb” analysis.**

7 A: The “Rule of Thumb” methodology that Mr. Murray relies on is another risk premium  
8 methodology. This methodology relies on an estimated MRP of 3.0 percent to 4.0 percent  
9 plus Evergy’s long-term bond yield. However, Mr. Murray selects the low end of the risk  
10 premium range of 3.0 percent because he contends that investors view utilities as bond  
11 “surrogates/substitutes”.<sup>149</sup> Mr. Murray notes that the current yield on Evergy’s long-term  
12 bonds is approximately 4.6 percent, which when combined with the 3.0 percent risk  
13 premium, results in a ROE estimate for Evergy of 7.6 percent.<sup>150</sup> While Mr. Murray  
14 reports the result of this analysis, he has recommended an ROE that is 240 basis points  
15 higher than his Rule of Thumb approach.

16 **Q: Do you agree with this methodology?**

17 A: As discussed in my response to Dr. Won, this specification of the risk premium approach  
18 relies on historical estimates of the MRP and does not take into consideration the effect on  
19 the MRP of current market conditions. There are a number of studies which have shown  
20 that the MRP is inversely related to the level of interest rates. For example, in a March

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<sup>149</sup> Direct Testimony of David Murray, at 29-30.

<sup>150</sup> *Ibid.*

1 1998 article titled *Interest Rate Risk and Utility Risk Premia During 1982-93* in Managerial  
2 and Decision Economics, Dr. S. Keith Berry used a regression approach to analyze the  
3 relationship between authorized returns on equity for regulated utilities and utility bond  
4 yields. The author found that there was an inverse relationship between utility risk premia  
5 and interest rates.<sup>151</sup> Similarly, in a Spring 1986 article in *Financial Management*, Dr.  
6 Robert S. Harris also showed that there was a negative relationship between utility risk  
7 premia and interest rates.<sup>152</sup>

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

#### 14 **E. Conclusions**

15 **Q: Please summarize your conclusions about the way in which Mr. Murray arrives at his**  
16 **recommended ROE for Evergy.**

17 **A:** While I have responded to each of the methodologies presented by Mr. Murray in my  
18 Rebuttal Testimony, it is important to recognize that his own ROE recommendation is not  
19 based on the results of any of the models that he develops. Instead, Mr. Murray's ROE

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<sup>151</sup> 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.

<sup>152</sup> Robert S. Harris, *Using Analysts' Growth Forecasts to Estimate Shareholders Required Rates of Return*, *Financial Management*, Spring 1986, at 66.

1 recommendation is based on an artificial “zone of reasonableness” of 8.50 percent to 9.50  
2 percent. Nothing in Mr. Murray’s testimony supports the range of reasonableness from  
3 which he selects his final ROE recommendation. Mr. Murray states that he has developed  
4 his range based on the Commission’s authorized ROE for Empire District Electric, and the  
5 authorized ROE for Evergy’s Kansas electric utility operations.<sup>153</sup> Notably, none of Mr.  
6 Murray’s ROE estimation models result in ROEs that fall within this established range.  
7 While Mr. Murray discards his ROE analyses for the purposes of setting his recommended  
8 ROE, he asks the Commission to rely on the results of his models to conclude that the cost  
9 of capital for utilities remains low. Further, he suggests that these model results somehow  
10 support his recommended ROE of 9.00 percent which understates the cost of equity for the  
11 Companies. The critical assumptions that I have identified in Mr. Murray’s models that  
12 result in understated results include:

- 13 1. Failure to consider that interest rates are expected to increase, which will  
14 result in a decline in the valuations of electric utilities over the near term;
- 15 2. Reliance on unreasonably low long-term growth rates in the Multi-Stage  
16 DCF analysis, which do not support the current valuations for Evergy or the  
17 companies in his electric utility proxy groups;
- 18 3. Understated MRP estimates in his CAPM and “Rule of Thumb” analyses  
19 that do not reflect the inverse relationship between interest rates and the  
20 MRP.
- 21 4. If Mr. Murray had specified his models appropriately, he would have  
22 concluded that the cost of equity is not lower than the recently authorized

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<sup>153</sup> Direct Testimony of David Murray, at 4.

1 returns for electric utilities. As a result, I do not believe it is reasonable to  
2 rely on Mr. Murray's final recommended ROE.

3 **IX. MECG WITNESS MR. MEYER'S ROE ANALYSIS**

4 **Q: Please summarize the analyses performed by Mr. Meyer and his ROE**  
5 **recommendation.**

6 A: Mr. Meyer does not provide any analytical framework to support the use of a 9.50 percent  
7 ROE in the estimated ROR for the regulatory liability on Sibley. Rather, Mr. Meyers relies  
8 on a comparison of the authorized ROE established in Case No. ER-2018-0146 and the  
9 achieved ROEs for the entirety of Evergy Missouri West and Evergy Missouri Metro over  
10 time to suggest that the return of 9.50 percent is reasonable.

11 **Q: Is Mr. Meyer's ROE analysis a measure of the investor-required return?**

12 A: No. Consistent with the *Hope* and *Bluefield* standards, the Commission has established  
13 ROEs in rate proceedings that are intended to reflect a return that is comparable with the  
14 return on investments of similar risk. That analysis has typically included the evaluation  
15 of market data for a group of companies that are generally risk-comparable to the subject  
16 company to estimate the investor-required return. Mr. Meyers provides no such analysis.  
17 Rather, his review of ROEs is entirely internally focused on how Metro or West have  
18 managed their operations to achieve actual annual returns. This analysis provides no  
19 insight into current market conditions or the investor-required return in the current market.

20 **Q: Does this analysis provide any guidance to the Commission on a return on a**  
21 **comparable risk investment?**

22 A: No.



1 **Q: What are your conclusions regarding Mr. Meyer's analyses?**

2 A: Mr. Meyer's internally focused analysis does not provide the Commission with any  
3 meaningful information about the investor-required return on equity in the market today,  
4 or over the period when the Companies' rates will be in effect. Mr. Meyer is benchmarking  
5 historical earned returns against a historically authorized ROE. The ROE that is to be  
6 determined in this proceeding is intended to reflect the investor-required return. As such,  
7 it is necessarily a forward-looking analysis. None of the information used in Mr. Meyer's  
8 analysis is forward looking. Further, none of the information used in his analysis is market  
9 data. Therefore, this analysis cannot reasonably provide the Commission with the  
10 necessary information to determine a return for Evergy Missouri Metro and Evergy  
11 Missouri West that is comparable to the current, and forward-looking returns on  
12 investments of comparable risk. Therefore, it would be reasonable and appropriate to  
13 disregard this analysis.

14

15 **X. SUMMARY AND RECOMMENDATIONS**

16 **Q: Please summarize your conclusions and recommendations regarding the appropriate**  
17 **ROE for Evergy Missouri Metro and Evergy Missouri West in this proceeding.**

18 A: The results of my ROE analysis, which are updated using market data through June 15,  
19 2022, continue to support a reasonable range of ROE results for Evergy Missouri Metro  
20 and Evergy Missouri West between 9.90 percent to 10.50 percent. While the analytical  
21 results of ROE estimation models provide a starting point, my recommendation also  
22 considers other factors, including company-specific risk factors, capital market conditions  
23 and the capital attraction standard. Considering the financial and business risk factors

1 facing the Companies, and the expectation that interest rates will increase over the near  
2 term as the economy recovers from 40-year high inflation, I continue to believe the  
3 Companies' requested ROE of 10.00 percent is reasonable and appropriate.

4 Nothing in the other ROE witnesses' testimony has caused me to change my  
5 recommended range of results.

6 Neither Dr. Won nor Mr. Murray rely on the results of any of their models to  
7 underlie or inform their respective ROE recommendations of 9.62 percent and 9.0 percent.

8 Dr. Won's reliance on a comparison of his Two-Step DCF results for the  
9 Companies in this proceeding to those for a reinterpretation of results from Empire  
10 District's 2019 rate case does not provide sufficient support for his ROE recommendation.

11 Similarly, Mr. Murray's DCF, CAPM and Rule of Thumb methods do not support  
12 his ultimate recommendation.

13 Finally, recently authorized ROEs for vertically-integrated electric utility  
14 companies are within the range established in my Direct Testimony.

15 **Q: What is your recommendation regarding a reasonable capital structure for Evergy**  
16 **Missouri Metro and Evergy Missouri West in this proceeding?**

17 A: I support the Companies' proposed actual capital structure included in my Direct  
18 Testimony of 51.19 percent common equity, 48.81 percent long-term debt for Evergy  
19 Missouri Metro, and 51.81 percent equity and 48.19 percent long-term debt for Evergy  
20 Missouri West. This capital structures represents the manner in which the Companies' are  
21 actually capitalized. Moreover, the proposed equity ratios of 51.19 percent to 51.81 percent  
22 are reasonable when compared to the authorized equity ratios of the proxy group.

1 Q: **Does this conclude your Rebuttal Testimony?**

2 A: Yes, it does.

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

In the Matter of Evergy Metro, Inc. d/b/a Evergy )  
Missouri Metro's Request for Authority to ) Case No. ER-2022-0129  
Implement A General Rate Increase for Electric )  
Service )

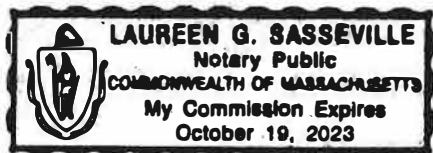
In the Matter of Evergy Missouri West, Inc. d/b/a )  
Evergy Missouri West's Request for Authority to ) Case No. ER-2022-0130  
Implement A General Rate Increase for Electric )  
Service )

**AFFIDAVIT OF ANN E. BULKLEY**

**COMMONWEALTH OF MASSACHUSETTES** )  
 ) ss  
**COUNTY OF MIDDLESEX** )

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

1. My name is Ann E. Bulkley and I am employed by The Brattle Group as Principal.
2. Attached hereto and made a part hereof for all purposes is my Rebuttal Testimony on behalf of Evergy Missouri Metro and Evergy Missouri West consisting of ninety-seven ( 97 ) pages, having been prepared in written form for introduction into evidence in the above-captioned docket.
3. I have knowledge of the matters set forth therein. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded, including any attachments thereto, are true and accurate to the best of my knowledge, information, and belief.



*Ann Bulkley*  
\_\_\_\_\_  
Ann E. Bulkley

Subscribed and sworn before me this 11 day of July 2022.

*Laureen G. Sasseeville*  
\_\_\_\_\_  
Notary Public  
My commission expires: 10/19/2023



SUMMARY OF ROE ANALYSES RESULTS<sup>1</sup>

<b>Constant Growth DCF - Median</b>			
	Median Low	Median	Median High
30-Day Average	8.37%	9.29%	9.83%
90-Day Average	8.38%	9.35%	9.89%
180-Day Average	8.42%	9.43%	10.02%
Constant Growth Average	8.39%	9.36%	9.91%
<b>Constant Growth DCF - Average w/ exclusions</b>			
	Mean Low	Mean	Mean High
30-Day Average	8.77%	9.54%	10.28%
90-Day Average	8.79%	9.54%	10.28%
180-Day Average	8.87%	9.62%	10.36%
Constant Growth Average	8.81%	9.56%	10.31%
<b>CAPM</b>			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Value Line Beta	11.52%	11.57%	11.62%
Bloomberg Beta	10.86%	10.94%	11.01%
Long-Term Avg. Beta	10.09%	10.23%	10.32%
<b>ECAPM</b>			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Value Line Beta	11.88%	11.92%	11.95%
Bloomberg Beta	11.39%	11.44%	11.50%
Long-Term Avg. Beta	10.80%	10.91%	10.98%
<b>Treasury Yield Plus Risk Premium</b>			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Risk Premium Analysis	10.00%	10.15%	10.29%
Risk Premium Mean Result		10.15%	

**Notes:**

[1] Constant Growth DCF analysis - Average w/ Exclusions represents the DCF results excluding the results for individual companies that did not meet the minimum threshold of 7 percent.

PROXY GROUP SCREENING DATA AND RESULTS

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	
Company	Ticker	Dividends	S&P Credit Rating Between BBB- and AAA	Covered by More Than 1 Analyst	Positive Growth Rates from at least two sources (Value Line, Yahoo! First Call, and Zacks)	Generation Assets Included in Rate Base	% Regulated Coal Generation Capacity > 5%	% Company- Owned Generation >40%	% Regulated Operating Income > 60%	% Regulated Electric Operating Income > 60%	Announced Merger
ALLETE, Inc.	ALE	Yes	BBB	Yes	Yes	Yes	49.92%	46.85%	94.97%	98.09%	No
Alliant Energy Corporation	LNT	Yes	A-	Yes	Yes	Yes	32.27%	68.83%	96.60%	91.18%	No
Ameren Corporation	AEE	Yes	BBB+	Yes	Yes	Yes	49.97%	77.12%	100.00%	85.03%	No
American Electric Power Company, Inc.	AEP	Yes	A-	Yes	Yes	Yes	51.92%	54.63%	95.48%	100.00%	No
Avista Corporation	AVA	Yes	BBB	Yes	Yes	Yes	10.41%	59.18%	100.00%	75.60%	No
CMS Energy Corporation	CMS	Yes	BBB+	Yes	Yes	Yes	23.18%	40.93%	87.13%	68.14%	No
Duke Energy Corporation	DUK	Yes	BBB+	Yes	Yes	Yes	27.95%	82.98%	99.36%	90.89%	No
Entergy Corporation	ETR	Yes	BBB+	Yes	Yes	Yes	13.07%	66.69%	100.00%	99.53%	No
IDACORP, Inc.	IDA	Yes	BBB	Yes	Yes	Yes	26.43%	70.89%	99.84%	100.00%	No
MGE Energy, Inc.	MGEE	Yes	AA-	Yes	Yes	Yes	38.32%	67.14%	71.05%	73.31%	No
NextEra Energy, Inc.	NEE	Yes	A-	Yes	Yes	Yes	8.56%	97.10%	84.39%	100.00%	No
NorthWestern Corporation	NWE	Yes	BBB	Yes	Yes	Yes	32.54%	57.57%	99.75%	84.22%	No
Otter Tail Corporation	OTTR	Yes	BBB	Yes	Yes	Yes	66.95%	57.71%	62.74%	100.00%	No
Portland General Electric Company	POR	Yes	BBB+	Yes	Yes	Yes	20.81%	61.21%	100.00%	100.00%	No
Southern Company	SO	Yes	BBB+	Yes	Yes	Yes	32.58%	78.89%	85.13%	81.08%	No
Xcel Energy Inc.	XEL	Yes	A-	Yes	Yes	Yes	32.85%	57.83%	100.00%	86.47%	No

Notes:

- [1] Source: Bloomberg Professional
- [2] Source: Bloomberg Professional
- [3] Source: Yahoo! Finance and Zacks
- [4] Source: Yahoo! Finance, Value Line Investment Survey, and Zacks
- [5] Source: S&P Capital IQ Pro
- [6] Source: S&P Capital IQ Pro
- [7] Source: S&P Capital IQ Pro
- [8] Source: Form 10-Ks for 2020, 2019 & 2018
- [9] Source: Form 10-Ks for 2020, 2019 & 2018
- [10] SNL Financial News Releases

30-DAY CONSTANT GROWTH DCF -- EVERGY

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	All Proxy Group			With Exclusions		
		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	Low ROE	Mean ROE	High ROE
ALLETE, Inc.	ALE	\$2.60	\$60.87	4.27%	4.44%	6.00%	8.70%	8.70%	7.80%	10.40%	12.24%	13.16%	10.40%	12.24%	13.16%
Alliant Energy Corporation	LNT	\$1.71	\$59.89	2.86%	2.94%	6.00%	6.00%	5.70%	5.90%	8.64%	8.84%	8.94%	8.64%	8.84%	8.94%
Ameren Corporation	AEE	\$2.36	\$92.43	2.55%	2.64%	6.50%	6.46%	7.20%	6.72%	9.10%	9.36%	9.85%	9.10%	9.36%	9.85%
American Electric Power Company, Inc.	AEP	\$3.12	\$99.67	3.13%	3.23%	6.50%	6.21%	6.20%	6.30%	9.43%	9.53%	9.73%	9.43%	9.53%	9.73%
Avista Corporation	AVA	\$1.76	\$42.76	4.12%	4.22%	3.00%	5.80%	5.80%	4.87%	7.18%	9.08%	10.04%	7.18%	9.08%	10.04%
CMS Energy Corporation	CMS	\$1.84	\$69.02	2.67%	2.77%	6.50%	8.48%	8.10%	7.69%	9.25%	10.46%	11.26%	9.25%	10.46%	11.26%
Duke Energy Corporation	DUK	\$3.94	\$109.72	3.59%	3.70%	6.00%	5.91%	6.10%	6.00%	9.61%	9.70%	9.80%	9.61%	9.70%	9.80%
Energy Corporation	ETR	\$4.04	\$117.42	3.44%	3.53%	4.00%	6.02%	6.10%	5.37%	7.51%	8.91%	9.65%	7.51%	8.91%	9.65%
IDACORP, Inc.	IDA	\$3.00	\$106.62	2.81%	2.87%	4.00%	4.40%	2.80%	3.73%	5.65%	6.60%	7.28%			7.28%
MGE Energy, Inc.	MGEE	\$1.55	\$79.84	1.94%	2.00%	NA	6.10%	6.10%	6.10%	8.10%	8.10%	8.10%	8.10%	8.10%	8.10%
NextEra Energy, Inc.	NEE	\$1.70	\$73.82	2.30%	2.42%	12.50%	8.85%	8.90%	10.08%	11.25%	12.50%	14.95%	11.25%	12.50%	14.95%
NorthWestern Corporation	NWE	\$2.52	\$60.03	4.20%	4.27%	3.00%	4.50%	2.30%	3.27%	6.55%	7.53%	8.79%		7.53%	8.79%
Otter Tail Corporation	OTTR	\$1.65	\$64.45	2.56%	2.65%	4.50%	9.00%	n/a	6.75%	7.12%	9.40%	11.68%	7.12%	9.40%	11.68%
Portland General Electric Company	POR	\$1.72	\$48.19	3.57%	3.66%	7.50%	3.30%	4.40%	5.07%	6.93%	8.73%	11.20%		8.73%	11.20%
Southern Company	SO	\$2.72	\$73.78	3.69%	3.79%	6.50%	6.40%	4.00%	5.63%	7.76%	9.42%	10.31%	7.76%	9.42%	10.31%
Xcel Energy Inc.	XEL	\$1.95	\$73.58	2.65%	2.74%	6.00%	7.08%	6.40%	6.49%	8.73%	9.23%	9.82%	8.73%	9.23%	9.82%
Mean				3.15%	3.24%	5.90%	6.45%	5.92%	6.11%	8.32%	9.35%	10.28%	8.77%	9.54%	10.28%
Median				2.99%	3.08%	6.00%	6.16%	6.10%	6.05%	8.37%	9.29%	9.83%			

Notes:

- [1] Source: Bloomberg Professional
- [2] Source: Bloomberg Professional, equals 30-day average as of June 15, 2022
- [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])
- [12] - [14] Excludes companies with ROEs less than 7.00%.

90-DAY CONSTANT GROWTH DCF -- EVERGY

Company		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	With Exclusions		
		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	Low ROE	Mean ROE	High ROE
ALLETE, Inc.	ALE	\$2.60	\$62.68	4.15%	4.31%	6.00%	8.70%	8.70%	7.80%	10.27%	12.11%	13.03%	10.27%	12.11%	13.03%
Alliant Energy Corporation	LNT	\$1.71	\$60.32	2.83%	2.92%	6.00%	6.00%	5.70%	5.90%	8.62%	8.82%	8.92%	8.62%	8.82%	8.92%
Ameren Corporation	AEE	\$2.36	\$91.16	2.59%	2.68%	6.50%	6.46%	7.20%	6.72%	9.13%	9.40%	9.88%	9.13%	9.40%	9.88%
American Electric Power Company, Inc.	AEP	\$3.12	\$97.00	3.22%	3.32%	6.50%	6.21%	6.20%	6.30%	9.52%	9.62%	9.82%	9.52%	9.62%	9.82%
Avista Corporation	AVA	\$1.76	\$43.75	4.02%	4.12%	3.00%	5.80%	5.80%	4.87%	7.08%	8.99%	9.94%	7.08%	8.99%	9.94%
CMS Energy Corporation	CMS	\$1.84	\$68.05	2.70%	2.81%	6.50%	8.48%	8.10%	7.69%	9.29%	10.50%	11.30%	9.29%	10.50%	11.30%
Duke Energy Corporation	DUK	\$3.94	\$108.25	3.64%	3.75%	6.00%	5.91%	6.10%	6.00%	9.66%	9.75%	9.85%	9.66%	9.75%	9.85%
Energy Corporation	ETR	\$4.04	\$115.03	3.51%	3.61%	4.00%	6.02%	6.10%	5.37%	7.58%	8.98%	9.72%	7.58%	8.98%	9.72%
IDACORP, Inc.	IDA	\$3.00	\$108.77	2.76%	2.81%	4.00%	4.40%	2.80%	3.73%	5.60%	6.54%	7.22%			7.22%
MGE Energy, Inc.	MGEE	\$1.55	\$78.17	1.98%	2.04%	NA	6.10%	6.10%	6.10%	8.14%	8.14%	8.14%	8.14%	8.14%	8.14%
NextEra Energy, Inc.	NEE	\$1.70	\$77.57	2.19%	2.30%	12.50%	8.85%	8.90%	10.08%	11.14%	12.39%	14.83%	11.14%	12.39%	14.83%
NorthWestern Corporation	NWE	\$2.52	\$59.63	4.23%	4.30%	3.00%	4.50%	2.30%	3.27%	6.57%	7.56%	8.82%	7.56%	7.56%	8.82%
Otter Tail Corporation	OTTR	\$1.65	\$62.78	2.63%	2.72%	4.50%	9.00%	n/a	6.75%	7.19%	9.47%	11.75%	7.19%	9.47%	11.75%
Portland General Electric Company	POR	\$1.72	\$51.28	3.35%	3.44%	7.50%	3.30%	4.40%	5.07%	6.71%	8.51%	10.98%	7.89%	9.55%	10.98%
Southern Company	SO	\$2.72	\$71.39	3.81%	3.92%	6.50%	6.40%	4.00%	5.63%	7.89%	9.55%	10.43%	7.89%	9.55%	10.43%
Xcel Energy Inc.	XEL	\$1.95	\$71.63	2.72%	2.81%	6.00%	7.08%	6.40%	6.49%	8.80%	9.30%	9.90%	8.80%	9.30%	9.90%
Mean				3.15%	3.24%	5.90%	6.45%	5.92%	6.11%	8.32%	9.35%	10.28%	8.79%	9.54%	10.28%
Median				3.03%	3.12%	6.00%	6.16%	6.10%	6.05%	8.38%	9.35%	9.89%			

Notes:

- [1] Source: Bloomberg Professional
- [2] Source: Bloomberg Professional, equals 90-day average as of June 15, 2022
- [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])
- [12] - [14] Excludes companies with ROEs less than 7.00%.



180-DAY CONSTANT GROWTH DCF -- EVERGY

Company		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	With Exclusions		
		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	Low ROE	Mean ROE	High ROE
ALLETE, Inc.	ALE	\$2.60	\$62.93	4.13%	4.29%	6.00%	8.70%	8.70%	7.80%	10.26%	12.09%	13.01%	10.26%	12.09%	13.01%
Alliant Energy Corporation	LNT	\$1.71	\$59.13	2.89%	2.98%	6.00%	6.00%	5.70%	5.90%	8.67%	8.88%	8.98%	8.67%	8.88%	8.98%
Ameren Corporation	AEE	\$2.36	\$88.39	2.67%	2.76%	6.50%	6.46%	7.20%	6.72%	9.22%	9.48%	9.97%	9.22%	9.48%	9.97%
American Electric Power Company, Inc.	AEP	\$3.12	\$91.37	3.41%	3.52%	6.50%	6.21%	6.20%	6.30%	9.72%	9.83%	10.03%	9.72%	9.83%	10.03%
Avista Corporation	AVA	\$1.76	\$42.43	4.15%	4.25%	3.00%	5.80%	5.80%	4.87%	7.21%	9.12%	10.07%	7.21%	9.12%	10.07%
CMS Energy Corporation	CMS	\$1.84	\$65.04	2.83%	2.94%	6.50%	8.48%	8.10%	7.69%	9.42%	10.63%	11.43%	9.42%	10.63%	11.43%
Duke Energy Corporation	DUK	\$3.94	\$105.07	3.75%	3.86%	6.00%	5.91%	6.10%	6.00%	9.77%	9.87%	9.96%	9.77%	9.87%	9.96%
Energy Corporation	ETR	\$4.04	\$110.68	3.65%	3.75%	4.00%	6.02%	6.10%	5.37%	7.72%	9.12%	9.86%	7.72%	9.12%	9.86%
IDACORP, Inc.	IDA	\$3.00	\$108.05	2.78%	2.83%	4.00%	4.40%	2.80%	3.73%	5.62%	6.56%	7.24%			7.24%
MGE Energy, Inc.	MGEE	\$1.55	\$77.56	2.00%	2.06%	NA	6.10%	6.10%	6.10%	8.16%	8.16%	8.16%	8.16%	8.16%	8.16%
NextEra Energy, Inc.	NEE	\$1.70	\$81.25	2.09%	2.20%	12.50%	8.85%	8.90%	10.08%	11.03%	12.28%	14.72%	11.03%	12.28%	14.72%
NorthWestern Corporation	NWE	\$2.52	\$58.35	4.32%	4.39%	3.00%	4.50%	2.30%	3.27%	6.67%	7.66%	8.92%		7.66%	8.92%
Otter Tail Corporation	OTTR	\$1.65	\$63.52	2.60%	2.69%	4.50%	9.00%	n/a	6.75%	7.16%	9.44%	11.71%	7.16%	9.44%	11.71%
Portland General Electric Company	POR	\$1.72	\$50.91	3.38%	3.46%	7.50%	3.30%	4.40%	5.07%	6.73%	8.53%	11.01%		8.53%	11.01%
Southern Company	SO	\$2.72	\$68.15	3.99%	4.10%	6.50%	6.40%	4.00%	5.63%	8.07%	9.74%	10.62%	8.07%	9.74%	10.62%
Xcel Energy Inc.	XEL	\$1.95	\$68.85	2.83%	2.92%	6.00%	7.08%	6.40%	6.49%	8.92%	9.42%	10.01%	8.92%	9.42%	10.01%
Mean				3.22%	3.31%	5.90%	6.45%	5.92%	6.11%	8.40%	9.42%	10.36%	8.87%	9.62%	10.36%
Median				3.14%	3.22%	6.00%	6.16%	6.10%	6.05%	8.42%	9.43%	10.02%			

Notes:

- [1] Source: Bloomberg Professional
- [2] Source: Bloomberg Professional, equals 180-day average as of June 15, 2022
- [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]))
- [12] - [14] Excludes companies with ROEs less than 7.00%.

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

$$K = R_f + \beta (R_m - R_f)$$

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Current 30-day average of 30-year U.S. Treasury bond yield	Beta ( $\beta$ )	Market Return ( $R_m$ )	Market Risk Premium ( $R_m - R_f$ )	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.12%	0.90	12.96%	9.84%	11.98%	12.23%
Alliant Energy Corporation	LNT	3.12%	0.85	12.96%	9.84%	11.49%	11.86%
Ameren Corporation	AEE	3.12%	0.80	12.96%	9.84%	11.00%	11.49%
American Electric Power Company, Inc.	AEP	3.12%	0.75	12.96%	9.84%	10.50%	11.12%
Avista Corporation	AVA	3.12%	0.95	12.96%	9.84%	12.47%	12.60%
CMS Energy Corporation	CMS	3.12%	0.80	12.96%	9.84%	11.00%	11.49%
Duke Energy Corporation	DUK	3.12%	0.85	12.96%	9.84%	11.49%	11.86%
Entergy Corporation	ETR	3.12%	0.95	12.96%	9.84%	12.47%	12.60%
IDACORP, Inc.	IDA	3.12%	0.80	12.96%	9.84%	11.00%	11.49%
MGE Energy, Inc.	MGEE	3.12%	0.75	12.96%	9.84%	10.50%	11.12%
NextEra Energy, Inc.	NEE	3.12%	0.90	12.96%	9.84%	11.98%	12.23%
NorthWestern Corporation	NWE	3.12%	0.95	12.96%	9.84%	12.47%	12.60%
Otter Tail Corporation	OTTR	3.12%	0.85	12.96%	9.84%	11.49%	11.86%
Portland General Electric Company	POR	3.12%	0.85	12.96%	9.84%	11.49%	11.86%
Southern Company	SO	3.12%	0.90	12.96%	9.84%	11.98%	12.23%
Xcel Energy Inc.	XEL	3.12%	0.80	12.96%	9.84%	11.00%	11.49%
Mean						11.52%	11.88%

Notes:

[1] Source: Bloomberg Professional, as of June 15, 2022

[2] Source: Value Line

[3] Source: Schedule AEB-6

[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

$$K = R_f + \beta (R_m - R_f)$$

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Near-term projected 30- year U.S. Treasury bond yield (Q3 2022 - Q3 2023)	Beta ( $\beta$ )	Market Return ( $R_m$ )	Market Risk Premium ( $R_m - R_f$ )	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.48%	0.90	12.96%	9.48%	12.02%	12.25%
Alliant Energy Corporation	LNT	3.48%	0.85	12.96%	9.48%	11.54%	11.90%
Ameren Corporation	AEE	3.48%	0.80	12.96%	9.48%	11.07%	11.54%
American Electric Power Company, Inc.	AEP	3.48%	0.75	12.96%	9.48%	10.59%	11.19%
Avista Corporation	AVA	3.48%	0.95	12.96%	9.48%	12.49%	12.61%
CMS Energy Corporation	CMS	3.48%	0.80	12.96%	9.48%	11.07%	11.54%
Duke Energy Corporation	DUK	3.48%	0.85	12.96%	9.48%	11.54%	11.90%
Entergy Corporation	ETR	3.48%	0.95	12.96%	9.48%	12.49%	12.61%
IDACORP, Inc.	IDA	3.48%	0.80	12.96%	9.48%	11.07%	11.54%
MGE Energy, Inc.	MGEE	3.48%	0.75	12.96%	9.48%	10.59%	11.19%
NextEra Energy, Inc.	NEE	3.48%	0.90	12.96%	9.48%	12.02%	12.25%
NorthWestern Corporation	NWE	3.48%	0.95	12.96%	9.48%	12.49%	12.61%
Otter Tail Corporation	OTTR	3.48%	0.85	12.96%	9.48%	11.54%	11.90%
Portland General Electric Company	POR	3.48%	0.85	12.96%	9.48%	11.54%	11.90%
Southern Company	SO	3.48%	0.90	12.96%	9.48%	12.02%	12.25%
Xcel Energy Inc.	XEL	3.48%	0.80	12.96%	9.48%	11.07%	11.54%
Mean						11.57%	11.92%

Notes:

[1] Source: Blue Chip Financial Forecasts, Vol. 41, No. 6, June 1, 2022, at 2

[2] Source: Value Line

[3] Source: Schedule AEB-6

[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

$$K = R_f + \beta (R_m - R_f)$$

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Projected 30-year U.S. Treasury bond yield (2024 - 2028)	Beta ( $\beta$ )	Market Return (Rm)	Market Risk Premium (Rm - Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.80%	0.90	12.96%	9.16%	12.05%	12.28%
Alliant Energy Corporation	LNT	3.80%	0.85	12.96%	9.16%	11.59%	11.93%
Ameren Corporation	AEE	3.80%	0.80	12.96%	9.16%	11.13%	11.59%
American Electric Power Company, Inc.	AEP	3.80%	0.75	12.96%	9.16%	10.67%	11.25%
Avista Corporation	AVA	3.80%	0.95	12.96%	9.16%	12.51%	12.62%
CMS Energy Corporation	CMS	3.80%	0.80	12.96%	9.16%	11.13%	11.59%
Duke Energy Corporation	DUK	3.80%	0.85	12.96%	9.16%	11.59%	11.93%
Entergy Corporation	ETR	3.80%	0.95	12.96%	9.16%	12.51%	12.62%
IDACORP, Inc.	IDA	3.80%	0.80	12.96%	9.16%	11.13%	11.59%
MGE Energy, Inc.	MGEE	3.80%	0.75	12.96%	9.16%	10.67%	11.25%
NextEra Energy, Inc.	NEE	3.80%	0.90	12.96%	9.16%	12.05%	12.28%
NorthWestern Corporation	NWE	3.80%	0.95	12.96%	9.16%	12.51%	12.62%
Otter Tail Corporation	OTTR	3.80%	0.85	12.96%	9.16%	11.59%	11.93%
Portland General Electric Company	POR	3.80%	0.85	12.96%	9.16%	11.59%	11.93%
Southern Company	SO	3.80%	0.90	12.96%	9.16%	12.05%	12.28%
Xcel Energy Inc.	XEL	3.80%	0.80	12.96%	9.16%	11.13%	11.59%
Mean						11.62%	11.95%

Notes:

[1] Source: Blue Chip Financial Forecasts, Vol. 41, No. 6, June 1, 2022, at 14

[2] Source: Value Line

[3] Source: Schedule AEB-6

[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

$$K = R_f + \beta (R_m - R_f)$$

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Current 30-day average of 30-year U.S. Treasury bond yield	Beta ( $\beta$ )	Market Return (Rm)	Market Risk Premium (Rm - Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.12%	0.82	12.96%	9.84%	11.21%	11.65%
Alliant Energy Corporation	LNT	3.12%	0.80	12.96%	9.84%	11.01%	11.50%
Ameren Corporation	AEE	3.12%	0.75	12.96%	9.84%	10.52%	11.13%
American Electric Power Company, Inc.	AEP	3.12%	0.76	12.96%	9.84%	10.64%	11.22%
Avista Corporation	AVA	3.12%	0.76	12.96%	9.84%	10.59%	11.18%
CMS Energy Corporation	CMS	3.12%	0.75	12.96%	9.84%	10.46%	11.09%
Duke Energy Corporation	DUK	3.12%	0.72	12.96%	9.84%	10.18%	10.88%
Entergy Corporation	ETR	3.12%	0.86	12.96%	9.84%	11.57%	11.92%
IDACORP, Inc.	IDA	3.12%	0.81	12.96%	9.84%	11.12%	11.58%
MGE Energy, Inc.	MGEE	3.12%	0.68	12.96%	9.84%	9.84%	10.62%
NextEra Energy, Inc.	NEE	3.12%	0.80	12.96%	9.84%	11.02%	11.50%
NorthWestern Corporation	NWE	3.12%	0.89	12.96%	9.84%	11.86%	12.14%
Otter Tail Corporation	OTTR	3.12%	0.86	12.96%	9.84%	11.62%	11.96%
Portland General Electric Company	POR	3.12%	0.79	12.96%	9.84%	10.93%	11.44%
Southern Company	SO	3.12%	0.78	12.96%	9.84%	10.83%	11.37%
Xcel Energy Inc.	XEL	3.12%	0.74	12.96%	9.84%	10.36%	11.01%
Mean						10.86%	11.39%

Notes:

[1] Source: Bloomberg Professional, as of June 15, 2022

[2] Source: Bloomberg Professional, based on 10-year weekly returns

[3] Source: Schedule AEB-6

[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

$$K = R_f + \beta (R_m - R_f)$$

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]
		Near-term projected 30-year U.S. Treasury bond yield (Q3 2022 - Q3 2023)	Beta ( $\beta$ )	Market Return (Rm)	Market Risk Premium (Rm - Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.48%	0.82	12.96%	9.48%	11.28%	11.70%
Alliant Energy Corporation	LNT	3.48%	0.80	12.96%	9.48%	11.09%	11.56%
Ameren Corporation	AEE	3.48%	0.75	12.96%	9.48%	10.61%	11.20%
American Electric Power Company, Inc.	AEP	3.48%	0.76	12.96%	9.48%	10.72%	11.28%
Avista Corporation	AVA	3.48%	0.76	12.96%	9.48%	10.68%	11.25%
CMS Energy Corporation	CMS	3.48%	0.75	12.96%	9.48%	10.55%	11.16%
Duke Energy Corporation	DUK	3.48%	0.72	12.96%	9.48%	10.28%	10.95%
Entergy Corporation	ETR	3.48%	0.86	12.96%	9.48%	11.62%	11.95%
IDACORP, Inc.	IDA	3.48%	0.81	12.96%	9.48%	11.19%	11.63%
MGE Energy, Inc.	MGEE	3.48%	0.68	12.96%	9.48%	9.96%	10.71%
NextEra Energy, Inc.	NEE	3.48%	0.80	12.96%	9.48%	11.09%	11.56%
NorthWestern Corporation	NWE	3.48%	0.89	12.96%	9.48%	11.90%	12.17%
Otter Tail Corporation	OTTR	3.48%	0.86	12.96%	9.48%	11.67%	12.00%
Portland General Electric Company	POR	3.48%	0.79	12.96%	9.48%	11.01%	11.50%
Southern Company	SO	3.48%	0.78	12.96%	9.48%	10.91%	11.43%
Xcel Energy Inc.	XEL	3.48%	0.74	12.96%	9.48%	10.46%	11.08%
Mean						10.94%	11.44%

Notes:

[1] Source: Blue Chip Financial Forecasts, Vol. 41, No. 6, June 1, 2022, at 2

[2] Source: Bloomberg Professional, based on 10-year weekly returns

[3] Source: Schedule AEB-6

[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

$$K = R_f + \beta (R_m - R_f)$$

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]
		Projected 30-year U.S. Treasury bond yield (2024 - 2028)	Beta ( $\beta$ )	Market Return (Rm)	Market Risk Premium (Rm - Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.80%	0.82	12.96%	9.16%	11.33%	11.74%
Alliant Energy Corporation	LNT	3.80%	0.80	12.96%	9.16%	11.15%	11.60%
Ameren Corporation	AEE	3.80%	0.75	12.96%	9.16%	10.69%	11.26%
American Electric Power Company, Inc.	AEP	3.80%	0.76	12.96%	9.16%	10.80%	11.34%
Avista Corporation	AVA	3.80%	0.76	12.96%	9.16%	10.76%	11.31%
CMS Energy Corporation	CMS	3.80%	0.75	12.96%	9.16%	10.63%	11.22%
Duke Energy Corporation	DUK	3.80%	0.72	12.96%	9.16%	10.37%	11.02%
Entergy Corporation	ETR	3.80%	0.86	12.96%	9.16%	11.66%	11.99%
IDACORP, Inc.	IDA	3.80%	0.81	12.96%	9.16%	11.25%	11.68%
MGE Energy, Inc.	MGEE	3.80%	0.68	12.96%	9.16%	10.06%	10.78%
NextEra Energy, Inc.	NEE	3.80%	0.80	12.96%	9.16%	11.15%	11.60%
NorthWestern Corporation	NWE	3.80%	0.89	12.96%	9.16%	11.94%	12.20%
Otter Tail Corporation	OTTR	3.80%	0.86	12.96%	9.16%	11.72%	12.03%
Portland General Electric Company	POR	3.80%	0.79	12.96%	9.16%	11.07%	11.55%
Southern Company	SO	3.80%	0.78	12.96%	9.16%	10.98%	11.48%
Xcel Energy Inc.	XEL	3.80%	0.74	12.96%	9.16%	10.54%	11.15%
Mean						11.01%	11.50%

Notes:

[1] Source: Blue Chip Financial Forecasts, Vol. 41, No. 6, June 1, 2022, at 14

[2] Source: Bloomberg Professional, based on 10-year weekly returns

[3] Source: Schedule AEB-6

[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 & VALUE LINE LT AVERAGE BETA

$$K = R_f + \beta (R_m - R_f)$$

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Current 30-day average of 30-year U.S. Treasury bond yield	Beta ( $\beta$ )	Market Return ( $R_m$ )	Market Risk Premium ( $R_m - R_f$ )	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.12%	0.77	12.96%	9.84%	10.65%	11.23%
Alliant Energy Corporation	LNT	3.12%	0.74	12.96%	9.84%	10.36%	11.01%
Ameren Corporation	AEE	3.12%	0.72	12.96%	9.84%	10.21%	10.90%
American Electric Power Company, Inc.	AEP	3.12%	0.67	12.30%	9.28%	9.15%	9.94%
Avista Corporation	AVA	3.12%	0.76	12.96%	9.84%	10.55%	11.16%
CMS Energy Corporation	CMS	3.12%	0.69	12.96%	9.84%	9.86%	10.64%
Duke Energy Corporation	DUK	3.12%	0.64	12.96%	9.84%	9.42%	10.31%
Entergy Corporation	ETR	3.12%	0.72	12.96%	9.84%	10.21%	10.90%
IDACORP, Inc.	IDA	3.12%	0.73	12.96%	9.84%	10.26%	10.93%
MGE Energy, Inc.	MGEE	3.12%	0.68	12.96%	9.84%	9.77%	10.56%
NextEra Energy, Inc.	NEE	3.12%	0.71	12.96%	9.84%	10.06%	10.79%
NorthWestern Corporation	NWE	3.12%	0.73	12.96%	9.84%	10.26%	10.93%
Otter Tail Corporation	OTTR	3.12%	0.86	12.96%	9.84%	11.54%	11.89%
Portland General Electric Company	POR	3.12%	0.75	12.96%	9.84%	10.45%	11.08%
Southern Company	SO	3.12%	0.62	12.96%	9.84%	9.22%	10.16%
Xcel Energy Inc.	XEL	3.12%	0.65	12.96%	9.84%	9.52%	10.38%
Mean						10.09%	10.80%

Notes:

[1] Source: Bloomberg Professional, as of June 15, 2022

[2] Source: Schedule AEB-5

[3] Source: Schedule AEB-6

[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 & VALUE LINE LT AVERAGE BETA

$$K = R_f + \beta (R_m - R_f)$$

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Near-term projected 30- year U.S. Treasury bond yield (Q3 2022 - Q3 2023)	Beta ( $\beta$ )	Market Return ( $R_m$ )	Market Risk Premium ( $R_m - R_f$ )	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.48%	0.77	12.96%	9.48%	10.74%	11.29%
Alliant Energy Corporation	LNT	3.48%	0.74	12.96%	9.48%	10.45%	11.08%
Ameren Corporation	AEE	3.48%	0.72	12.96%	9.48%	10.31%	10.97%
American Electric Power Company, Inc.	AEP	3.48%	0.67	12.96%	9.48%	9.79%	10.58%
Avista Corporation	AVA	3.48%	0.76	12.96%	9.48%	10.64%	11.22%
CMS Energy Corporation	CMS	3.48%	0.69	12.96%	9.48%	9.98%	10.72%
Duke Energy Corporation	DUK	3.48%	0.64	12.96%	9.48%	9.55%	10.40%
Entergy Corporation	ETR	3.48%	0.72	12.96%	9.48%	10.31%	10.97%
IDACORP, Inc.	IDA	3.48%	0.73	12.96%	9.48%	10.36%	11.01%
MGE Energy, Inc.	MGEE	3.48%	0.68	12.96%	9.48%	9.88%	10.65%
NextEra Energy, Inc.	NEE	3.48%	0.71	12.96%	9.48%	10.17%	10.87%
NorthWestern Corporation	NWE	3.48%	0.73	12.96%	9.48%	10.36%	11.01%
Otter Tail Corporation	OTTR	3.48%	0.86	12.96%	9.48%	11.59%	11.93%
Portland General Electric Company	POR	3.48%	0.75	12.96%	9.48%	10.55%	11.15%
Southern Company	SO	3.48%	0.62	12.96%	9.48%	9.36%	10.26%
Xcel Energy Inc.	XEL	3.48%	0.65	12.96%	9.48%	9.64%	10.47%
Mean						10.23%	10.91%



Notes:

[1] Source: Blue Chip Financial Forecasts, Vol. 41, No. 6, June 1, 2022, at 2

[2] Source: Schedule AEB-5

[3] Source: Schedule AEB-6

[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 & VALUE LINE LT BETA

$$K = R_f + \beta (R_m - R_f)$$

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Projected 30-year U.S. Treasury bond yield (2024 - 2028)	Beta ( $\beta$ )	Market Return (Rm)	Market Risk Premium (Rm - Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.80%	0.77	12.96%	9.16%	10.81%	11.35%
Alliant Energy Corporation	LNT	3.80%	0.74	12.96%	9.16%	10.54%	11.14%
Ameren Corporation	AEE	3.80%	0.72	12.96%	9.16%	10.40%	11.04%
American Electric Power Company, Inc.	AEP	3.80%	0.67	12.96%	9.16%	9.89%	10.66%
Avista Corporation	AVA	3.80%	0.76	12.96%	9.16%	10.72%	11.28%
CMS Energy Corporation	CMS	3.80%	0.69	12.96%	9.16%	10.08%	10.80%
Duke Energy Corporation	DUK	3.80%	0.64	12.96%	9.16%	9.67%	10.49%
Entergy Corporation	ETR	3.80%	0.72	12.96%	9.16%	10.40%	11.04%
IDACORP, Inc.	IDA	3.80%	0.73	12.96%	9.16%	10.44%	11.07%
MGE Energy, Inc.	MGEE	3.80%	0.68	12.96%	9.16%	9.99%	10.73%
NextEra Energy, Inc.	NEE	3.80%	0.71	12.96%	9.16%	10.26%	10.94%
NorthWestern Corporation	NWE	3.80%	0.73	12.96%	9.16%	10.44%	11.07%
Otter Tail Corporation	OTTR	3.80%	0.86	12.96%	9.16%	11.64%	11.97%
Portland General Electric Company	POR	3.80%	0.75	12.96%	9.16%	10.63%	11.21%
Southern Company	SO	3.80%	0.62	12.96%	9.16%	9.48%	10.35%
Xcel Energy Inc.	XEL	3.80%	0.65	12.96%	9.16%	9.76%	10.56%
Mean						10.32%	10.98%

Notes:

[1] Source: Blue Chip Financial Forecasts, Vol. 41, No. 6, June 1, 2022, at 14

[2] Source: Schedule AEB-5

[3] Source: Schedule AEB-6

[4] Equals [3] - [1]

[5] Equals [1] + [2] x [4]

[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

HISTORICAL BETA - 2012 - 2021

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Company	Ticker	12/31/2012	12/31/2013	12/31/2014	12/31/2015	12/31/2016	12/31/2017	12/31/2018	12/31/2019	12/31/2020	12/31/2021	Average
ALLETE, Inc.	ALE	0.70	0.75	0.80	0.80	0.75	0.80	0.65	0.65	0.85	0.90	0.77
Alliant Energy Corporation	LNT	0.70	0.75	0.80	0.80	0.70	0.70	0.60	0.60	0.85	0.85	0.74
Ameren Corporation	AEE	0.80	0.80	0.75	0.75	0.65	0.70	0.55	0.55	0.85	0.80	0.72
American Electric Power Company, In	AEP	0.65	0.70	0.70	0.70	0.65	0.65	0.55	0.55	0.75	0.75	0.67
Avista Corporation	AVA	0.70	0.70	0.80	0.80	0.70	0.75	0.65	0.60	0.90	0.95	0.76
CMS Energy Corporation	CMS	0.75	0.70	0.70	0.75	0.65	0.65	0.55	0.50	0.80	0.80	0.69
Duke Energy Corporation	DUK	0.60	0.65	0.60	0.65	0.60	0.60	0.50	0.50	0.85	0.85	0.64
Entergy Corporation	ETR	0.70	0.70	0.70	0.70	0.65	0.65	0.60	0.60	0.95	0.95	0.72
IDACORP, Inc.	IDA	0.70	0.70	0.80	0.80	0.75	0.70	0.60	0.55	0.80	0.85	0.73
MGE Energy, Inc.	MGEE	0.60	0.65	0.70	0.75	0.70	0.75	0.60	0.55	0.70	0.75	0.68
NextEra Energy, Inc.	NEE	0.70	0.70	0.70	0.75	0.65	0.65	0.55	0.55	0.90	0.90	0.71
NorthWestern Corporation	NWE	0.70	0.70	0.70	0.70	0.70	0.70	0.60	0.60	0.90	0.95	0.73
Otter Tail Corporation	OTTR	0.90	0.95	0.90	0.85	0.85	0.90	0.75	0.70	0.85	0.90	0.86
Portland General Electric Company	POR	0.75	0.75	0.80	0.80	0.70	0.70	0.60	0.60	0.85	0.90	0.75
Southern Company	SO	0.55	0.55	0.55	0.60	0.55	0.55	0.50	0.50	0.90	0.95	0.62
Xcel Energy Inc.	XEL	0.65	0.65	0.70	0.65	0.60	0.60	0.55	0.50	0.80	0.80	0.65
Mean		0.70	0.71	0.73	0.74	0.68	0.69	0.59	0.57	0.84	0.87	0.71

Notes:

[1] Value Line, dated November 2, 2012, November 23, 2012, and December 21, 2012.

[2] Value Line, dated November 1, 2013, November 22, 2013, and December 20, 2013.

[3] Value Line, dated October 31, 2014, November 21, 2014, and December 19, 2014.

[4] Value Line, dated October 30, 2015, November 20, 2015, and December 18, 2015.

[5] Value Line, dated October 28, 2016, November 18, 2016, and December 16, 2016.

[6] Value Line, dated October 27, 2017, November 17, 2017, and December 15, 2017.

[7] Value Line, dated October 18, 2018, November 16, 2018, and December 14, 2018.

[8] Value Line, dated October 25, 2019, November 15, 2019, and December 13, 2019.

[9] Value Line, dated October 23, 2020, November 13, 2020, and December 11, 2020.

[10] Value Line, dated October 22, 2021, November 12, 2021, and December 10, 2021

[11] Average ([1] - [10])

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

[1] Estimated Weighted Average Dividend Yield	1.85%
[2] Estimated Weighted Average Long-Term Growth Rate	11.01%
[3] S&P 500 Estimated Required Market Return	12.96%

STANDARD AND POOR'S 500 INDEX

Name	Ticker	[4] Shares Outstg	[5] Price	[6] Market Capitalization	[7] Weight in Index	[8] Estimated Dividend Yield	[9] Cap-Weighted Dividend Yield	[10] Value Line Long-Term Growth Est.	[11] Cap-Weighted Long-Term Growth Est.
LyondellBasell Industries NV	LYB	327.62	96.14	31,497.58	0.12%	4.95%	0.01%	3.50%	0.00%
Signature Bank/New York NY	SBNY	63.07	180.91	11,409.09		1.24%		24.50%	
American Express Co	AXP	753.06	146.22	110,112.43	0.42%	1.42%	0.01%	10.00%	0.04%
Verizon Communications Inc	VZ	4,199.64	49.15	206,412.50	0.79%	5.21%	0.04%	3.00%	0.02%
Broadcom Inc	AVGO	403.82	526.71	212,694.98		3.11%		23.00%	
Boeing Co/The	BA	591.64	133.72	79,113.57					
Caterpillar Inc	CAT	533.37	206.00	109,875.04	0.42%	2.33%	0.01%	8.00%	0.03%
JPMorgan Chase & Co	JPM	2,937.05	115.41	338,964.94	1.29%	3.47%	0.04%	5.00%	0.06%
Chevron Corp	CVX	1,964.81	164.26	322,740.18		3.46%		26.00%	
Coca-Cola Co/The	KO	4,335.03	59.67	258,671.18	0.99%	2.95%	0.03%	7.00%	0.07%
AbbVie Inc	ABBV	1,767.11	138.09	244,020.22	0.93%	4.08%	0.04%	4.50%	0.04%
Walt Disney Co/The	DIS	1,821.48	95.88	174,643.89				30.50%	
FleetCor Technologies Inc	FLT	77.34	229.52	17,751.31	0.07%			10.50%	0.01%
Extra Space Storage Inc	EXR	134.28	161.50	21,686.22	0.08%	3.72%	0.00%	6.00%	0.00%
Exxon Mobil Corp	XOM	4,212.54	94.89	399,728.21		3.71%			
Phillips 66	PSX	481.10	102.38	49,255.02		3.79%		85.00%	
General Electric Co	GE	1,100.67	69.10	76,055.95	0.29%	0.46%	0.00%	15.00%	0.04%
HP Inc	HPQ	1,034.14	34.41	35,584.69	0.14%	2.91%	0.00%	15.50%	0.02%
Home Depot Inc/The	HD	1,027.76	279.73	287,493.91	1.10%	2.72%	0.03%	9.00%	0.10%
Monolithic Power Systems Inc	MPWR	46.64	416.19	19,412.35	0.07%	0.72%	0.00%	18.00%	0.01%
International Business Machines Corp	IBM	899.44	137.06	123,276.56	0.47%	4.82%	0.02%	8.50%	0.00%
Johnson & Johnson	JNJ	2,631.40	169.99	447,312.03	1.71%	2.66%	0.05%	8.00%	0.14%
McDonald's Corp	MCD	739.55	238.90	176,677.78	0.67%	2.31%	0.02%	10.50%	0.07%
Merck & Co Inc	MRK	2,528.81	84.63	214,012.77	0.82%	3.26%	0.03%	8.00%	0.07%
3M Co	MMM	569.06	134.33	76,441.70	0.29%	4.44%	0.01%	5.50%	0.02%
American Water Works Co Inc	AWK	181.75	135.02	24,540.29	0.09%	1.94%	0.00%	8.50%	0.01%
Bank of America Corp	BAC	8,056.88	32.05	258,223.04	0.99%	2.62%	0.03%	9.00%	0.09%
Pfizer Inc	PFE	5,610.90	48.51	272,184.56	1.04%	3.30%	0.03%	6.50%	0.07%
Procter & Gamble Co/The	PG	2,399.30	132.51	317,930.85	1.21%	2.76%	0.03%	6.50%	0.08%
AT&T Inc	T	7,159.00	19.44	139,170.96	0.53%	5.71%	0.03%	0.50%	0.00%
Travelers Cos Inc/The	TRV	239.96	165.54	39,723.14	0.15%	2.25%	0.00%	8.00%	0.01%
Raytheon Technologies Corp	RTX	1,487.22	92.28	137,240.20	0.52%	2.38%	0.01%	7.50%	0.04%
Analog Devices Inc	ADI	519.81	150.08	78,012.48	0.30%	2.03%	0.01%	11.00%	0.03%
Walmart Inc	WMT	2,741.15	119.38	327,238.49	1.25%	1.88%	0.02%	7.50%	0.09%
Cisco Systems Inc	CSCO	4,140.96	43.80	181,374.22	0.69%	3.47%	0.02%	8.00%	0.06%
Intel Corp	INTC	4,089.00	38.65	158,039.85	0.60%	3.78%	0.02%	6.00%	0.04%
General Motors Co	GM	1,458.02	34.18	49,835.23	0.19%			11.00%	0.02%
Microsoft Corp	MSFT	7,479.03	251.76	1,882,921.35	7.19%	0.99%	0.07%	17.50%	1.26%
Dollar General Corp	DG	227.00	232.25	52,720.05	0.20%	0.95%	0.00%	10.00%	0.02%
Cigna Corp	CI	317.27	247.10	78,398.16	0.30%	1.81%	0.01%	10.00%	0.03%
Kinder Morgan Inc	KMI	2,267.47	17.60	39,907.52	0.15%	6.31%	0.01%	19.00%	0.03%
Citigroup Inc	C	1,941.92	47.58	92,396.60	0.35%	4.29%	0.02%	4.50%	0.02%
American International Group Inc	AIG	792.19	52.05	41,233.59		2.46%		31.50%	
Altria Group Inc	MO	1,810.56	45.67	82,688.14	0.32%	7.88%	0.02%	5.50%	0.02%
HCA Healthcare Inc	HCA	295.48	181.69	53,686.49	0.21%	1.23%	0.00%	12.50%	0.03%
Under Armour Inc	UA	188.67	9.56	1,803.68				33.00%	
International Paper Co	IP	370.63	44.05	16,326.21	0.06%	4.20%	0.00%	12.50%	0.01%
Hewlett Packard Enterprise Co	HPE	1,299.33	14.07	18,281.57	0.07%	3.41%	0.00%	6.50%	0.00%
Abbott Laboratories	ABT	1,750.94	104.80	183,498.72	0.70%	1.79%	0.01%	8.00%	0.06%
Aflac Inc	AFL	644.17	54.23	34,933.07	0.13%	2.95%	0.00%	9.00%	0.01%
Air Products and Chemicals Inc	APD	221.77	239.29	53,068.06	0.20%	2.71%	0.01%	12.00%	0.02%
Royal Caribbean Cruises Ltd	RCL	254.96	39.69	10,119.20					
Hess Corp	HES	311.26	117.16	36,467.57		1.28%			
Archer-Daniels-Midland Co	ADM	562.71	82.28	46,299.61	0.18%	1.94%	0.00%	13.00%	0.02%
Automatic Data Processing Inc	ADP	417.75	207.15	86,536.29	0.33%	2.01%	0.01%	9.00%	0.03%
Verisk Analytics Inc	VRSK	157.90	160.19	25,294.32	0.10%	0.77%	0.00%	10.50%	0.01%
AutoZone Inc	AZO	19.49	2,013.81	39,245.13	0.15%			14.00%	0.02%
Avery Dennison Corp	AVY	81.71	161.10	13,164.13	0.05%	1.86%	0.00%	12.00%	0.01%
Enphase Energy Inc	ENPH	135.03	188.48	25,450.08				26.50%	
MSCI Inc	MSCI	81.27	397.39	32,295.09	0.12%	1.05%	0.00%	14.50%	0.02%
Ball Corp	BALL	319.79	66.27	21,192.42		1.21%		21.50%	
Ceridian HCM Holding Inc	CDAY	152.65	47.21	7,206.37					
Carrier Global Corp	CARR	848.24	36.77	31,189.86		1.63%			
Bank of New York Mellon Corp/The	BK	807.80	41.87	33,822.50	0.13%	3.25%	0.00%	6.50%	0.01%
Otis Worldwide Corp	OTIS	422.79	69.76	29,494.11		1.66%			
Baxter International Inc	BAX	503.53	67.83	34,154.37	0.13%	1.71%	0.00%	10.00%	0.01%
Becton Dickinson and Co	BDX	285.07	236.79	67,500.54	0.26%	1.47%	0.00%	5.50%	0.01%
Berkshire Hathaway Inc	BRK/B	1,285.75	278.93	358,634.53	1.37%			6.00%	0.08%
Best Buy Co Inc	BBY	225.17	71.76	16,158.06	0.06%	4.91%	0.00%	9.50%	0.01%
Boston Scientific Corp	BSX	1,429.57	36.03	51,507.44	0.20%			16.00%	0.03%
Bristol-Myers Squibb Co	BMY	2,129.06	73.02	155,464.25		2.96%			
Fortune Brands Home & Security Inc	FBHS	130.81	62.12	8,125.73	0.03%	1.80%	0.00%	10.00%	0.00%
Brown-Forman Corp	BF/B	309.80	67.09	20,784.15	0.08%	1.12%	0.00%	12.00%	0.01%
Coterra Energy Inc	CTRA	805.81	30.67	24,714.04		1.96%			
Campbell Soup Co	CPB	300.58	45.31	13,619.10	0.05%	3.27%	0.00%	5.00%	0.00%
Hilton Worldwide Holdings Inc	HLT	278.33	121.89	33,925.89		0.49%			
Carnival Corp	CCL	989.70	9.84	9,738.66					
Qorvo Inc	QRVO	106.03	98.52	10,445.78	0.04%			14.50%	0.01%
Lumen Technologies Inc	LUMN	1,033.06	10.50	10,847.08	0.04%	9.52%	0.00%	3.50%	0.00%

## STANDARD AND POOR'S 500 INDEX

Name	Ticker	[4] Shares Outstg	[5] Price	[6] Market Capitalization	[7] Weight in Index	[8] Estimated Dividend Yield	[9] Cap-Weighted Dividend Yield	[10] Value Line Long-Term Growth Est.	[11] Cap-Weighted Long-Term Growth Est.
UDR Inc	UDR	318.40	42.94	13,672.14	0.05%	3.54%	0.00%	10.50%	0.01%
Clorox Co/The	CLX	123.08	123.13	15,154.84	0.06%	3.77%	0.00%	4.50%	0.00%
Paycom Software Inc	PAYC	60.25	273.82	16,498.75	0.06%			20.00%	0.01%
CMS Energy Corp	CMS	290.13	62.66	18,179.48	0.07%	2.94%	0.00%	6.50%	0.00%
Newell Brands Inc	NWL	413.50	18.72	7,740.72		4.91%			
Colgate-Palmolive Co	CL	837.94	74.16	62,141.78	0.24%	2.54%	0.01%	6.50%	0.02%
EPAM Systems Inc	EPAM	57.15	289.77	16,560.65				20.50%	
Comerica Inc	CMA	130.76	76.34	9,982.22	0.04%	3.56%	0.00%	6.00%	0.00%
IPG Photonics Corp	IPGP	51.87	92.35	4,790.47	0.02%			17.00%	0.00%
Conagra Brands Inc	CAG	479.88	31.98	15,346.40	0.06%	3.91%	0.00%	4.00%	0.00%
Consolidated Edison Inc	ED	354.30	88.25	31,266.53	0.12%	3.58%	0.00%	4.50%	0.01%
Corning Inc	GLW	844.61	32.74	27,652.60	0.11%	3.30%	0.00%	20.00%	0.02%
Cummins Inc	CMI	141.10	199.16	28,101.08	0.11%	2.91%	0.00%	8.00%	0.01%
Caesars Entertainment Inc	CZR	214.37	41.39	8,872.61					
Danaher Corp	DHR	727.08	244.94	178,090.24	0.68%	0.41%	0.00%	17.00%	0.12%
Target Corp	TGT	463.70	147.44	68,367.34	0.26%	2.93%	0.01%	13.00%	0.03%
Deere & Co	DE	305.64	330.58	101,037.15	0.39%	1.37%	0.01%	15.00%	0.06%
Dominion Energy Inc	D	811.27	74.88	60,747.90	0.23%	3.57%	0.01%	14.00%	0.03%
Dover Corp	DOV	144.16	124.06	17,884.86	0.07%	1.61%	0.00%	9.00%	0.01%
Alliant Energy Corp	LNT	250.81	55.74	13,980.37	0.05%	3.07%	0.00%	6.00%	0.00%
Duke Energy Corp	DUK	770.00	100.18	77,138.60	0.29%	3.93%	0.01%	6.00%	0.02%
Regency Centers Corp	REG	172.36	58.26	10,041.81	0.04%	4.29%	0.00%	12.50%	0.00%
Eaton Corp PLC	ETN	399.00	131.01	52,272.99	0.20%	2.47%	0.00%	12.00%	0.02%
Ecolab Inc	ECL	285.66	150.04	42,859.68	0.16%	1.36%	0.00%	10.50%	0.02%
PerkinElmer Inc	PKI	126.15	140.41	17,712.44	0.07%	0.20%	0.00%	5.00%	0.00%
Emerson Electric Co	EMR	594.00	85.46	50,763.24	0.19%	2.41%	0.00%	11.50%	0.02%
EOG Resources Inc	EOG	585.71	127.46	74,654.98	0.29%	2.35%	0.01%	18.00%	0.05%
Aon PLC	AON	212.38	253.13	53,760.76	0.21%	0.88%	0.00%	7.50%	0.02%
Entergy Corp	ETR	203.37	107.77	21,917.62	0.08%	3.75%	0.00%	4.00%	0.00%
Equifax Inc	EFX	122.34	178.34	21,817.22	0.08%	0.87%	0.00%	10.00%	0.01%
IQVIA Holdings Inc	IQV	189.28	202.13	38,258.96	0.15%			14.50%	0.02%
Gartner Inc	IT	80.54	235.74	18,986.26	0.07%			15.50%	0.01%
FedEx Corp	FDX	259.18	232.78	60,331.45	0.23%	1.98%	0.00%	13.00%	0.03%
FMC Corp	FMC	125.94	107.16	13,495.62	0.05%	1.98%	0.00%	10.50%	0.01%
Brown & Brown Inc	BRO	282.27	54.94	15,508.08	0.06%	0.75%	0.00%	10.50%	0.01%
Ford Motor Co	F	3,948.91	12.27	48,453.16		3.26%		33.50%	
NextEra Energy Inc	NEE	1,964.50	74.19	145,746.26	0.56%	2.29%	0.01%	12.50%	0.07%
Franklin Resources Inc	BEN	499.92	23.78	11,888.19	0.05%	4.88%	0.00%	9.00%	0.00%
Garmin Ltd	GRMN	193.13	96.98	18,729.26	0.07%	3.01%	0.00%	10.00%	0.01%
Freeport-McMoRan Inc	FCX	1,449.26	36.90	53,477.77		1.63%		27.00%	
Dexcom Inc	DXCM	392.50	71.51	28,067.96					
General Dynamics Corp	GD	277.71	217.92	60,517.47	0.23%	2.31%	0.01%	8.00%	0.02%
General Mills Inc	GIS	602.21	66.34	39,950.74	0.15%	3.08%	0.00%	4.00%	0.01%
Genuine Parts Co	GPC	141.60	132.42	18,750.01	0.07%	2.70%	0.00%	8.50%	0.01%
Atmos Energy Corp	ATO	139.02	106.09	14,748.10	0.06%	2.56%	0.00%	7.50%	0.00%
WW Grainger Inc	GWV	51.10	473.06	24,174.31	0.09%	1.45%	0.00%	7.00%	0.01%
Halliburton Co	HAL	901.98	35.61	32,119.37		1.35%		26.00%	
L3Harris Technologies Inc	LHX	192.88	226.70	43,724.76	0.17%	1.98%	0.00%	18.50%	0.03%
Healthpeak Properties Inc	PEAK	539.56	24.37	13,149.00		4.92%		-7.50%	
Catalent Inc	CTLT	179.21	104.96	18,810.20				21.00%	
Fortive Corp	FTV	358.45	56.64	20,302.49	0.08%	0.49%	0.00%	12.00%	0.01%
Hershey Co/The	HSY	145.99	206.19	30,101.88	0.12%	1.75%	0.00%	6.50%	0.01%
Synchrony Financial	SYF	501.49	30.47	15,280.37	0.06%	2.89%	0.00%	9.50%	0.01%
Hormel Foods Corp	HRL	546.06	44.89	24,512.45	0.09%	2.32%	0.00%	6.50%	0.01%
Arthur J Gallagher & Co	AJG	210.07	152.75	32,087.89	0.12%	1.34%	0.00%	16.50%	0.02%
Mondelez International Inc	MDLZ	1,383.92	59.04	81,706.87	0.31%	2.37%	0.01%	9.50%	0.03%
CenterPoint Energy Inc	CNP	629.43	28.12	17,699.63	0.07%	2.42%	0.00%	6.50%	0.00%
Humana Inc	HUM	126.49	433.22	54,799.30	0.21%	0.73%	0.00%	11.00%	0.02%
Willis Towers Watson PLC	WTW	111.49	194.81	21,718.98	0.08%	1.68%	0.00%	8.00%	0.01%
Illinois Tool Works Inc	ITW	311.44	186.41	58,056.09	0.22%	2.62%	0.01%	11.00%	0.02%
CDW Corp/DE	CDW	135.12	163.85	22,138.76	0.08%	1.22%	0.00%	11.00%	0.01%
Trane Technologies PLC	TT	233.86	127.82	29,891.99		2.10%			
Interpublic Group of Cos Inc/The	IPG	393.66	28.05	11,042.28	0.04%	4.14%	0.00%	12.00%	0.01%
International Flavors & Fragrances Inc	IFF	254.84	116.43	29,670.79	0.11%	2.71%	0.00%	7.50%	0.01%
Jacobs Engineering Group Inc	J	128.63	124.68	16,037.21	0.06%	0.74%	0.00%	15.00%	0.01%
Generac Holdings Inc	GNRC	63.83	248.54	15,864.31				23.50%	
NXP Semiconductors NV	NXPI	262.57	168.94	44,357.73	0.17%	2.00%	0.00%	12.00%	0.02%
Kellogg Co	K	337.87	67.80	22,907.79	0.09%	3.42%	0.00%	3.50%	0.00%
Broadridge Financial Solutions Inc	BR	111.23	137.95	16,171.46	0.06%	1.86%	0.00%	9.00%	0.01%
Kimberly-Clark Corp	KMB	336.93	122.41	41,242.99	0.16%	3.79%	0.01%	5.50%	0.01%
Kimco Realty Corp	KIM	618.01	19.31	11,933.72	0.05%	4.14%	0.00%	8.50%	0.00%
Oracle Corp	ORCL	2,668.16	69.70	185,970.54	0.71%	1.84%	0.01%	9.00%	0.06%
Kroger Co/The	KR	720.94	50.88	36,681.33	0.14%	1.65%	0.00%	6.50%	0.01%
Lennar Corp	LEN	258.62	68.97	17,837.09	0.07%	2.17%	0.00%	9.00%	0.01%
Eli Lilly & Co	LLY	950.16	292.99	278,387.38	1.06%	1.34%	0.01%	11.50%	0.12%
Bath & Body Works Inc	BBWI	228.74	34.00	7,777.02		2.35%		26.50%	
Charter Communications Inc	CHTR	160.73	449.00	72,165.97				21.50%	
Lincoln National Corp	LNC	171.95	49.09	8,440.88	0.03%	3.67%	0.00%	11.50%	0.00%
Loews Corp	L	246.11	58.91	14,498.22	0.06%	0.42%	0.00%	16.00%	0.01%
Lowe's Cos Inc	LOW	639.13	179.01	114,410.48	0.44%	2.35%	0.01%	12.50%	0.05%
IDEX Corp	IEX	76.01	179.66	13,655.24	0.05%	1.34%	0.00%	10.00%	0.01%
Marsh & McLennan Cos Inc	MMC	502.71	148.39	74,596.54	0.28%	1.44%	0.00%	11.50%	0.03%
Masco Corp	MAS	235.94	50.95	12,021.14	0.05%	2.20%	0.00%	8.50%	0.00%
S&P Global Inc	SPGI	339.90	321.34	109,223.47	0.42%	1.06%	0.00%	9.50%	0.04%
Medtronic PLC	MDT	1,330.74	89.35	118,901.89	0.45%	3.04%	0.01%	8.50%	0.04%
Viavis Inc	VTRS	1,212.33	10.70	12,971.90		4.49%			
CVS Health Corp	CVS	1,311.31	91.45	119,919.21	0.46%	2.41%	0.01%	6.00%	0.03%
DuPont de Nemours Inc	DD	508.53	60.35	30,689.60		2.19%			
Micron Technology Inc	MU	1,116.67	59.12	66,017.35		0.68%		24.00%	
Motorola Solutions Inc	MSI	167.30	203.11	33,979.69	0.13%	1.56%	0.00%	8.00%	0.01%

## STANDARD AND POOR'S 500 INDEX

		[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Name	Ticker	Shares Outstg	Price	Market Capitalization	Weight in Index	Estimated Dividend Yield	Cap-Weighted Dividend Yield	Value Line Long-Term Growth Est.	Cap-Weighted Long-Term Growth Est.
Cboe Global Markets Inc	CBOE	106.19	109.72	11,651.06	0.04%	1.75%	0.00%	10.00%	0.00%
Laboratory Corp of America Holdings	LH	93.18	218.96	20,401.82	0.08%	1.32%	0.00%	6.00%	0.00%
Newmont Corp	NEM	793.65	62.68	49,746.04	0.19%	3.51%	0.01%	9.50%	0.02%
NIKE Inc	NKE	1,268.76	113.44	143,928.13		1.08%		24.00%	
NiSource Inc	NI	405.80	27.72	11,248.72	0.04%	3.39%	0.00%	9.50%	0.00%
Norfolk Southern Corp	NSC	238.33	224.50	53,505.76	0.20%	2.21%	0.00%	10.00%	0.02%
Principal Financial Group Inc	PFG	252.68	64.96	16,414.35	0.06%	3.94%	0.00%	6.00%	0.00%
Eversource Energy	ES	344.88	80.58	27,790.27	0.11%	3.16%	0.00%	6.00%	0.01%
Northrop Grumman Corp	NOC	155.45	458.45	71,263.76	0.27%	1.51%	0.00%	7.50%	0.02%
Wells Fargo & Co	WFC	3,790.35	38.17	144,677.74	0.55%	2.62%	0.01%	7.50%	0.04%
Nucor Corp	NUE	266.00	116.46	30,978.36	0.12%	1.72%	0.00%	10.00%	0.01%
PVH Corp	PVH	66.96	63.40	4,245.33	0.02%	0.24%	0.00%	13.50%	0.00%
Occidental Petroleum Corp	OXY	937.19	60.28	56,493.87		0.86%			
Omnicor Group Inc	OMC	205.73	65.43	13,461.11	0.05%	4.28%	0.00%	6.00%	0.00%
ONEOK Inc	OKE	446.62	59.69	26,658.51	0.10%	6.27%	0.01%	11.00%	0.01%
Raymond James Financial Inc	RJF	126.66	87.98	19,061.66	0.07%	1.55%	0.00%	10.50%	0.01%
Parker-Hannifin Corp	PH	128.37	254.79	32,707.90	0.12%	2.09%	0.00%	12.50%	0.02%
Rollins Inc	ROL	492.46	32.77	16,137.95	0.06%	1.22%	0.00%	10.50%	0.01%
PPL Corp	PPL	735.90	26.27	19,332.17		3.43%			
ConocoPhillips	COP	1,293.45	109.33	141,412.89	0.54%	1.68%	0.01%	20.00%	0.11%
PulteGroup Inc	PHM	237.63	39.43	9,369.63	0.04%	0.00%	0.00%	11.00%	0.00%
Pinnacle West Capital Corp	PNW	113.00	68.36	7,724.75	0.03%	4.97%	0.00%	1.50%	0.00%
PNC Financial Services Group Inc/The	PNC	413.58	156.51	64,729.56	0.25%	3.83%	0.01%	11.50%	0.03%
PPG Industries Inc	PPG	236.15	113.62	26,831.14	0.10%	2.08%	0.00%	4.00%	0.00%
Progressive Corp/The	PGR	584.88	112.57	65,839.60	0.25%	0.36%	0.00%	4.50%	0.01%
Public Service Enterprise Group Inc	PEG	499.26	60.52	30,215.15	0.12%	3.57%	0.00%	4.00%	0.00%
Robert Half International Inc	RHI	110.51	82.34	9,099.72	0.03%	2.09%	0.00%	7.50%	0.00%
Edison International	EIX	381.20	61.13	23,302.76		4.58%			
Schlumberger NV	SLB	1,413.46	41.52	58,686.90		1.69%		23.00%	
Charles Schwab Corp/The	SCHW	1,817.06	61.51	111,767.18	0.43%	1.30%	0.01%	9.00%	0.04%
Sherwin-Williams Co/The	SHW	260.13	228.99	59,567.40	0.23%	1.05%	0.00%	11.50%	0.03%
West Pharmaceutical Services Inc	WST	74.08	289.89	21,473.89	0.08%	0.25%	0.00%	17.00%	0.01%
J M Smucker Co/The	SJM	108.46	125.17	13,575.69	0.05%	3.16%	0.00%	4.00%	0.00%
Snap-on Inc	SNA	53.37	203.84	10,879.76	0.04%	2.79%	0.00%	4.50%	0.00%
AMETEK Inc	AME	230.91	112.28	25,926.57	0.10%	0.78%	0.00%	10.00%	0.01%
Southern Co/The	SO	1,062.53	66.57	70,732.29	0.27%	4.09%	0.01%	6.50%	0.02%
Truist Financial Corp	TFC	1,331.41	46.58	62,017.26	0.24%	4.12%	0.01%	7.00%	0.02%
Southwest Airlines Co	LUV	592.96	37.23	22,075.75				29.50%	
W R Berkley Corp	WRB	265.19	67.01	17,770.58	0.07%	0.60%	0.00%	15.50%	0.01%
Stanley Black & Decker Inc	SWK	150.97	106.56	16,086.83	0.06%	2.97%	0.00%	6.00%	0.00%
Public Storage	PSA	175.53	304.17	53,390.66	0.20%	2.63%	0.01%	8.00%	0.02%
Arista Networks Inc	ANET	308.26	92.87	28,628.48	0.11%			4.50%	0.00%
Sysco Corp	SYY	509.48	80.78	41,155.47	0.16%	2.43%	0.00%	17.50%	0.03%
Corteva Inc	CTVA	725.32	55.53	40,277.02		1.01%			
Texas Instruments Inc	TXN	922.13	155.92	143,779.13	0.55%	2.95%	0.02%	8.50%	0.05%
Textron Inc	TXT	215.08	61.34	13,193.19	0.05%	0.13%	0.00%	8.50%	0.00%
Thermo Fisher Scientific Inc	TMO	391.46	514.76	201,508.98	0.77%	0.23%	0.00%	15.50%	0.12%
TJX Cos Inc/The	TJX	1,171.64	57.63	67,521.38	0.26%	2.05%	0.01%	20.00%	0.05%
Globe Life Inc	GL	98.60	93.26	9,195.44	0.04%	0.89%	0.00%	8.00%	0.00%
Johnson Controls International plc	JCI	695.67	49.86	34,686.06	0.13%	2.81%	0.00%	14.00%	0.02%
Ulta Beauty Inc	ULTA	51.82	405.61	21,017.90	0.08%			15.00%	0.01%
Union Pacific Corp	UNP	628.03	209.84	131,784.77	0.50%	2.48%	0.01%	9.50%	0.05%
Keysight Technologies Inc	KEYS	179.95	138.47	24,917.12	0.10%			13.00%	0.01%
UnitedHealth Group Inc	UNH	938.17	464.33	435,621.40	1.66%	1.42%	0.02%	12.00%	0.20%
Marathon Oil Corp	MRO	707.69	28.07	19,864.89		1.14%			
Bio-Rad Laboratories Inc	BIO	24.88	480.44	11,951.91	0.05%			11.50%	0.01%
Ventas Inc	VTR	399.70	50.24	20,080.73	0.08%	3.58%	0.00%	10.50%	0.01%
VF Corp	VFC	388.48	46.70	18,142.02	0.07%	4.28%	0.00%	9.50%	0.01%
Vornado Realty Trust	VNO	191.74	29.45	5,646.83		7.20%		-19.00%	
Vulcan Materials Co	VMC	132.90	151.45	20,127.10	0.08%	1.06%	0.00%	8.50%	0.01%
Weyerhaeuser Co	WY	744.50	34.51	25,692.63	0.10%	2.09%	0.00%	6.00%	0.01%
Whirlpool Corp	WHR	56.20	155.52	8,740.54	0.03%	4.50%	0.00%	9.50%	0.00%
Williams Cos Inc/The	WMB	1,218.01	31.75	38,671.88	0.15%	5.35%	0.01%	8.50%	0.01%
Constellation Energy Corp	CEG	326.66	58.20	19,011.84		0.97%			
WEC Energy Group Inc	WEC	315.44	91.88	28,982.17	0.11%	3.17%	0.00%	6.00%	0.01%
Adobe Inc	ADBE	472.50	376.92	178,094.70	0.68%			14.50%	0.10%
AES Corp/The	AES	667.86	19.55	13,056.66	0.05%	3.23%	0.00%	14.00%	0.01%
Amgen Inc	AMGN	534.20	235.58	125,846.84	0.48%	3.29%	0.02%	5.50%	0.03%
Apple Inc	AAPL	16,185.18	135.43	2,191,959.06	8.37%	0.68%	0.06%	14.00%	1.17%
Autodesk Inc	ADSK	217.27	176.71	38,394.14	0.15%			14.00%	0.02%
Cintas Corp	CTAS	102.33	354.84	36,309.00	0.14%	1.07%	0.00%	13.50%	0.02%
Comcast Corp	CMCSA	4,470.57	40.13	179,403.97	0.69%	2.69%	0.02%	9.50%	0.07%
Molson Coors Beverage Co	TAP	200.53	51.82	10,391.31		2.93%		49.50%	
KLA Corp	KLAC	149.24	323.79	48,320.80		1.30%		21.00%	
Marriott International Inc/MD	MAR	327.30	154.80	50,665.73	0.19%	0.78%	0.00%	17.50%	0.03%
McCormick & Co Inc/MD	MKC	250.23	83.73	20,951.42	0.08%	1.77%	0.00%	6.00%	0.00%
PACCAR Inc	PCAR	347.68	85.85	29,848.59	0.11%	1.58%	0.00%	5.00%	0.01%
Costco Wholesale Corp	COST	442.96	458.79	203,226.99	0.78%	0.78%	0.01%	10.50%	0.08%
First Republic Bank/CA	FRC	179.68	140.28	25,206.07	0.10%	0.77%	0.00%	11.00%	0.01%
Stryker Corp	SYK	378.15	202.51	76,579.97	0.29%	1.37%	0.00%	8.50%	0.02%
Tyson Foods Inc	TSN	291.54	84.11	24,521.35	0.09%	2.19%	0.00%	6.00%	0.01%
Lamb Weston Holdings Inc	LW	144.45	65.12	9,406.39	0.04%	1.50%	0.00%	5.00%	0.00%
Applied Materials Inc	AMAT	869.95	97.42	84,750.24	0.32%	1.07%	0.00%	14.50%	0.05%
American Airlines Group Inc	AAL	649.52	13.31	8,645.04					
Cardinal Health Inc	CAH	272.43	51.04	13,904.67	0.05%	3.88%	0.00%	5.00%	0.00%
Cincinnati Financial Corp	CINF	160.36	117.52	18,844.92	0.07%	2.35%	0.00%	7.00%	0.01%
Paramount Global	PARA	608.40	25.65	15,605.33	0.06%	3.74%	0.00%	4.50%	0.00%
DR Horton Inc	DHI	352.03	65.44	23,036.84	0.09%	1.38%	0.00%	13.00%	0.01%
Electronic Arts Inc	EA	279.60	129.26	36,140.58	0.14%	0.59%	0.00%	9.00%	0.01%
Expeditors International of Washington Inc	EXPD	167.75	97.95	16,431.50	0.06%	1.37%	0.00%	10.00%	0.01%

## STANDARD AND POOR'S 500 INDEX

Name	Ticker	[4] Shares Outstg	[5] Price	[6] Market Capitalization	[7] Weight in Index	[8] Estimated Dividend Yield	[9] Cap-Weighted Dividend Yield	[10] Value Line Long-Term Growth Est.	[11] Cap-Weighted Long-Term Growth Est.
Fastenal Co	FAST	575.55	49.61	28,553.23	0.11%	2.50%	0.00%	8.50%	0.01%
M&T Bank Corp	MTB	179.42	165.49	29,691.72	0.11%	2.90%	0.00%	8.00%	0.01%
Xcel Energy Inc	XEL	544.65	65.85	35,865.40	0.14%	2.96%	0.00%	6.00%	0.01%
Fiserv Inc	FISV	646.39	91.47	59,125.66	0.23%			11.00%	0.02%
Fifth Third Bancorp	FITB	686.09	34.73	23,827.80	0.09%	3.46%	0.00%	11.00%	0.01%
Gilead Sciences Inc	GILD	1,254.31	58.39	73,239.34	0.28%	5.00%	0.01%	13.50%	0.04%
Hasbro Inc	HAS	139.44	81.76	11,400.78	0.04%	3.42%	0.00%	11.50%	0.01%
Huntington Bancshares Inc/OH	HBAN	1,439.18	12.54	18,047.25	0.07%	4.94%	0.00%	12.50%	0.01%
Welltower Inc	WELL	453.97	78.45	35,613.79	0.14%	3.11%	0.00%	3.50%	0.00%
Biogen Inc	BIIB	146.45	197.26	28,889.12				-10.50%	
Northern Trust Corp	NTRS	208.38	93.28	19,437.69	0.07%	3.00%	0.00%	8.00%	0.01%
Packaging Corp of America	PKG	93.70	147.23	13,795.60	0.05%	3.40%	0.00%	11.00%	0.01%
Paychex Inc	PAYX	361.02	117.95	42,581.96	0.16%	2.68%	0.00%	9.50%	0.02%
QUALCOMM Inc	QCOM	1,120.00	131.03	146,753.60	0.56%	2.29%	0.01%	19.00%	0.11%
Roper Technologies Inc	ROP	105.91	384.31	40,703.43	0.16%	0.65%	0.00%	8.50%	0.01%
Ross Stores Inc	ROST	349.93	76.00	26,594.38	0.10%	1.63%	0.00%	14.00%	0.01%
IDEXX Laboratories Inc	IDXX	84.01	333.94	28,053.30	0.11%			12.00%	0.01%
Starbucks Corp	SBUX	1,146.90	74.19	85,088.51	0.33%	2.64%	0.01%	16.50%	0.05%
KeyCorp	KEY	932.47	17.74	16,542.04	0.06%	4.40%	0.00%	9.50%	0.01%
Fox Corp	FOXA	311.68	32.83	10,232.59	0.04%	1.46%	0.00%	10.50%	0.00%
Fox Corp	FOX	245.07	30.44	7,459.78		1.58%			
State Street Corp	STT	367.12	63.94	23,473.33	0.09%	3.57%	0.00%	9.50%	0.01%
Norwegian Cruise Line Holdings Ltd	NCLH	419.10	11.73	4,916.05					
US Bancorp	USB	1,485.74	46.36	68,878.91	0.26%	3.97%	0.01%	6.00%	0.02%
A O Smith Corp	AOS	130.04	56.04	7,287.22	0.03%	2.00%	0.00%	11.00%	0.00%
NortonLifeLock Inc	NLOK	571.37	22.00	12,570.05	0.05%	2.27%	0.00%	9.50%	0.00%
T Rowe Price Group Inc	TROW	227.30	110.07	25,018.58	0.10%	4.36%	0.00%	9.50%	0.01%
Waste Management Inc	WM	415.16	145.41	60,368.42	0.23%	1.79%	0.00%	6.50%	0.01%
Constellation Brands Inc	STZ	161.03	230.58	37,130.99	0.14%	1.39%	0.00%	5.00%	0.01%
DENTSPLY SIRONA Inc	XRAY	215.45	35.36	7,618.38	0.03%	1.41%	0.00%	12.00%	0.00%
Zions Bancorp NA	ZION	151.36	53.12	8,040.19	0.03%	2.86%	0.00%	7.50%	0.00%
Alaska Air Group Inc	ALK	126.09	41.18	5,192.47					
Invesco Ltd	IVZ	455.03	16.42	7,471.51	0.03%	4.57%	0.00%	15.50%	0.00%
Linde PLC	LIN	501.93	299.99	150,572.78	0.58%	1.56%	0.01%	12.00%	0.07%
Intuit Inc	INTU	282.08	378.54	106,777.43	0.41%	0.72%	0.00%	17.50%	0.07%
Morgan Stanley	MS	1,749.28	76.02	132,980.57	0.51%	3.68%	0.02%	10.50%	0.05%
Microchip Technology Inc	MCHP	554.50	61.55	34,129.54	0.13%	1.79%	0.00%	10.00%	0.01%
Chubb Ltd	CB	423.71	199.28	84,437.13	0.32%	1.67%	0.01%	11.00%	0.04%
Hologic Inc	HOLX	249.38	68.32	17,037.71				25.00%	
Citizens Financial Group Inc	CFG	495.45	36.29	17,979.74	0.07%	4.30%	0.00%	8.50%	0.01%
O'Reilly Automotive Inc	ORLY	65.73	599.01	39,369.93	0.15%			13.00%	0.02%
Allstate Corp/The	ALL	274.98	121.67	33,457.18	0.13%	2.79%	0.00%	4.50%	0.01%
Equity Residential	EQR	376.04	69.15	26,003.30		3.62%		-2.00%	
BorgWarner Inc	BWA	239.58	35.78	8,571.99	0.03%	1.90%	0.00%	9.50%	0.00%
Organon & Co	OGN	253.64	33.59	8,519.67		3.33%			
Host Hotels & Resorts Inc	HST	714.78	17.61	12,587.22	0.05%	1.36%	0.00%	8.50%	0.00%
Incyte Corp	INCY	221.51	68.55	15,184.17				25.50%	
Simon Property Group Inc	SPG	328.64	97.50	32,042.30	0.12%	6.97%	0.01%	2.50%	0.00%
Eastman Chemical Co	EMN	128.95	95.05	12,256.70	0.05%	3.20%	0.00%	9.50%	0.00%
Twitter Inc	TWTR	764.18	37.99	29,031.24					
AvalonBay Communities Inc	AVB	139.82	187.58	26,227.06	0.10%	3.39%	0.00%	6.50%	0.01%
Prudential Financial Inc	PRU	375.00	94.85	35,568.75	0.14%	5.06%	0.01%	5.50%	0.01%
United Parcel Service Inc	UPS	734.44	175.88	129,172.96	0.49%	3.46%	0.02%	11.50%	0.06%
Walgreens Boots Alliance Inc	WBA	863.77	40.73	35,181.47	0.13%	4.69%	0.01%	7.50%	0.01%
STERIS PLC	STE	100.08	202.28	20,244.18	0.08%	0.85%	0.00%	11.50%	0.01%
McKesson Corp	MCK	143.58	307.68	44,177.00	0.17%	0.61%	0.00%	10.00%	0.02%
Lockheed Martin Corp	LMT	266.11	414.10	110,194.91	0.42%	2.70%	0.01%	7.00%	0.03%
AmerisourceBergen Corp	ABC	209.46	142.31	29,808.82	0.11%	1.29%	0.00%	8.50%	0.01%
Capital One Financial Corp	COF	393.05	108.17	42,516.33		2.22%			
Waters Corp	WAT	60.24	324.26	19,531.80	0.07%			6.00%	0.00%
Nordson Corp	NDSN	57.51	201.69	11,599.60	0.04%	1.01%	0.00%	12.00%	0.01%
Dollar Tree Inc	DLTR	224.56	154.54	34,702.88	0.13%			12.00%	0.02%
Darden Restaurants Inc	DRI	124.73	116.55	14,537.75	0.06%	3.78%	0.00%	19.50%	0.01%
Match Group Inc	MTCH	285.59	77.06	22,007.80				21.00%	
Domino's Pizza Inc	DPZ	36.05	385.42	13,892.46	0.05%	1.14%	0.00%	15.50%	0.01%
NVR Inc	NVR	3.29	3,909.85	12,863.41	0.05%			5.50%	0.00%
NetApp Inc	NTAP	222.54	65.43	14,560.53	0.06%	3.06%	0.00%	8.00%	0.00%
Citrix Systems Inc	CTXS	126.58	92.71	11,735.23	0.04%			7.50%	0.00%
DXC Technology Co	DXC	229.66	32.34	7,427.04	0.03%			5.00%	0.00%
Old Dominion Freight Line Inc	ODFL	113.35	242.25	27,460.01	0.10%	0.50%	0.00%	12.00%	0.01%
DaVita Inc	DVA	94.60	90.15	8,528.19	0.03%			12.00%	0.00%
Hartford Financial Services Group Inc/The	HIG	328.87	67.03	22,043.82	0.08%	2.30%	0.00%	6.50%	0.01%
Iron Mountain Inc	IRM	290.56	47.97	13,938.26	0.05%	5.16%	0.00%	11.00%	0.01%
Estee Lauder Cos Inc/The	EL	231.81	243.12	56,356.43	0.22%	0.99%	0.00%	14.00%	0.03%
Cadence Design Systems Inc	CDNS	275.76	147.72	40,735.12	0.16%			12.00%	0.02%
Tyler Technologies Inc	TYL	41.47	318.27	13,199.93	0.05%			14.00%	0.01%
Universal Health Services Inc	UHS	67.13	105.44	7,077.98	0.03%	0.76%	0.00%	9.00%	0.00%
Skyworks Solutions Inc	SWKS	160.93	94.62	15,226.82	0.06%	2.37%	0.00%	15.50%	0.01%
Quest Diagnostics Inc	DGX	117.37	128.78	15,114.26	0.06%	2.05%	0.00%	7.00%	0.00%
Activision Blizzard Inc	ATVI	781.88	75.35	58,914.73	0.23%	0.62%	0.00%	14.00%	0.03%
Rockwell Automation Inc	ROK	116.26	205.66	23,910.44	0.09%	2.18%	0.00%	10.00%	0.01%
Kraft Heinz Co/The	KHC	1,223.95	36.18	44,282.58	0.17%	4.42%	0.01%	5.50%	0.01%
American Tower Corp	AMT	465.53	241.40	112,379.42	0.43%	2.37%	0.01%	9.00%	0.04%
Regeneron Pharmaceuticals Inc	REGN	108.03	561.19	60,624.23	0.23%			3.00%	0.01%
Amazon.com Inc	AMZN	10,174.41	107.67	1,095,478.72				26.50%	
Jack Henry & Associates Inc	JKHY	72.86	179.27	13,061.97	0.05%	1.09%	0.00%	10.50%	0.01%
Ralph Lauren Corp	RL	45.19	95.87	4,332.75	0.02%	3.13%	0.00%	11.50%	0.00%
Boston Properties Inc	BXP	156.71	92.04	14,423.77		4.26%		-1.50%	
Amphenol Corp	APH	597.14	66.12	39,482.83	0.15%	1.21%	0.00%	12.00%	0.02%
Howmet Aerospace Inc	HWM	417.91	32.71	13,669.97	0.05%	0.24%	0.00%	12.00%	0.01%

## STANDARD AND POOR'S 500 INDEX

Name	Ticker	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
		Shares Outstg	Price	Market Capitalization	Weight in Index	Estimated Dividend Yield	Cap-Weighted Dividend Yield	Value Line Long-Term Growth Est.	Cap-Weighted Long-Term Growth Est.
Pioneer Natural Resources Co	PXD	241.96	258.21	62,476.23		11.43%		23.00%	
Valero Energy Corp	VLO	408.10	128.30	52,358.72	0.20%	3.06%	0.01%	11.00%	0.02%
Synopsys Inc	SNPS	152.97	303.24	46,386.62	0.18%			12.50%	0.02%
Etsy Inc	ETSY	127.12	76.05	9,667.40				24.50%	
CH Robinson Worldwide Inc	CHRW	127.27	103.14	13,126.22	0.05%	2.13%	0.00%	8.00%	0.00%
Accenture PLC	ACN	633.40	281.19	178,106.03	0.68%	1.38%	0.01%	12.50%	0.09%
TransDigm Group Inc	TDG	54.61	547.79	29,912.62	0.11%			18.00%	0.02%
Yum! Brands Inc	YUM	285.16	111.90	31,909.85	0.12%	2.04%	0.00%	10.50%	0.01%
Prologis Inc	PLD	739.75	115.09	85,137.25	0.33%	2.75%	0.01%	6.00%	0.02%
FirstEnergy Corp	FE	570.93	37.24	21,261.51	0.08%	4.19%	0.00%	7.50%	0.01%
VeriSign Inc	VRSN	109.55	163.88	17,952.23	0.07%			8.50%	0.01%
Quanta Services Inc	PWR	143.71	124.12	17,837.16	0.07%	0.23%	0.00%	12.50%	0.01%
Henry Schein Inc	HSIC	138.05	74.97	10,349.68	0.04%			7.00%	0.00%
Ameren Corp	AEE	258.09	83.26	21,488.74	0.08%	2.83%	0.00%	6.50%	0.01%
ANSYS Inc	ANSS	86.99	238.75	20,768.86	0.08%			9.00%	0.01%
FactSet Research Systems Inc	FDS	37.90	355.87	13,486.41	0.05%	1.00%	0.00%	10.50%	0.01%
NVIDIA Corp	NVDA	2,500.00	165.27	413,175.00		0.10%		21.50%	
Sealed Air Corp	SEE	146.08	58.89	8,602.89	0.03%	1.36%	0.00%	10.00%	0.00%
Cognizant Technology Solutions Corp	CTSH	521.17	68.49	35,695.21	0.14%	1.58%	0.00%	7.00%	0.01%
SVB Financial Group	SIVB	58.85	419.04	24,660.92	0.09%			6.00%	0.01%
Intuitive Surgical Inc	ISRG	358.96	196.13	70,402.24	0.27%			12.50%	0.03%
Take-Two Interactive Software Inc	TTWO	161.98	126.16	20,435.65	0.08%			12.50%	0.01%
Republic Services Inc	RSG	315.89	123.36	38,968.31	0.15%	1.49%	0.00%	12.50%	0.02%
eBay Inc	EBAY	559.84	43.51	24,358.73	0.09%	2.02%	0.00%	15.50%	0.01%
Goldman Sachs Group Inc/The	GS	343.45	290.07	99,623.67	0.38%	2.76%	0.01%	5.00%	0.02%
SBA Communications Corp	SBAC	107.83	301.39	32,498.58		0.94%		35.50%	
Sempra Energy	SRE	314.31	144.74	45,492.51	0.17%	3.16%	0.01%	11.50%	0.02%
Moody's Corp	MCO	184.50	262.30	48,394.35	0.18%	1.07%	0.00%	8.00%	0.01%
Booking Holdings Inc	BKNG	40.62	1,973.24	80,158.93	0.31%			14.00%	0.04%
F5 Inc	FFIV	60.47	153.27	9,268.54	0.04%			10.00%	0.00%
Akamai Technologies Inc	AKAM	160.31	91.04	14,594.17	0.06%			9.50%	0.01%
Charles River Laboratories International Inc	CRL	50.81	212.89	10,815.88	0.04%			12.00%	0.00%
MarketAxess Holdings Inc	MKTX	37.74	270.04	10,191.85	0.04%	1.04%	0.00%	11.50%	0.00%
Devon Energy Corp	DVN	660.00	68.46	45,183.60		7.42%		30.00%	
Bio-Techne Corp	TECH	39.23	330.66	12,973.11	0.05%	0.39%	0.00%	17.50%	0.01%
Alphabet Inc	GOOGL	300.76	2,195.29	660,264.20					
Teleflex Inc	TFX	46.90	257.22	12,063.62	0.05%	0.53%	0.00%	13.50%	0.01%
Allegion plc	ALLE	87.81	100.69	8,841.09	0.03%	1.63%	0.00%	10.50%	0.00%
Netflix Inc	NFLX	444.27	180.11	80,018.19	0.31%			12.50%	0.04%
Warner Bros Discovery Inc	WBD	2,426.84	14.85	36,038.63					
Agilent Technologies Inc	A	298.71	116.47	34,790.52	0.13%	0.72%	0.00%	11.50%	0.02%
Trimble Inc	TRMB	250.14	59.79	14,955.99	0.06%			10.00%	0.01%
Anthem Inc	ANTM	241.09	462.88	111,593.42	0.43%	1.11%	0.00%	12.50%	0.05%
CME Group Inc	CME	359.42	200.88	72,199.89	0.28%	1.99%	0.01%	7.50%	0.02%
Juniper Networks Inc	JNPR	323.10	28.58	9,234.06	0.04%	2.94%	0.00%	9.00%	0.00%
BlackRock Inc	BLK	151.50	599.90	90,886.65	0.35%	3.25%	0.01%	10.00%	0.03%
DTE Energy Co	DTE	193.74	119.21	23,095.98	0.09%	2.97%	0.00%	4.50%	0.00%
Celanese Corp	CE	108.31	134.38	14,554.56	0.06%	2.02%	0.00%	9.50%	0.01%
Nasdaq Inc	NDAQ	164.68	149.92	24,688.53	0.09%	1.60%	0.00%	6.00%	0.01%
Philip Morris International Inc	PM	1,550.11	98.21	152,236.30	0.58%	5.09%	0.03%	7.00%	0.04%
Ingersoll Rand Inc	IR	405.93	44.56	18,088.24		0.18%			
Salesforce Inc	CRM	995.00	168.55	167,707.25	0.64%			16.50%	0.11%
Huntington Ingalls Industries Inc	HII	40.05	205.67	8,236.47	0.03%	2.29%	0.00%	10.00%	0.00%
MetLife Inc	MET	813.21	62.31	50,670.87	0.19%	3.21%	0.01%	7.50%	0.01%
Under Armour Inc	UA	253.22	8.79	2,225.79					
Tapestry Inc	TPR	251.80	32.70	8,233.93	0.03%	3.06%	0.00%	10.00%	0.00%
CSX Corp	CSX	2,174.26	29.42	63,966.73	0.24%	1.36%	0.00%	10.00%	0.02%
Edwards Lifesciences Corp	EW	621.75	88.78	55,199.14	0.21%			12.50%	0.03%
Ameriprise Financial Inc	AMP	109.90	246.48	27,089.14	0.10%	2.03%	0.00%	15.00%	0.02%
Zebra Technologies Corp	ZBRA	52.51	308.36	16,193.22	0.06%			11.50%	0.01%
Zimmer Biomet Holdings Inc	ZBH	209.58	106.97	22,418.45	0.09%	0.90%	0.00%	7.00%	0.01%
Camden Property Trust	CPT	106.52	128.55	13,693.27	0.05%	2.92%	0.00%	2.50%	0.00%
CBRE Group Inc	CBRE	326.86	71.40	23,337.88	0.09%			8.50%	0.01%
Mastercard Inc	MA	964.92	325.39	313,975.64	1.20%	0.60%	0.01%	13.50%	0.16%
CarMax Inc	KMX	160.54	91.54	14,695.65	0.06%			13.00%	0.01%
Intercontinental Exchange Inc	ICE	558.27	95.63	53,386.98	0.20%	1.59%	0.00%	6.50%	0.01%
Fidelity National Information Services Inc	FIS	610.77	95.47	58,310.31		1.97%		52.00%	
Chipotle Mexican Grill Inc	CMG	27.96	1,266.16	35,404.37	0.14%			16.50%	0.02%
Wynn Resorts Ltd	WYNN	115.97	59.34	6,881.36				27.00%	
Live Nation Entertainment Inc	LYV	228.06	86.68	19,768.59					
Assurant Inc	AIZ	54.09	173.24	9,369.69	0.04%	1.57%	0.00%	14.00%	0.01%
NRG Energy Inc	NRG	237.28	39.11	9,280.18		3.58%		-10.50%	
Monster Beverage Corp	MNST	529.67	87.87	46,542.19	0.18%			11.50%	0.02%
Regions Financial Corp	RF	934.50	19.38	18,110.61	0.07%	3.51%	0.00%	10.50%	0.01%
Baker Hughes Co	BKR	984.58	31.74	31,250.44		2.27%			
Mosaic Co/The	MOS	361.99	53.61	19,406.44		1.12%		56.50%	
Expedia Group Inc	EXPE	151.57	104.41	15,825.84					
Evergy Inc	EVRG	229.48	61.31	14,069.30	0.05%	3.74%	0.00%	7.50%	0.00%
CF Industries Holdings Inc	CF	208.60	92.07	19,205.99	0.07%	1.74%	0.00%	19.50%	0.01%
APA Corp	APA	338.23	45.63	15,433.53		1.10%			
Leidos Holdings Inc	LDOS	136.66	98.79	13,500.84	0.05%	1.46%	0.00%	9.00%	0.00%
Alphabet Inc	GOOG	313.38	2,207.81	691,874.67	2.64%			18.50%	0.49%
Cooper Cos Inc/The	COO	49.34	315.34	15,557.61	0.06%	0.02%	0.00%	16.00%	0.01%
TE Connectivity Ltd	TEL	322.17	120.60	38,854.18	0.15%	1.86%	0.00%	10.50%	0.02%
Discover Financial Services	DFS	280.97	94.68	26,601.77	0.10%	2.53%	0.00%	16.00%	0.02%
Visa Inc	V	1,645.72	196.16	322,824.24	1.23%	0.76%	0.01%	13.50%	0.17%
Mid-America Apartment Communities Inc	MAA	115.43	162.41	18,746.66	0.07%	3.08%	0.00%	8.50%	0.01%
Xylem Inc/NY	XYL	180.09	76.45	13,768.11	0.05%	1.57%	0.00%	6.50%	0.00%
Marathon Petroleum Corp	MPC	541.00	98.90	53,504.41		2.35%			
Advanced Micro Devices Inc	AMD	1,620.51	89.30	144,711.36	0.55%			17.50%	0.10%



## STANDARD AND POOR'S 500 INDEX

Name	Ticker	[4] Shares Outstg	[5] Price	[6] Market Capitalization	[7] Weight in Index	[8] Estimated Dividend Yield	[9] Cap-Weighted Dividend Yield	[10] Value Line Long-Term Growth Est.	[11] Cap-Weighted Long-Term Growth Est.
Tractor Supply Co	TSCO	111.88	196.13	21,943.42	0.08%	1.88%	0.00%	12.50%	0.01%
ResMed Inc	RMD	146.29	203.28	29,736.81	0.11%	0.83%	0.00%	8.50%	0.01%
Mettler-Toledo International Inc	MTD	22.68	1,167.25	26,473.23	0.10%			13.50%	0.01%
Copart Inc	CPRT	237.67	106.45	25,300.29	0.10%			12.00%	0.01%
VICI Properties Inc	VICI	963.00	29.27	28,187.07	0.11%	4.92%	0.01%	8.00%	0.01%
Fortinet Inc	FTNT	160.53	277.52	44,549.45				21.50%	
Albemarle Corp	ALB	117.11	215.08	25,188.66	0.10%	0.73%	0.00%	15.00%	0.01%
Moderna Inc	MRNA	397.76	128.53	51,124.09				-2.50%	
Essex Property Trust Inc	ESS	65.33	257.23	16,805.61		3.42%		-2.50%	
Realty Income Corp	O	601.60	64.80	38,983.55	0.15%	4.58%	0.01%	3.50%	0.01%
Westrock Co	WRK	254.85	43.40	11,060.58	0.04%	2.30%	0.00%	20.00%	0.01%
Westinghouse Air Brake Technologies Corp	WAB	182.65	88.00	16,073.02	0.06%	0.68%	0.00%	9.00%	0.01%
Pool Corp	POOL	40.07	353.82	14,178.98	0.05%	1.13%	0.00%	19.00%	0.01%
Western Digital Corp	WDC	313.17	49.95	15,642.74				20.50%	
PepsiCo Inc	PEP	1,382.68	157.79	218,173.71	0.83%	2.92%	0.02%	6.00%	0.05%
Diamondback Energy Inc	FANG	177.55	146.76	26,057.38		8.31%			
ServiceNow Inc	NOW	200.46	465.95	93,404.34				45.50%	
Church & Dwight Co Inc	CHD	242.77	81.50	19,785.84	0.08%	1.29%	0.00%	6.00%	0.00%
Duke Realty Corp	DRE	384.82	53.68	20,657.14	0.08%	2.09%	0.00%	2.09%	0.00%
Federal Realty OP LP	FRT	79.42	95.93	7,618.76	0.03%	4.46%	0.00%	2.50%	0.00%
MGM Resorts International	MGM	426.05	30.06	12,807.12				25.00%	
American Electric Power Co Inc	AEP	513.54	90.65	46,552.76	0.18%	3.44%	0.01%	6.50%	0.01%
SolarEdge Technologies Inc	SEDG	55.39	274.13	15,183.24				22.00%	
PTC Inc	PTC	116.98	103.42	12,097.66				29.00%	
JB Hunt Transport Services Inc	JBHT	104.78	161.52	16,924.55	0.06%	0.99%	0.00%	11.50%	0.01%
Lam Research Corp	LRCX	138.72	453.64	62,926.67	0.24%	1.32%	0.00%	17.00%	0.04%
Mohawk Industries Inc	MHK	63.54	125.42	7,969.06	0.03%			10.50%	0.00%
Pentair PLC	PNR	165.40	46.03	7,613.36	0.03%	1.82%	0.00%	13.00%	0.00%
Vertex Pharmaceuticals Inc	VRTX	255.76	253.51	64,836.70	0.25%			18.50%	0.05%
Amcor PLC	AMCR	1,502.77	12.10	18,183.48	0.07%	3.97%	0.00%	15.00%	0.01%
Meta Platforms Inc	META	2,293.52	169.35	388,407.44					
T-Mobile US Inc	TMUS	1,253.59	126.52	158,603.57	0.61%			9.50%	0.06%
United Rentals Inc	URI	71.61	265.96	19,045.93	0.07%			18.00%	0.01%
Alexandria Real Estate Equities Inc	ARE	163.22	135.73	22,153.58	0.08%	3.48%	0.00%	9.00%	0.01%
Honeywell International Inc	HON	680.73	184.97	125,915.18	0.48%	2.12%	0.01%	11.00%	0.05%
ABIOMED Inc	ABMD	45.56	232.35	10,586.80	0.04%			7.50%	0.00%
Delta Air Lines Inc	DAL	641.06	31.96	20,488.21					
United Airlines Holdings Inc	UAL	326.73	37.89	12,379.76					
Seagate Technology Holdings PLC	STX	214.84	76.24	16,379.71	0.06%	3.67%	0.00%	16.00%	0.01%
News Corp	NWS	197.27	15.80	3,116.91		1.27%			
Centene Corp	CNC	584.89	77.46	45,305.35	0.17%			10.00%	0.02%
Martin Marietta Materials Inc	MLM	62.28	318.45	19,834.34	0.08%	0.77%	0.00%	5.50%	0.00%
Teradyne Inc	TER	160.20	92.44	14,809.17	0.06%	0.48%	0.00%	8.50%	0.00%
PayPal Holdings Inc	PYPL	1,158.04	75.83	87,814.17	0.34%			16.00%	0.05%
Tesla Inc	TSLA	1,036.39	699.00	724,437.31				50.50%	
DISH Network Corp	DISH	291.56	18.18	5,300.56	0.02%			2.50%	0.00%
Penn National Gaming Inc	PENN	166.80	30.25	5,045.79				28.00%	
Dow Inc	DOW	728.10	57.41	41,800.34		4.88%			
Everest Re Group Ltd	RE	39.44	275.26	10,855.70	0.04%	2.40%	0.00%	17.50%	0.01%
Teledyne Technologies Inc	TDY	46.84	372.67	17,456.98	0.07%			11.50%	0.01%
News Corp	NWSA	388.47	15.54	6,036.81		1.29%			
Exelon Corp	EXC	980.14	42.26	41,420.59		3.19%			
Global Payments Inc	GP	281.54	112.85	31,771.79	0.12%	0.89%	0.00%	17.00%	0.02%
Crown Castle International Corp	CCI	433.03	160.25	69,393.38	0.27%	3.67%	0.01%	12.00%	0.03%
Aptiv PLC	APT	270.93	95.46	25,863.07				27.50%	
Advance Auto Parts Inc	AAP	60.64	172.29	10,447.67	0.04%	3.48%	0.00%	16.00%	0.01%
Align Technology Inc	ALGN	78.81	243.78	19,211.33	0.07%			17.00%	0.01%
Illumina Inc	ILMN	157.10	193.63	30,419.27	0.12%			6.50%	0.01%
LKQ Corp	LKQ	282.83	48.75	13,788.11	0.05%	2.05%	0.00%	13.00%	0.01%
Nielsen Holdings PLC	NLSN	359.69	22.65	8,147.05		1.06%			
Zoetis Inc	ZTS	470.63	158.07	74,392.33	0.28%	0.82%	0.00%	11.00%	0.03%
Digital Realty Trust Inc	DLR	284.67	128.93	36,702.76		3.78%		-3.50%	
Equinix Inc	EQIX	91.02	641.25	58,367.86	0.22%	1.93%	0.00%	15.00%	0.03%
Molina Healthcare Inc	MOH	58.70	260.34	15,281.96	0.06%			11.00%	0.01%
Las Vegas Sands Corp	LVS	764.11	32.64	24,940.52	0.10%			13.50%	0.01%

## Notes:

- [1] Equals sum of Col. [9]  
[2] Equals sum of Col. [11]  
[3] Equals  $([1] \times (1 + (0.5 \times [2]))) + [2]$   
[4] Source: Bloomberg Professional as of June 15, 2022  
[5] Source: Bloomberg Professional as of June 15, 2022  
[6] Equals [4] x [5]  
[7] Equals weight in S&P 500 based on market capitalization [6] if Growth Rate >0% and <20%  
[8] Source: Bloomberg Professional, as of June 15, 2022  
[9] Equals [7] x [8]  
[10] Source: Value Line, as of June 15, 2022  
[11] Equals [7] x [10]

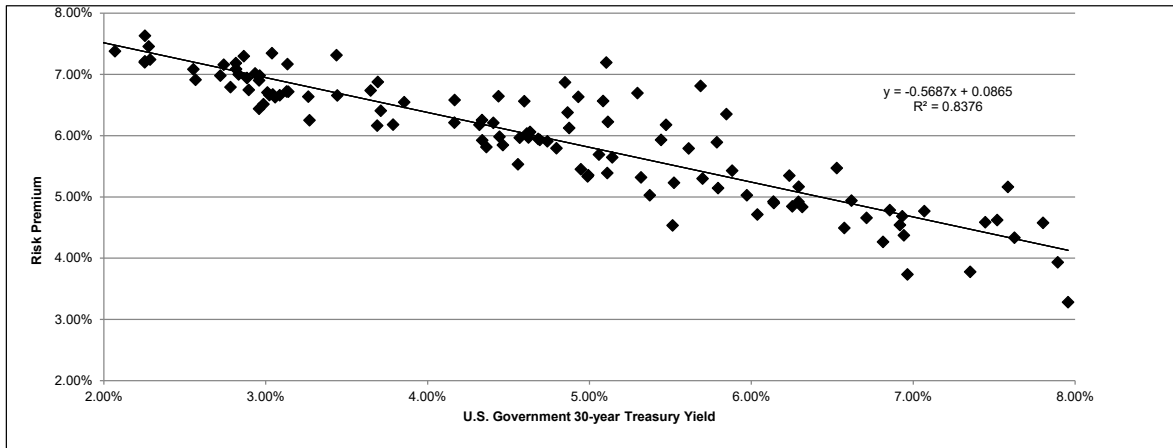
Risk Premium -- Vertically Integrated Electric Utilities (US)

	[1]	[2]	[3]
	Average		
	Authorized VI	U.S. Govt. 30-	
	Electric ROE	year Treasury	Risk Premium
1992.1	12.38%	7.80%	4.58%
1992.2	11.83%	7.89%	3.93%
1992.3	12.03%	7.45%	4.59%
1992.4	12.14%	7.52%	4.62%
1993.1	11.84%	7.07%	4.77%
1993.2	11.64%	6.86%	4.79%
1993.3	11.15%	6.31%	4.84%
1993.4	11.04%	6.14%	4.90%
1994.1	11.07%	6.57%	4.49%
1994.2	11.13%	7.35%	3.78%
1994.3	12.75%	7.58%	5.17%
1994.4	11.24%	7.96%	3.28%
1995.1	11.96%	7.63%	4.34%
1995.2	11.32%	6.94%	4.37%
1995.3	11.37%	6.71%	4.66%
1995.4	11.58%	6.23%	5.35%
1996.1	11.46%	6.29%	5.17%
1996.2	11.46%	6.92%	4.54%
1996.3	10.70%	6.96%	3.74%
1996.4	11.56%	6.62%	4.94%
1997.1	11.08%	6.81%	4.27%
1997.2	11.62%	6.93%	4.68%
1997.3	12.00%	6.53%	5.47%
1997.4	11.06%	6.14%	4.92%
1998.1	11.31%	5.88%	5.43%
1998.2	12.20%	5.85%	6.35%
1998.3	11.65%	5.47%	6.18%
1998.4	12.30%	5.10%	7.20%
1999.1	10.40%	5.37%	5.03%
1999.2	10.94%	5.79%	5.15%
1999.3	10.75%	6.04%	4.71%
1999.4	11.10%	6.25%	4.85%
2000.1	11.21%	6.29%	4.92%
2000.2	11.00%	5.97%	5.03%
2000.3	11.68%	5.79%	5.89%
2000.4	12.50%	5.69%	6.81%
2001.1	11.38%	5.44%	5.93%
2001.2	11.00%	5.70%	5.30%
2001.3	10.76%	5.52%	5.23%
2001.4	11.99%	5.30%	6.70%
2002.1	10.05%	5.51%	4.54%
2002.2	11.41%	5.61%	5.79%
2002.3	11.65%	5.08%	6.57%
2002.4	11.57%	4.93%	6.64%
2003.1	11.72%	4.85%	6.87%
2003.2	11.16%	4.60%	6.56%
2003.3	10.50%	5.11%	5.39%
2003.4	11.34%	5.11%	6.23%
2004.1	11.00%	4.88%	6.12%
2004.2	10.64%	5.32%	5.32%
2004.3	10.75%	5.06%	5.69%
2004.4	11.24%	4.86%	6.38%
2005.1	10.63%	4.69%	5.93%
2005.2	10.31%	4.47%	5.85%
2005.3	11.08%	4.44%	6.65%
2005.4	10.63%	4.68%	5.95%
2006.1	10.70%	4.63%	6.06%
2006.2	10.79%	5.14%	5.65%
2006.3	10.35%	4.99%	5.35%
2006.4	10.65%	4.74%	5.91%
2007.1	10.59%	4.80%	5.80%
2007.2	10.33%	4.99%	5.34%
2007.3	10.40%	4.95%	5.45%
2007.4	10.65%	4.61%	6.04%
2008.1	10.62%	4.41%	6.21%
2008.2	10.54%	4.57%	5.97%
2008.3	10.43%	4.44%	5.98%
2008.4	10.39%	3.65%	6.74%
2009.1	10.75%	3.44%	7.31%
2009.2	10.75%	4.17%	6.58%
2009.3	10.50%	4.32%	6.18%
2009.4	10.59%	4.34%	6.26%
2010.1	10.59%	4.62%	5.97%
2010.2	10.18%	4.36%	5.82%
2010.3	10.40%	3.86%	6.55%
2010.4	10.38%	4.17%	6.21%
2011.1	10.09%	4.56%	5.53%
2011.2	10.26%	4.34%	5.92%
2011.3	10.57%	3.69%	6.88%
2011.4	10.39%	3.04%	7.35%
2012.1	10.30%	3.14%	7.17%

Risk Premium -- Vertically Integrated Electric Utilities (US)

	[1]	[2]	[3]
	Average		
	Average	U.S. Govt. 30-	Risk Premium
	Authorized VI	year Treasury	
	Electric ROE		
2012.2	9.95%	2.93%	7.02%
2012.3	9.90%	2.74%	7.16%
2012.4	10.16%	2.86%	7.30%
2013.1	9.85%	3.13%	6.72%
2013.2	9.86%	3.14%	6.72%
2013.3	10.12%	3.71%	6.41%
2013.4	9.97%	3.79%	6.18%
2014.1	9.86%	3.69%	6.17%
2014.2	10.10%	3.44%	6.66%
2014.3	9.90%	3.26%	6.64%
2014.4	9.94%	2.96%	6.98%
2015.1	9.64%	2.55%	7.08%
2015.2	9.83%	2.88%	6.94%
2015.3	9.40%	2.96%	6.44%
2015.4	9.86%	2.96%	6.90%
2016.1	9.70%	2.72%	6.98%
2016.2	9.48%	2.57%	6.91%
2016.3	9.74%	2.28%	7.46%
2016.4	9.83%	2.83%	7.00%
2017.1	9.72%	3.04%	6.67%
2017.2	9.64%	2.90%	6.75%
2017.3	10.00%	2.82%	7.18%
2017.4	9.91%	2.82%	7.09%
2018.1	9.69%	3.02%	6.66%
2018.2	9.75%	3.09%	6.66%
2018.3	9.69%	3.06%	6.63%
2018.4	9.52%	3.27%	6.25%
2019.1	9.72%	3.01%	6.71%
2019.2	9.58%	2.78%	6.79%
2019.3	9.53%	2.29%	7.24%
2019.4	9.89%	2.25%	7.63%
2020.1	9.72%	1.89%	7.83%
2020.2	9.58%	1.38%	8.20%
2020.3	9.30%	1.37%	7.93%
2020.4	9.56%	1.62%	7.94%
2021.1	9.45%	2.07%	7.38%
2021.2	9.47%	2.25%	7.21%
2021.3	9.27%	1.93%	7.34%
2021.4	9.67%	1.94%	7.73%
2022.1	9.45%	2.25%	7.20%
2022.2	9.50%	2.99%	6.51%
AVERAGE	10.62%	4.57%	6.06%
MEDIAN	10.59%	4.62%	6.18%

Risk Premium -- Vertically Integrated Electric Utilities (US)



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.915183713
R Square	0.837561229
Adjusted R Square	0.836207572
Standard Error	0.004189718
Observations	122

ANOVA					
	df	SS	MS	F	Significance F
Regression	1	0.010861196	0.010861196	618.7398897	3.47241E-49
Residual	120	0.002106448	1.75537E-05		
Total	121	0.012967644			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%
Intercept	0.086535683	0.001111113	77.8819689	1.3602E-104	0.084335756	0.08873561	0.084335756
X Variable 1	-0.568691952	0.022862463	-24.8744827	3.47241E-49	-0.613958038	-0.5234259	-0.61395804

	U.S. Govt. 30-year Treasury	Risk Premium	ROE
Current 30-day average of 30-year U.S. Treasury bond yield [4]	3.12%	6.88%	10.00%
Blue Chip Near-Term Projected Forecast (Q3 2022 - Q3 2023) [5]	3.48%	6.67%	10.15%
Blue Chip Long-Term Projected Forecast (2023-2027) [6]	3.80%	6.49%	10.29%
<b>AVERAGE</b>			<b>10.15%</b>

Notes:

- [1] Source: Regulatory Research Associates, rate cases through June 15, 2022
- [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 June 15, 2022
- [5] Source: Blue Chip Financial Forecasts, Vol. 41, No. 6, June 1, 2022 at 2
- [6] Source: Blue Chip Financial Forecasts, Vol. 41, No. 6, June 1, 2022 at 14
- [7] See notes [4], [5] & [6]
- #REF!
- [9] Equals Column [7] + Column [8]

CAPITAL STRUCTURE ANALYSIS

Proxy Group Company	Ticker	Most Recent 8 Quarters			
		Common Equity Ratio	Long-Term Debt Ratio	Preferred Equity Ratio	Total Capitalization
ALLETE, Inc.	ALE	56.55%	43.45%	0.00%	100.00%
Alliant Energy Corporation	LNT	51.72%	47.06%	1.22%	100.00%
Ameren Corporation	AEE	53.09%	46.23%	0.69%	100.00%
American Electric Power Company, Inc.	AEP	48.19%	51.81%	0.00%	100.00%
Avista Corporation	AVA	50.52%	49.48%	0.00%	100.00%
CMS Energy Corporation	CMS	51.82%	47.97%	0.22%	100.00%
Duke Energy Corporation	DUK	52.95%	47.05%	0.00%	100.00%
Entergy Corporation	ETR	46.15%	53.74%	0.11%	100.00%
IDACORP, Inc.	IDA	53.76%	45.97%	0.28%	100.00%
MGE Energy, Inc.	MGEE	61.36%	38.64%	0.00%	100.00%
NextEra Energy, Inc.	NEE	61.33%	38.67%	0.00%	100.00%
NorthWestern Corporation	NWE	47.54%	52.46%	0.00%	100.00%
Otter Tail Corporation	OTTR	53.98%	46.02%	0.00%	100.00%
Portland General Electric Company	POR	46.60%	53.40%	0.00%	100.00%
The Southern Company	SO	54.42%	45.02%	0.56%	100.00%
Xcel Energy Inc.	XEL	53.99%	46.01%	0.00%	100.00%
	Average	52.75%	47.06%	0.19%	
	Median	53.02%	46.64%	0.00%	
	Maximum	61.36%	53.74%	1.22%	
	Minimum	46.15%	38.64%	0.00%	

Notes:

[1] Ratios are weighted by actual common capital, preferred capital, and long-term debt of the operating subsidiaries.

[2] Electric operating subsidiaries with data listed as N/A from S&P Capital IQ Pro have been excluded from the analysis.

**Dr. Won's Discounted Cash Flow (DCF) Costs of Common Equity (COE) Estimates - AS FILED**  
**Based on Dividend per Share, Earning per Share, Stock Price, and Growth Rate**  
**for the Comparable Electric Utility Companies**

<b>2022 Q1 DCF COE estimate</b>										
		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	
Electric Utility Companies	Ticker	Dividend per Share	Stock Price	Dividend Yield	Expected Dividend Yield	Projected Weighted Growth	Projected GDP Growth	Growth Rate	COE	
1	Alliant Energy Corporation	LNT	1.71	59.03	2.90%	2.96%	4.83%	3.90%	4.65%	7.61%
2	Ameren Corporation	AEE	2.36	87.25	2.70%	2.79%	6.67%	3.90%	6.11%	8.90%
3	American Electric Power Company, Inc.	AEP	3.17	90.69	3.50%	3.60%	6.17%	3.90%	5.71%	9.31%
4	Avista Corporation	AVA	1.76	43.96	4.00%	4.07%	3.33%	3.90%	3.45%	7.52%
5	CMS Energy Corporation	CMS	1.84	64.56	2.85%	2.93%	6.33%	3.90%	5.85%	8.78%
6	Duke Energy Corporation	DUK	3.98	103.01	3.86%	3.94%	3.83%	3.90%	3.85%	7.78%
7	Entergy Corporation	ETR	4.09	108.85	3.76%	3.84%	4.33%	3.90%	4.25%	8.08%
8	IDACORP, Inc.	IDA	3.05	108.09	2.82%	2.89%	4.83%	3.90%	4.65%	7.53%
9	MGE Energy, Inc.	MGEE	1.59	75.61	2.10%	2.15%	4.67%	3.90%	4.51%	6.66%
10	Northwestern Corporation	N W E	2.52	58.55	4.30%	4.37%	2.67%	3.90%	2.91%	7.28%
11	OGE Energy Corp.	OGE	1.66	37.72	4.40%	4.40%	4.50%	3.90%	4.51%	9.01%
12	Pinnacle West Capital Corporation	PNW	3.44	71.01	4.84%	4.91%	2.50%	3.90%	2.78%	7.69%
13	Portland General Electric Company	POR	1.80	51.94	3.47%	3.56%	5.67%	3.90%	5.31%	8.87%
14	The Southern Company	SO	2.70	67.08	4.03%	4.11%	4.00%	3.90%	3.98%	8.09%
15	Xcel Energy Inc.	XEL	1.95	68.11	2.86%	2.94%	6.00%	3.90%	5.58%	8.52%
<b>Average</b>			<b>2.51</b>	<b>73.03</b>	<b>3.49%</b>	<b>3.57%</b>	<b>4.70%</b>	<b>3.90%</b>	<b>4.54%</b>	<b>8.11%</b>
									DCF Lower Bound	7.40%
									DCF Upper Bound	8.96%
									<b>Average</b>	<b>8.18%</b>

<b>2019 Q4 DCF COE estimate</b>										
		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	
Electric Utility Companies	Ticker	Dividend per Share	Stock Price	Dividend Yield	Expected Dividend Yield	Projected Weighted Growth	Projected GDP Growth	Growth Rate	COE	
1	Alliant Energy Corporation	LNT	1.42	53.04	2.68%	2.76%	6.50%	3.90%	5.98%	8.74%
2	Ameren Corporation	AEE	1.92	76.19	2.52%	2.59%	5.50%	3.90%	5.18%	7.77%
3	American Electric Power Company, Inc.	AEP	2.71	92.78	2.92%	2.99%	4.67%	3.90%	4.51%	7.50%
4	Avista Corporation	AVA	1.55	47.68	3.25%	3.31%	3.50%	3.90%	3.58%	6.89%
5	CMS Energy Corporation	CMS	1.53	62.42	2.45%	2.53%	7.00%	3.90%	6.38%	8.91%
6	Duke Energy Corporation	DUK	3.75	91.71	4.09%	4.16%	3.67%	3.90%	3.71%	7.88%
7	Entergy Corporation	ETR	3.66	117.95	3.10%	3.16%	3.33%	3.90%	3.45%	6.60%
8	IDACORP, Inc.	IDA	2.56	107.11	2.39%	2.45%	4.83%	3.90%	4.65%	7.09%
9	MGE Energy, Inc.	MGEE	1.38	77.30	1.79%	1.83%	5.33%	3.90%	5.05%	6.88%
10	Northwestern Corporation	N W E	2.30	71.82	3.20%	3.26%	3.33%	3.90%	3.45%	6.70%
11	OGE Energy Corp.	OGE	1.51	43.26	3.49%	3.58%	5.67%	3.90%	5.31%	8.90%
12	Pinnacle West Capital Corporation	PNW	3.04	90.55	3.36%	3.43%	4.50%	3.90%	4.38%	7.81%
13	Portland General Electric Company	POR	1.52	56.09	2.71%	2.77%	4.67%	3.90%	4.51%	7.28%
14	The Southern Company	SO	2.46	61.89	3.97%	4.04%	3.33%	3.90%	3.45%	7.49%
15	Xcel Energy Inc.	XEL	1.62	62.69	2.58%	2.65%	5.67%	3.90%	5.31%	7.97%
<b>Average</b>			<b>2.20</b>	<b>74.17</b>	<b>2.97%</b>	<b>3.03%</b>	<b>4.77%</b>	<b>3.90%</b>	<b>4.59%</b>	<b>7.63%</b>
									DCF Lower Bound	6.79%
									DCF Upper Bound	8.82%
									<b>Average</b>	<b>7.80%</b>

<b>Comparison DCF Estimates</b>	
2019 Q4 DCF COE estimate	7.80%
2022 Q1 DCF COE estimate	8.18%
Difference of Averages between Q4 2019 and Q1 2022	0.37%

Note:  
[1] - [8] SJW-d13

**Dr. Won's Discounted Cash Flow (DCF) Costs of Common Equity (COE) Estimates - ADJUSTED FOR PROJECTED EPS GROWTH AS FILED**  
**Based on Dividend per Share, Earning per Share, Stock Price, and Growth Rate**  
**for the Comparable Electric Utility Companies**

<b>2022 Q1 DCF COE estimate</b>										
		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	
Electric Utility Companies	Ticker	Dividend per Share	Stock Price	Dividend Yield	Expected Dividend Yield	Projected EPS Growth	Projected GDP Growth	Growth Rate	COE	
1	Alliant Energy Corporation	LNT	1.71	59.03	2.90%	2.96%	4.50%	3.90%	4.38%	7.34%
2	Ameren Corporation	AEE	2.36	87.25	2.70%	2.79%	6.50%	3.90%	5.98%	8.77%
3	American Electric Power Company, Inc.	AEP	3.17	90.69	3.50%	3.60%	6.50%	3.90%	5.98%	9.58%
4	Avista Corporation	AVA	1.76	43.96	4.00%	4.07%	3.00%	3.90%	3.18%	7.25%
5	CMS Energy Corporation	CMS	1.84	64.56	2.85%	2.94%	6.50%	3.90%	5.98%	8.92%
6	Duke Energy Corporation	DUK	3.98	103.01	3.86%	3.99%	7.00%	3.90%	6.38%	10.37%
7	Entergy Corporation	ETR	4.09	108.85	3.76%	3.82%	3.00%	3.90%	3.18%	7.00%
8	IDACORP, Inc.	IDA	3.05	108.09	2.82%	2.88%	4.00%	3.90%	3.98%	6.86%
9	MGE Energy, Inc.	MGEE	1.59	75.61	2.10%	2.15%	4.50%	3.90%	4.38%	6.53%
10	Northwestern Corporation	N W E	2.52	58.55	4.30%	4.37%	3.00%	3.90%	3.18%	7.55%
11	OGE Energy Corp.	OGE	1.66	37.72	4.40%	4.53%	6.50%	3.90%	5.98%	10.51%
12	Pinnacle West Capital Corporation	PNW	3.44	71.01	4.84%	4.89%	1.50%	3.90%	1.98%	6.87%
13	Portland General Electric Company	POR	1.80	51.94	3.47%	3.58%	7.50%	3.90%	6.78%	10.36%
14	The Southern Company	SO	2.70	67.08	4.03%	4.13%	5.50%	3.90%	5.18%	9.31%
15	Xcel Energy Inc.	XEL	1.95	68.11	2.86%	2.94%	6.00%	3.90%	5.58%	8.52%
<b>Average</b>			<b>2.51</b>	<b>73.03</b>	<b>3.49%</b>	<b>3.58%</b>	<b>5.03%</b>	<b>3.90%</b>	<b>4.81%</b>	<b>8.38%</b>
									DCF Lower Bound	6.87%
									DCF Upper Bound	10.37%
									<b>Average</b>	<b>8.62%</b>

<b>2019 Q4 DCF COE estimate</b>										
		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	
Electric Utility Companies	Ticker	Dividend per Share	Stock Price	Dividend Yield	Expected Dividend Yield	Projected EPS Growth	Projected GDP Growth	Growth Rate	COE	
1	Alliant Energy Corporation	LNT	1.42	53.04	2.68%	2.76%	6.50%	3.90%	5.98%	8.74%
2	Ameren Corporation	AEE	1.92	76.19	2.52%	2.60%	6.50%	3.90%	5.98%	8.58%
3	American Electric Power Company, Inc.	AEP	2.71	92.78	2.92%	2.98%	4.00%	3.90%	3.98%	6.96%
4	Avista Corporation	AVA	1.55	47.68	3.25%	3.31%	3.50%	3.90%	3.58%	6.89%
5	CMS Energy Corporation	CMS	1.53	62.42	2.45%	2.53%	7.00%	3.90%	6.38%	8.91%
6	Duke Energy Corporation	DUK	3.75	91.71	4.09%	4.20%	6.00%	3.90%	5.58%	9.78%
7	Entergy Corporation	ETR	3.66	117.95	3.10%	3.14%	2.00%	3.90%	2.38%	5.52%
8	IDACORP, Inc.	IDA	2.56	107.11	2.39%	2.43%	3.50%	3.90%	3.58%	6.01%
9	MGE Energy, Inc.	MGEE	1.38	77.30	1.79%	1.83%	6.00%	3.90%	5.58%	7.41%
10	Northwestern Corporation	N W E	2.30	71.82	3.20%	3.24%	2.00%	3.90%	2.38%	5.62%
11	OGE Energy Corp.	OGE	1.51	43.26	3.49%	3.59%	6.50%	3.90%	5.98%	9.57%
12	Pinnacle West Capital Corporation	PNW	3.04	90.55	3.36%	3.42%	4.00%	3.90%	3.98%	7.40%
13	Portland General Electric Company	POR	1.52	56.09	2.71%	2.77%	4.50%	3.90%	4.38%	7.15%
14	The Southern Company	SO	2.46	61.89	3.97%	4.05%	3.50%	3.90%	3.58%	7.63%
15	Xcel Energy Inc.	XEL	1.62	62.69	2.58%	2.65%	5.50%	3.90%	5.18%	7.83%
<b>Average</b>			<b>2.20</b>	<b>74.17</b>	<b>2.97%</b>	<b>3.03%</b>	<b>4.73%</b>	<b>3.90%</b>	<b>4.57%</b>	<b>7.60%</b>
									DCF Lower Bound	5.82%
									DCF Upper Bound	9.24%
									<b>Average</b>	<b>7.53%</b>

**Comparison DCF Estimates**

2019 Q4 DCF COE estimate	7.53%
2022 Q1 DCF COE estimate	8.62%
Difference of Averages between Q4 2019 and Q1 2022	1.09%

**Note:**

- [1] - [4] SJW-d13
- [5] SJW-d11
- [6] - [8] SJW-d13

**Dr. Won's Discounted Cash Flow (DCF) Costs of Common Equity (COE) Estimates - ADJUSTED TO INCLUDE GDP GROWTH**  
**Based on Dividend per Share, Earning per Share, Stock Price, and Growth Rate**  
**for the Comparable Electric Utility Companies**

2022 Q1 DCF COE estimate		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]		
Electric Utility Companies	Ticker	Dividend per Share	Stock Price	Dividend Yield	Expected Dividend Yield	Projected Weighted Growth	Projected GDP Growth	Growth Rate	COE		
1	Alliant Energy Corporation	LNT	1.71	59.03	2.90%	2.97%	4.83%	6.22%	5.11%	8.08%	
2	Ameren Corporation	AEE	2.36	87.25	2.70%	2.79%	6.67%	6.22%	6.58%	9.37%	
3	American Electric Power Company, Inc.	AEP	3.17	90.69	3.50%	3.60%	6.17%	6.22%	6.18%	9.78%	
4	Avista Corporation	AVA	1.76	43.96	4.00%	4.08%	3.33%	6.22%	3.91%	7.99%	
5	CMS Energy Corporation	CMS	1.84	64.56	2.85%	2.94%	6.33%	6.22%	6.31%	9.25%	
6	Duke Energy Corporation	DUK	3.98	103.01	3.86%	3.95%	3.83%	6.22%	4.31%	8.26%	
7	Entergy Corporation	ETR	4.09	108.85	3.76%	3.85%	4.33%	6.22%	4.71%	8.56%	
8	IDACORP, Inc.	IDA	3.05	108.09	2.82%	2.89%	4.83%	6.22%	5.11%	8.00%	
9	MGE Energy, Inc.	MGEE	1.59	75.61	2.10%	2.16%	4.67%	6.22%	4.98%	7.13%	
10	Northwestern Corporation	N W E	2.52	58.55	4.30%	4.38%	2.67%	6.22%	3.38%	7.75%	
11	OGE Energy Corp.	OGE	1.66	37.72	4.40%	4.51%	4.67%	6.22%	4.98%	9.49%	
12	Pinnacle West Capital Corporation	PNW	3.44	71.01	4.84%	4.92%	2.50%	6.22%	3.24%	8.17%	
13	Portland General Electric Company	POR	1.80	51.94	3.47%	3.57%	5.67%	6.22%	5.78%	9.34%	
14	The Southern Company	SO	2.70	67.08	4.03%	4.11%	4.00%	6.22%	4.44%	8.56%	
15	Xcel Energy Inc.	XEL	1.95	68.11	2.86%	2.95%	6.00%	6.22%	6.04%	8.99%	
<b>Average</b>			<b>2.51</b>	<b>73.03</b>	<b>3.49%</b>	<b>3.58%</b>	<b>4.70%</b>	<b>6.22%</b>	<b>5.00%</b>	<b>8.58%</b>	
										DCF Lower Bound	7.87%
										DCF Upper Bound	9.43%
										Average	8.65%

2019 Q4 DCF COE estimate (Adjusted GDP Growth)		[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]				
Electric Utility Companies	Ticker	Dividend per Share	Stock Price	Dividend Yield	Expected Dividend Yield	Projected Weighted Growth	Projected GDP Growth (Low)	Projected GDP Growth (High)	Growth Rate (Low)	Growth Rate (High)	COE (Low)	COE (High)				
1	Alliant Energy Corporation	LNT	1.42	53.04	2.68%	2.73%	6.50%	4.10%	4.40%	6.02%	6.08%	8.75%	8.81%			
2	Ameren Corporation	AEE	1.92	76.19	2.52%	2.57%	5.50%	4.10%	4.40%	5.22%	5.28%	7.79%	7.85%			
3	American Electric Power Company, Inc.	AEP	2.71	92.78	2.92%	2.98%	4.67%	4.10%	4.40%	4.55%	4.61%	7.54%	7.60%			
4	Avista Corporation	AVA	1.55	47.68	3.25%	3.32%	3.50%	4.10%	4.40%	3.62%	3.68%	6.94%	7.00%			
5	CMS Energy Corporation	CMS	1.53	62.42	2.45%	2.50%	7.00%	4.10%	4.40%	6.42%	6.48%	8.92%	8.98%			
6	Duke Energy Corporation	DUK	3.75	91.71	4.09%	4.18%	3.67%	4.10%	4.40%	3.75%	3.81%	7.93%	7.99%			
7	Entergy Corporation	ETR	3.66	117.95	3.10%	3.17%	3.33%	4.10%	4.40%	3.49%	3.55%	6.66%	6.72%			
8	IDACORP, Inc.	IDA	2.56	107.11	2.39%	2.44%	4.83%	4.10%	4.40%	4.69%	4.75%	7.13%	7.19%			
9	MGE Energy, Inc.	MGEE	1.38	77.30	1.79%	1.82%	5.33%	4.10%	4.40%	5.09%	5.15%	6.91%	6.97%			
10	Northwestern Corporation	N W E	2.30	71.82	3.20%	3.27%	3.33%	4.10%	4.40%	3.49%	3.55%	6.76%	6.82%			
11	OGE Energy Corp.	OGE	1.51	43.26	3.49%	3.56%	5.67%	4.10%	4.40%	5.35%	5.41%	8.92%	8.98%			
12	Pinnacle West Capital Corporation	PNW	3.04	90.55	3.36%	3.43%	4.50%	4.10%	4.40%	4.42%	4.48%	7.85%	7.91%			
13	Portland General Electric Company	POR	1.52	56.09	2.71%	2.77%	4.67%	4.10%	4.40%	4.55%	4.61%	7.32%	7.38%			
14	The Southern Company	SO	2.46	61.89	3.97%	4.06%	3.33%	4.10%	4.40%	3.49%	3.55%	7.55%	7.61%			
15	Xcel Energy Inc.	XEL	1.62	62.69	2.58%	2.64%	5.67%	4.10%	4.40%	5.35%	5.41%	7.99%	8.05%			
<b>Average</b>			<b>2.20</b>	<b>74.17</b>	<b>2.97%</b>	<b>3.03%</b>	<b>4.77%</b>	<b>4.10%</b>	<b>4.40%</b>	<b>4.63%</b>	<b>4.69%</b>	<b>7.66%</b>	<b>7.72%</b>			
													DCF Lower Bound	6.83%	6.89%	
														DCF Upper Bound	8.84%	8.90%
														Average	7.83%	7.89%

**Comparison DCF Estimates**

2019 Q4 DCF COE estimate	7.83%	7.89%
2022 Q1 DCF COE estimate	8.65%	8.65%
Difference of Averages between Q4 2019 and Q1 2022	0.82%	0.76%

**Note:**

- [1] - [3] SJW-d13
- [4] = [3] x (1 + .5 x [7])
- [5] SJW-d13
- [6] AEB-R10
- [7] = (4 x [5] + [6]) / 5
- [8] = [4] + [7]
- [9] - [11] SJW-d13
- [12] = [11] x (1 + .5 x (AVERAGE ([14];[15])))
- [13] SJW-d13
- [14] - [15] Empire District Case No. ER-2019-0374. Chari Rebuttal at 7 and Staff Direct Report at 16.
- [16] = (4 x [13] + [14]) / 5
- [17] = (4 x [13] + [15]) / 5
- [18] = [12] + [16]
- [19] = [12] + [17]



**Dr. Won's Discounted Cash Flow (DCF) Costs of Common Equity (COE) Estimates - ADJUSTED TO INCLUDE BULKLEY GDP GROWTH**  
**Based on Dividend per Share, Earning per Share, Stock Price, and Growth Rate**  
**for the Comparable Electric Utility Companies**

<b>2022 Q1 DCF COE estimate</b>		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	
Electric Utility Companies	Ticker	Dividend per Share	Stock Price	Dividend Yield	Expected Dividend Yield	Projected Weighted Growth	Projected GDP Growth	Growth Rate	COE	
1	Alliant Energy Corporation	LNT	1.71	59.03	2.90%	2.97%	4.83%	6.22%	5.11%	8.08%
2	Ameren Corporation	AEE	2.36	87.25	2.70%	2.79%	6.67%	6.22%	6.58%	9.37%
3	American Electric Power Company, Inc.	AEP	3.17	90.69	3.50%	3.60%	6.17%	6.22%	6.18%	9.78%
4	Avista Corporation	AVA	1.76	43.96	4.00%	4.08%	3.33%	6.22%	3.91%	7.99%
5	CMS Energy Corporation	CMS	1.84	64.56	2.85%	2.94%	6.33%	6.22%	6.31%	9.25%
6	Duke Energy Corporation	DUK	3.98	103.01	3.86%	3.95%	3.83%	6.22%	4.31%	8.26%
7	Entergy Corporation	ETR	4.09	108.85	3.76%	3.85%	4.33%	6.22%	4.71%	8.56%
8	IDACORP, Inc.	IDA	3.05	108.09	2.82%	2.89%	4.83%	6.22%	5.11%	8.00%
9	MGE Energy, Inc.	MGEE	1.59	75.61	2.10%	2.16%	4.67%	6.22%	4.98%	7.13%
10	Northwestern Corporation	N W E	2.52	58.55	4.30%	4.38%	2.67%	6.22%	3.38%	7.75%
11	OGE Energy Corp.	OGE	1.66	37.72	4.40%	4.51%	4.67%	6.22%	4.98%	9.49%
12	Pinnacle West Capital Corporation	PNW	3.44	71.01	4.84%	4.92%	2.50%	6.22%	3.24%	8.17%
13	Portland General Electric Company	POR	1.80	51.94	3.47%	3.57%	5.67%	6.22%	5.78%	9.34%
14	The Southern Company	SO	2.70	67.08	4.03%	4.11%	4.00%	6.22%	4.44%	8.56%
15	Xcel Energy Inc.	XEL	1.95	68.11	2.86%	2.95%	6.00%	6.22%	6.04%	8.99%
<b>Average</b>			2.51	73.03	3.49%	3.58%	4.70%	6.22%	5.00%	8.58%
									DCF Lower Bound	7.87%
									DCF Upper Bound	9.43%
									Average	8.65%

<b>2019 Q4 DCF COE estimate (Adjusted GDP Growth)</b>		[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	
Electric Utility Companies	Ticker	Dividend per Share	Stock Price	Dividend Yield	Expected Dividend Yield	Projected Weighted Growth	Projected GDP Growth	Growth Rate	COE	
1	Alliant Energy Corporation	LNT	1.42	53.04	2.68%	2.75%	6.50%	5.53%	6.31%	9.06%
2	Ameren Corporation	AEE	1.92	76.19	2.52%	2.59%	5.50%	5.53%	5.51%	8.10%
3	American Electric Power Company, Inc.	AEP	2.71	92.78	2.92%	3.00%	4.67%	5.53%	4.84%	7.84%
4	Avista Corporation	AVA	1.55	47.68	3.25%	3.34%	3.50%	5.53%	3.91%	7.25%
5	CMS Energy Corporation	CMS	1.53	62.42	2.45%	2.52%	7.00%	5.53%	6.71%	9.23%
6	Duke Energy Corporation	DUK	3.75	91.71	4.09%	4.20%	3.67%	5.53%	4.04%	8.24%
7	Entergy Corporation	ETR	3.66	117.95	3.10%	3.19%	3.33%	5.53%	3.77%	6.96%
8	IDACORP, Inc.	IDA	2.56	107.11	2.39%	2.46%	4.83%	5.53%	4.97%	7.43%
9	MGE Energy, Inc.	MGEE	1.38	77.30	1.79%	1.83%	5.33%	5.53%	5.37%	7.21%
10	Northwestern Corporation	N W E	2.30	71.82	3.20%	3.29%	3.33%	5.53%	3.77%	7.06%
11	OGE Energy Corp.	OGE	1.51	43.26	3.49%	3.59%	5.67%	5.53%	5.64%	9.23%
12	Pinnacle West Capital Corporation	PNW	3.04	90.55	3.36%	3.45%	4.50%	5.53%	4.71%	8.16%
13	Portland General Electric Company	POR	1.52	56.09	2.71%	2.78%	4.67%	5.53%	4.84%	7.62%
14	The Southern Company	SO	2.46	61.89	3.97%	4.08%	3.33%	5.53%	3.77%	7.86%
15	Xcel Energy Inc.	XEL	1.62	62.69	2.58%	2.66%	5.67%	5.53%	5.64%	8.29%
<b>Average</b>			2.20	74.17	2.97%	3.05%	4.77%	5.53%	4.92%	7.97%
									DCF Lower Bound	7.14%
									DCF Upper Bound	9.14%
									Average	8.14%

**Comparison DCF Estimates**

2019 Q4 DCF COE estimate	8.14%
2022 Q1 DCF COE estimate	8.65%
Difference of Averages between Q4 2019 and Q1 2022	0.51%

**Note:**

- [1] - [3] SJW-d13
- [4] = [3] x (1 + .5 x [7])
- [5] SJW-d13
- [6] AEB-R10
- [7] = (4 x [5] + [6]) / 5
- [8] = [4] + [7]
- [9] - [11] SJW-d13
- [12] = [11] x (1 + .5 x (AVERAGE ([14];[15])))
- [13] SJW-d13
- [14] AEB-R10
- [15] = (4 x [13] + [14]) / 5
- [16] = [12] + [15]

**Dr. Won's Discounted Cash Flow (DCF) Costs of Common Equity (COE) Estimates - ADJUSTED FOR FERC METHODOLOGY**  
**Based on Dividend per Share, Earning per Share, Stock Price, and Growth Rate**  
**for the Comparable Electric Utility Companies**

**2022 Q1 DCF COE estimate (Adjusted Projected Weighted G** [1] [2] [3] [4] [5] [6] [7] [8] [9]

Electric Utility Companies	Ticker	Dividend per Share	Stock Price	Dividend Yield	Expected Dividend Yield	First Call Growth Rates	Projected GDP Growth	Growth Rate	COE	Outlier
1 Alliant Energy Corporation	LNT	1.71	59.03	2.90%	2.99%	6.10%	6.22%	6.12%	9.11%	
2 Ameren Corporation	AEE	2.36	87.25	2.70%	2.80%	7.40%	6.22%	7.16%	9.97%	
3 American Electric Power Company, Inc.	AEP	3.17	90.69	3.50%	3.60%	6.10%	6.22%	6.12%	9.73%	
4 Avista Corporation	AVA	1.76	43.96	4.00%	4.13%	6.60%	6.22%	6.52%	10.66%	
5 CMS Energy Corporation	CMS	1.84	64.56	2.85%	2.95%	7.40%	6.22%	7.16%	10.12%	
6 Duke Energy Corporation	DUK	3.98	103.01	3.86%	3.98%	5.85%	6.22%	5.92%	9.90%	
7 Entergy Corporation	ETR	4.09	108.85	3.76%	3.87%	5.90%	6.22%	5.96%	9.83%	
8 IDACORP, Inc.	IDA	3.05	108.09	2.82%	2.89%	4.40%	6.22%	4.76%	7.65%	
9 MGE Energy, Inc.	MGEE	1.59	75.61	2.10%	2.17%	6.50%	6.22%	6.44%	8.61%	
10 Northwestern Corporation	N W E	2.52	58.55	4.30%	4.41%	4.50%	6.22%	4.84%	9.25%	
11 OGE Energy Corp.	OGE	1.86	37.72	4.40%	4.46%	1.90%	6.22%	2.76%	7.23%	x
12 Pinnacle West Capital Corporation	PNW	3.44	71.01	4.84%	4.88%	0.10%	6.22%	1.32%	6.20%	x
13 Portland General Electric Company	POR	1.80	51.94	3.47%	3.55%	4.60%	6.22%	4.92%	8.47%	
14 The Southern Company	SO	2.70	67.08	4.03%	4.15%	6.47%	6.22%	6.42%	10.57%	
15 Xcel Energy Inc.	XEL	1.95	68.11	2.86%	2.96%	6.90%	6.22%	6.76%	9.72%	
<b>Average</b>		<b>2.51</b>	<b>73.03</b>	<b>3.49%</b>	<b>3.59%</b>	<b>5.38%</b>	<b>6.22%</b>	<b>5.55%</b>	<b>9.13%</b>	
Upper Threshold [10]						19.45%				
Zone of Reasonableness Low						7.65%				
Lower Equal Third						8.65%				
Median						9.73%				
Upper Equal Third						9.68%				
Zone of Reasonableness High						10.66%				
Number of Companies in Proxy Group & Not Outlier						13				
Low-end Outlier Test - Value Line EPS Growth Rates										
Moody's Public Utility Baa Bond Yield		5.10%								
20% of CAPM MRP (Value Line)		2.20%								
Low End Threshold		7.30%								
High-end Outlier Test										
200% of Median		19.45%								

**Notes:**

- [1] - [3] SJW-d13
- [4] = [3] x (1 + .5 x [7])
- [5] Source: Yahoo! Finance as of March 31, 2022
- [6] AEB-R10
- [7] = (4 x [5] + [6]) / 5
- [8] = [4] + [7]
- [9] = Outlier if [8] < 6-Mo. Average of Baa Utility Index + 20% \* Market Risk Premium [5.10%] or [8] > [10]
- [10] = Median of [8] \* 2

**Dr. Won's Discounted Cash Flow (DCF) Costs of Common Equity (COE) Estimates - ADJUSTED FOR FERC METHODOLOGY**  
**Based on Dividend per Share, Earning per Share, Stock Price, and Growth Rate**  
**for the Comparable Electric Utility Companies**

<b>2019 Q4 DCF COE estimate (Adjusted Projected Weighted G</b>										
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	
Electric Utility Companies	Ticker	Dividend per Share	Stock Price	Dividend Yield	Expected Dividend Yield	First Call Growth Rates	Projected GDP Growth	Growth Rate	COE	Outlier
1	Alliant Energy Corporation	LNT	1.42	53.04	2.68%	2.75%	5.00%	5.53%	5.11%	7.85%
2	Ameren Corporation	AEE	1.92	76.19	2.52%	2.58%	4.70%	5.53%	4.87%	7.45%
3	American Electric Power Company, Inc.	AEP	2.71	92.78	2.92%	3.01%	5.90%	5.53%	5.83%	8.83%
4	Avista Corporation	AVA	1.55	47.68	3.25%	3.31%	3.50%	5.53%	3.91%	7.22%
5	CMS Energy Corporation	CMS	1.53	62.42	2.45%	2.54%	7.50%	5.53%	7.11%	9.64%
6	Duke Energy Corporation	DUK	3.75	91.71	4.09%	4.19%	4.65%	5.53%	4.83%	9.01%
7	Entergy Corporation	ETR	3.66	117.95	3.10%	3.10%	Negative	5.53%		x
8	IDACORP, Inc.	IDA	2.56	107.11	2.39%	2.43%	2.50%	5.53%	3.11%	5.53%
9	MGE Energy, Inc.	MGEE	1.38	77.30	1.79%	1.82%	4.00%	5.53%	4.31%	6.13%
10	Northwestern Corporation	N W E	2.30	71.82	3.20%	3.26%	3.20%	5.53%	3.67%	6.93%
11	OGE Energy Corp.	OGE	1.51	43.26	3.49%	3.56%	3.50%	5.53%	3.91%	7.46%
12	Pinnacle West Capital Corporation	PNW	3.04	90.55	3.36%	3.44%	4.41%	5.53%	4.63%	8.07%
13	Portland General Electric Company	POR	1.52	56.09	2.71%	2.77%	4.10%	5.53%	4.39%	7.16%
14	The Southern Company	SO	2.46	61.89	3.97%	4.02%	1.56%	5.53%	2.35%	6.38%
15	Xcel Energy Inc.	XEL	1.62	62.69	2.58%	2.65%	5.20%	5.53%	5.27%	7.92%
<b>Average</b>			<b>2.20</b>	<b>74.17</b>	<b>2.97%</b>	<b>3.03%</b>	<b>4.27%</b>	<b>5.53%</b>	<b>4.52%</b>	<b>7.54%</b>
Upper Threshold [10]						14.91%				
Zone of Reasonableness Low						6.13%				
Lower Equal Third						7.30%				
Median						7.46%				
Upper Equal Third						8.47%				
Zone of Reasonableness High						9.64%				
Number of Companies in Proxy Group & Not Outlier						13				
Low-end Outlier Test - Value Line EPS Growth Rates										
Moody's Public Utility Baa Bond Yield		3.74%								
20% of CAPM MRP (Value Line)		2.08%								
Low End Threshold		5.82%								
High-end Outlier Test										
200% of Median		14.91%								

**Notes:**

- [1] - [3] SJW-d13
- [4] = [3] x (1 + .5 x [7])
- [5] Source: Yahoo! Finance as of November 30, 2019
- [6] AEB-R10
- [7] = (4 x [5] + [6]) / 5
- [8] = [4] + [7]
- [9] = Outlier if [8] < 6-Mo. Average of Baa Utility Index + 20% \* Market Risk Premium [5.10%] or [8] > [10]
- [10] = Median of [8] \* 2

<b>Comparison DCF Estimates</b>			Midpoint	Median
2019 Q4 DCF COE estimate			7.89%	7.46%
2022 Q1 DCF COE estimate			9.15%	9.73%
Difference of Averages between Q4 2019 and Q1 2022			1.27%	2.26%

CALCULATION OF LONG-TERM GDP GROWTH RATE (2022)	
Real GDP (\$ Billions) [1]	
1929	\$1,110.20
2021	\$19,427.30
<b>Compound Annual Growth Rate</b>	<b>3.16%</b>
Consumer Price Index (YoY % Change) [2]	
2029-2033	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	1.49
2050	3.38
Compound Annual Growth Rate	4.41%
<b>Average Inflation Forecast</b>	<b>2.96%</b>
<b>Long-Term GDP Growth Rate</b>	<b>6.22%</b>

Notes:

[1] Bureau of Economic Analysis, March 30, 2022

[2] Blue Chip Financial Forecasts, Vol. 40, No. 12, December 1, 2021 at 14

[3] Energy Information Administration, Annual Energy Outlook 2022 at Table 20, March 2022

CALCULATION OF LONG-TERM GDP GROWTH RATE (2019)	
Real GDP (\$ Billions) [1]	
1929	\$1,110.20
2018	\$18,638.20
<b>Compound Annual Growth Rate</b>	<b>3.22%</b>
Consumer Price Index (YoY % Change) [2]	
2026-2030	2.10%
Average	2.10%
Consumer Price Index (All-Urban) [3]	
2029	3.24
2050	5.24
Compound Annual Growth Rate	2.31%
GDP Chain-type Price Index (2009=1.000) [3]	
2029	1.50
2050	2.42
Compound Annual Growth Rate	2.30%
<b>Average Inflation Forecast</b>	<b>2.24%</b>
<b>Long-Term GDP Growth Rate</b>	<b>5.53%</b>

Notes:

[1] Bureau of Economic Analysis, November 27, 2019.

[2] Blue Chip Financial Forecasts, Vol. 38, No. 6, June 1, 2019, at 14

[3] Energy Information Administration, Annual Energy Outlook 2019, Table 20