BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION,
 	
    Complainant,
 	
v.
 	
PUGET SOUND ENERGY,
 	
    Respondent.
	Docket UE-240004
	Docket UG-240005

In the Matter of the Petition of PUGET SOUND ENERGY For an Accounting Order Authorizing deferred accounting treatment of purchased power agreement expenses pursuant to RCW 80.28.410	**Docket UE 230810** (consolidated)

PREFILED REBUTTAL TESTIMONY (NONCONFIDENTIAL) OF

ANN E. BULKLEY

ON BEHALF OF PUGET SOUND ENERGY

SEPTEMBER 18, 2024

PUGET SOUND ENERGY

**PREFILED REBUTTAL TESTIMONY (NONCONFIDENTIAL) OF
ANN E. BULKLEY**

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3 **ANN E. BULKLEY**

4 **I.   INTRODUCTION**

5 **Q.   Are you the same Ann E. Bulkley who previously submitted prefiled direct**

6 **testimony in this proceeding?**

7 A.   Yes. I submitted prefiled direct testimony in this proceeding on behalf of Puget

8 Sound Energy, Inc. ("PSE" or the "Company") regarding the appropriate return on

9 equity ("ROE") for the Company and the reasonableness of the Company's

10 proposed ratemaking capital structure.[1]

11 **Q.   On whose behalf are you submitting this rebuttal testimony?**

12 A.   I am submitting this rebuttal testimony before the Washington Utilities and

13 Transportation Commission ("Commission") on behalf of PSE.

14 **Q.   What is the purpose of your rebuttal testimony?**

15 A.   The purpose of my rebuttal testimony is to respond to the testimony of David C.

16 Parcell on behalf of the Staff of the Commission,[2] the testimony of Chis McGuire

17 on behalf of the Staff of the Commission,[3] the response testimony of J. Randall

18 Woolridge on behalf of the Washington State Office of Attorney General Public

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[1]   Prefiled Direct Testimony of Ann E. Bulkley, Exh. AEB-1T.

[2]   Prefiled Response of David C. Parcell, Exh. DCP-1T.

[3]   Prefiled Response Testimony of Chris McGuire, Exh. CRM-1T.

Counsel,[4] and the response testimony of Lance D. Kaufman on behalf of the Alliance of Western Energy Consumers ("AWEC"),[5] as their respective testimonies relate to the just and reasonable ROE and the appropriate capital structure for the Company's electric and natural gas distribution businesses. If and to the extent that I do not address a particular issue raised by these witnesses in my rebuttal testimony, it is not acceptance of that issue.

Q. Are you sponsoring any attachments as part of your rebuttal testimony?

A. Yes, I am sponsoring Exh. AEB-20 through AEB-39, which are identified in the List of exhibits at the beginning of this testimony and which have been prepared by me or under my direct supervision.

Q. Have you prepared cost of equity analyses to support your rebuttal testimony that reflect current market conditions?

A. Yes. As discussed in more detail herein, I have prepared updated cost of equity analyses based on market data through July 31, 2024, to rebut the cost of equity analyses of Parcell, Dr. Woolridge, and Dr. Kaufman. These analyses validate the reasonableness of PSE's proposed ROE of 9.95 percent for the first year of the rate period, and 10.50 percent for the second year of the rate period. My conclusion continues to be based on not only the results of multiple cost of equity models, but

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[4]   Prefiled Response Testimony of J. Randall Woolridge, Exh. JRW-1T.

[5]   Prefiled Response Testimony of Lance D. Kaufman, Exh. LDK-1T.

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1 also other factors, including capital market conditions, the capital attraction and

2 comparable return standards, and the Company's specific risks.

3 **Q.   How is the remainder of your rebuttal testimony organized?**

4 A.   The remainder of my prefiled rebuttal testimony is organized as follows:

- Section II provides a summary and overview of my prefiled rebuttal testimony and the important factors to be considered in establishing the authorized ROE for the Company.

- Section III provides cost of equity analyses based on market data as of July 31, 2024.

- Section IV discusses the changes in capital market conditions since my prefiled direct testimony and their effect on the cost of equity and authorized ROEs for comparable utilities nationwide relative to the witnesses' ROE recommendations in this proceeding.

- Section V is my response regarding issues concerning the appropriate proxy group for the cost of equity analyses.

- Section VI is my response regarding the issues concerning the DCF models of the intervenors, as well as issues raised by intervenors regarding my DCF models.

- Section VII is my response regarding the issues concerning the CAPM models of the intervenors, as well as issues raised by intervenors regarding my CAPM models.

- Section VIII is my response regarding the issues concerning the ECAPM models of Dr. Kaufman, as well as issues raised by intervenors regarding my ECAPM models.

- Section IX is my response regarding the issues concerning the Risk Premium model conducted by Parcell, as well as issues raised by intervenors regarding my Risk Premium model.

- Section X is my response regarding the issues concerning the Comparable Earnings model relied on by Parcell.

- Section XI compares the as-filed results of the cost of equity analyses of Parcell, Dr. Woolridge, and Dr. Kaufman to the updated and corrected results of those analyses based on the issues that I have identified and discussed with their respective analyses.

- Section XII is my response regarding the issues concerning PSE's regulatory and business risks.
- Section XIII is my response to the other witnesses' testimony regarding the Company's proposed capital structure.

II. SUMMARY AND OVERVIEW

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

A. The primary factors that should be considered are: (1) the importance of providing a return that is comparable to returns on alternative investments with commensurate risk; (2) the need for a return that supports a utility's ability to attract needed capital at reasonable terms; (3) the effect of current and expected capital market conditions; and (4) achieving a reasonable balance between the interests of investors and customers.

Q. What are the ROE recommendations of the other parties in this proceeding?

A. Figure 1 summarizes the recommended ROEs of Parcell, Dr. Woolridge, and Dr. Kaufman. Each of these witnesses' recommendation is applicable for each year of the multiyear rate plan ("MYRP"). As shown, their respective recommendations are based on the results of a different set of cost of equity models, as Parcell relies on the estimates from four models, while Dr. Woolridge conducts two models but relies primarily on the results of his DCF model, and Dr. Kaufman conducts three models, one of which is the ECAPM, which neither Parcell nor Dr. Woolridge utilize.

Figure 1: Summary of Other Witnesses' Cost of Equity Model Results

	Mr. Parcell (Staff)	Dr. Woolridge (Public Counsel)	Dr. Kaufman (AWEC)
Constant Growth DCF	9.00% - 10.00%	9.55% - 9.90%	8.94% - 9.24%
Multi-Stage DCF	n/a	n/a	8.96% - 9.27%
CAPM	10.70% - 10.80%	8.25% - 8.30%	7.54% - 9.45%
ECAPM	n/a	n/a	7.93% - 9.98%
Comparable Earnings	9.00% - 9.50%	n/a	n/a
Risk Premium	9.40% - 10.80%	n/a	n/a
Overall Recommendation	**9.50%**	**9.375%**	**9.20%**

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

A.   My key conclusions and recommendations in this proceeding are as follows:

Cost of Equity / Authorized ROE

- Updated cost of equity analyses based on market data through July 31, 2024, validate the reasonableness of PSE's proposed ROE of 9.95 percent for the first year of the MYRP, and 10.50 percent for the second year of the MYRP.

- While I disagree with various aspects of the cost of equity models conducted by Parcell, Dr. Woolridge, and Dr. Kaufman in this proceeding, a fundamental problem with their respective ROE recommendations is that they do not reflect or otherwise take into consideration the change in market conditions since the completion of the Company's last gas rate proceeding.

  o Long-term interest rates have increased by approximately 130 basis points since the filing of the Company's rebuttal testimony in its 2022 rate proceeding.

  o The results of Parcell's and Dr. Woolridge's cost of equity analyses from the Company's prior rate proceeding as compared to the results of those same analyses in the current proceeding demonstrate that the cost of equity has increased significantly.

- Despite this increase in the cost of equity, Parcell's recommendation is just 25 basis points higher than his recommendation in the last proceeding.

- Dr. Woolridge and Dr. Kaufman recommend an ROE that is *lower than* the ROE authorized for the Company in the last proceeding.

- None of these witnesses have provided any support or justification for their ROE recommendations given the change in market conditions and increase in the cost of equity relative to the market conditions that existed during the Company's last rate proceeding.

- When reasonable adjustments are reflected to the cost of equity analyses prepared by Parcell, Dr. Woolridge, and Dr. Kaufman to update and correct their analyses, it demonstrates that the Company's proposed ROEs during the MYRP are reasonable.

- Neither Parcell, McGuire, nor Dr. Woolridge have independently evaluated the comparative risk of the Company relative to their respective proxy groups. Therefore, there is no basis for Parcell to conclude that PSE's ROE should be set of the low-end of his recommended range.

Capital Structure

- The Company's proposed capital structure, which consists of 50.00 percent common equity for the first year of the MYRP and 51.00 percent for the second year of the MYRP is reasonable for the following reasons:

  - The Company's proposed equity ratio for each year of the MYRP is below the average actual equity ratio of the utility subsidiaries of the proxy group companies (*i.e.*, utilities with risk profiles that are similar to the Company's risk profile).

  - The Company's proposed equity ratio for each year of the MYRP is below the range of equity ratios authorized for vertically-integrated electric utilities across the U.S. over the past five years.

  - While I disagree with Parcell and Dr. Woolridge that the Company's proposed capital structure should be compared to the average equity ratios of the proxy group holding companies, if that analysis is performed correctly, it also demonstrates that the Company's proposed equity ratio in each year of the MYRP is well below the proxy group average equity ratios and is therefore reasonable.

III. UPDATED COST OF EQUITY ANALYSES

Q. **Have you prepared cost of equity analyses to support your rebuttal testimony?**

A. Yes. I have prepared cost of equity analyses that validate my prefiled direct testimony and include market data through July 31, 2024, and also demonstrate the impact on the outdated cost of equity analyses provided by Dr. Kaufman.

Q. **Have you relied on the same proxy group for your updated analyses as you relied upon in your prefiled direct testimony?**

A. Yes, with the exception of ALLETE, Inc. ("ALE") and MGE Energy, Inc. ("MGEE"). ALE was acquired after I filed my prefiled direct testimony and thus does not currently pass the merger and acquisition screening criterion discussed in my prefiled direct testimony. MGEE does not have projected EPS growth rates from Yahoo! Finance and Zacks that are comprised of the estimates of more than one analyst and therefore do not pass my covered by more than one analyst screening criterion.

Q. **What are the updated results of your cost of equity analyses?**

A. Figure 2 summarizes the results of my updated analyses as of July 31, 2024, which are also presented in Exhs. AEB-20 through AEB-26. As shown, the updated results of the cost of equity analyses continue to support PSE's proposal to increase its ROE from 9.40 percent to 9.95 percent for the first year of the MYRP and to increase to 10.50 percent for the second year of the MYRP. Specifically, the results of my DCF, CAPM, and ECAPM analyses have all increased since the filing of my

1   prefiled direct testimony while the results of my Risk Premium and Expected

2   Earnings analysis have decreased slightly since the filing of my prefiled direct

3   testimony but still support the Company's proposed ROEs for years 1 and 2 of the

4   MYRP.

Figure 2: Cost of Equity Model Results

	Minimum Gwth Rate	Average Gwth Rate	Maximum Gwth Rate
Constant Growth DCF			
Mean Results:			
30-Day Avg. Stock Price	9.23%	10.44%	11.45%
90-Day Avg. Stock Price	9.32%	10.53%	11.55%
180-Day Avg. Stock Price	9.45%	10.66%	11.68%
Average	9.34%	10.54%	11.56%
Median Results:			
30-Day Avg. Stock Price	9.73%	10.61%	11.16%
90-Day Avg. Stock Price	9.89%	10.76%	11.23%
180-Day Avg. Stock Price	10.03%	10.79%	11.54%
Average	9.88%	10.72%	11.31%

	Current 30-Day Avg 30-Year Treasury Yield	Near-Term Projected 30-Year Treasury Yield	Longer-Term Projected 30-Year Treasury Yield
CAPM			
Current *Value Line* Beta	12.13%	12.12%	12.12%
Current Bloomberg Beta	10.90%	10.88%	10.87%
Long-term Avg. *Value Line* Beta	10.72%	10.69%	10.68%
ECAPM			
Current *Value Line* Beta	12.26%	12.26%	12.26%
Current Bloomberg Beta	11.34%	11.32%	11.32%
Long-term Avg. *Value Line* Beta	11.20%	11.19%	11.18%
Bond Yield + Risk Premium			
Electric	10.52%	10.47%	10.46%
Natural Gas	10.35%	10.31%	10.29%

	Mean	Median
Expected Earnings	10.82%	10.27%

1   IV.   **CAPITAL MARKET CONDITIONS AND A COMPARABLE RETURN**

2 **Q.**   **Do any parties address the change in capital market conditions since the**

3   **Company's last rate proceeding?**

4 **A.**   No.

5 **Q.**   **Do changes in capital market conditions since the Company's last rate**

6   **proceeding continue to indicate an increase in the cost of equity?**

7 **A.**   Yes. Changes in long-term bond yields since the Company's last rate proceeding,

8   as well as since the filing of the Company's application in this proceeding,

9   demonstrate an increase in the cost of capital. Specifically, as shown in Figure 3,

10   both short-term and long-term interest rates have increased since the Company's

11   rebuttal testimony was filed in its last rate proceeding, which is indicative of an

12   increase in the cost of equity. Core inflation has declined since the last rate

13   proceeding as a result of the increase in interest rates, although inflation continues

14   to remain above the Federal Reserve's long-term target value of 2.0 percent.

Figure 3: Change in Market Conditions Since PSE's Last Rate Proceeding[6]

Docket	Date	Federal Funds Rate	30-Day Avg of 30-Year Treasury Bond Yield	Core Inflation Rate
UE-220066 / UG-220067				
Company Rebuttal	7/28/2022	2.33%	3.16%	5.90%
UE-240004 / UG-240005				
Company Direct	11/30/2023	5.33%	4.76%	4.02%
Company Rebuttal	7/31/2024	5.33%	4.45%	3.21%
Change from Jul-22 to Jul-24:		*3.00%*	*1.29%*	*-2.69%*

Q. Do Parcell, Dr. Woolridge, or Dr. Kaufman adequately consider the implications of current and prospective capital market conditions on the cost of equity?

A. No. While these witnesses reference market conditions, none of them adequately consider the changes in recent market conditions on the cost of equity. As shown in Figure 3, long-term interest rates have increased by approximately 130 basis points since the filing of the Company's rebuttal testimony in its 2022 rate proceeding. However, despite this increase in the cost of equity, Parcell's recommendation is just 25 basis points higher than his recommendation in the last proceeding, while Dr. Woolridge and Dr. Kaufman recommend an ROE that is *lower than* the ROE authorized for the Company in the last proceeding. None of

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[6] St. Louis Federal Reserve Bank; Bureau of Labor Statistics; Bloomberg Professional.

1 these witnesses have provided any support or justification for their ROE

2 recommendations given the change in market conditions and increase in the cost of

3 equity relative to the market conditions that existed during the Company's last rate

4 proceeding.

5 **Q.   Do the results of Parcell's and Dr. Woolridge's costs of equity analyses in this**

6 **proceeding demonstrate that the cost of equity has increased significantly since**

7 **the Company's 2022 rate proceeding?**

8 A.   Yes. Figure 4 and Figure 5 summarize the results of Parcell's and Dr. Woolridge's

9 cost of equity analyses, respectively, that each presented in the Company's 2022

10 rate proceeding as compared to the results of those same analyses in the current

11 proceeding. It is clear from reviewing the differences between these two cases that,

12 based on Parcell's and Dr. Woolridge's own assumptions and the market data that

13 they each rely on to estimate the cost of equity, the cost of equity has significantly

14 increased since the Company's last rate proceeding. For example, as shown in

15 Figure 4, the results of Parcell's DCF and CAPM analyses have increased by 75

16 basis points and 205 basis points, respectively. Likewise, as shown in Figure 5, the

17 result of Dr. Woolridge's DCF analysis for his Panel A electric proxy group has

18 increased over 110 basis points, while the result of his CAPM analysis for the same

19 proxy group has increased 60 basis points.

Figure 4: Comparison of the Results of Parcell's Cost of Equity Analyses in the Company's Prior Rate Proceeding and Current Rate Proceeding

	Docket Nos. UE-220066 / UG-220067	Docket Nos. UE-240004 / UG-240005	Increase	
Constant Growth DCF				
Range	8.7% - 8.8%	9.00% - 10.00%		
Midpoint	8.75%	9.50%	**75**	**bp**
CAPM				
Range	8.70%	10.70% - 10.80%		
Midpoint	8.70%	10.75%	**205**	**bp**
Comparable Earnings				
Range	9.00% - 10.00%	9.00% - 9.50%		
Midpoint	9.50%	9.25%	**-25**	**bp**
Risk Premium				
Range	9.45% - 9.95%	9.40% - 10.80%		
Midpoint	9.70%	10.10%	**40**	**bp**
Overall Recommendation	**9.25%**	**9.50%**	**25**	**bp**

Figure 5: Comparison of the Results of Dr. Woolridge's Cost of Equity Analyses in the Company's Prior Rate Proceeding and Current Rate Proceeding

	Docket Nos. UE-220066/ UG-220067	Docket Nos. UE-240004/ UG-240005	Increase
Constant Growth DCF			
Panel A Proxy Group	8.80%	9.92%	
Panel B Proxy Group	8.90%	9.87%	
Panel C Proxy Group	8.75%	9.56%	
Average	8.82%	9.78%	97 bp
CAPM			
Panel A Proxy Group	7.70%	8.30%	
Panel B Proxy Group	7.70%	8.25%	
Panel C Proxy Group	7.40%	8.29%	
Average	7.60%	8.28%	68 bp
DCF/CAPM Range	7.40% to 8.90%	8.25% to 9.92%	
DCF/CAPM Midpoint	8.15%	9.09%	
Recommended ROE Range	7.40% to 8.90%	9.00% to 9.75%	
Recommendation	8.80%	9.375%	58 bp

Q. Does Dr. Woolridge's recommended ROE in the current proceeding reflect the change in cost of equity as reflected in his own model results?

A. No. Dr. Woolridge has noted in many proceedings, including the current proceeding, that he relies "primarily" on the results of his DCF model to set his ROE recommendation,[7] and as shown in Figure 4, his DCF results have increased on average by 97 basis points since the Company's last proceeding. However, as also shown in Figure 4, Dr. Woolridge's overall recommended ROE has only

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[7] Woolridge, Exh., JRW-1T at 6:15-17; *WUTC v. Puget Sound Energy*, Dockets UE-2200066 and UG-210918, Testimony of J. Randall Woolridge, Exh. JRW-1T at 5:10-16.

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1   increased by 58 basis points – which is even less than the increase in his CAPM

2   results (*i.e.*, 68 basis points). Therefore, instead of fully reflecting the substantial

3   increase in his DCF results since 2022, Dr. Woolridge has instead mitigated the

4   effect of that increase by arbitrarily adjusting the weight that he places on his DCF

5   analysis in establishing his overall ROE recommendation.

6   **Q.   Why has Dr. Woolridge's recommended ROE not reflected the increase in the**

7   **cost of equity shown by the increase in the results of his DCF analyses?**

8   A.   While Dr. Woolridge has consistently indicated that he places primary weight on

9   the results of his DCF analyses over time, the reason that his overall ROE

10   recommendation has not increased consistent with the magnitude of the increase in

11   his DCF results is because he arbitrarily changes the weight that he places on the

12   DCF results over time. Specifically, as the results of his DCF analyses have

13   increased over time, Dr. Woolridge has arbitrarily placed greater weight on the

14   results of his CAPM analyses such that the increase in his overall ROE

15   recommendation has been mitigated.

16   Figure 6 presents the results of Dr. Woolridge's DCF analyses and his overall ROE

17   recommendations in 16 proceedings since 2020 for vertically-integrated electric

18   utilities. As shown, from 2020-2022, Dr. Woolridge's ROE recommendation was

19   equal to or modestly less than the results of his DCF analyses. However, as the

20   results of Dr. Woolridge's DCF analyses (dark blue line) increased substantially

21   since 2023, and in particular in the rate proceedings for vertically-integrated electric

1   utilities in which Dr. Woolridge has testified in 2024, his ROE recommendation

2   has become significantly lower than the results of his DCF analyses.

3   **Figure 6: Comparison of the Results of Dr. Woolridge's DCF Model Results and**
4   **Recommended ROE In Rate Proceedings for Vertically-Integrated Electric Utilities**
5   **Since 2020**
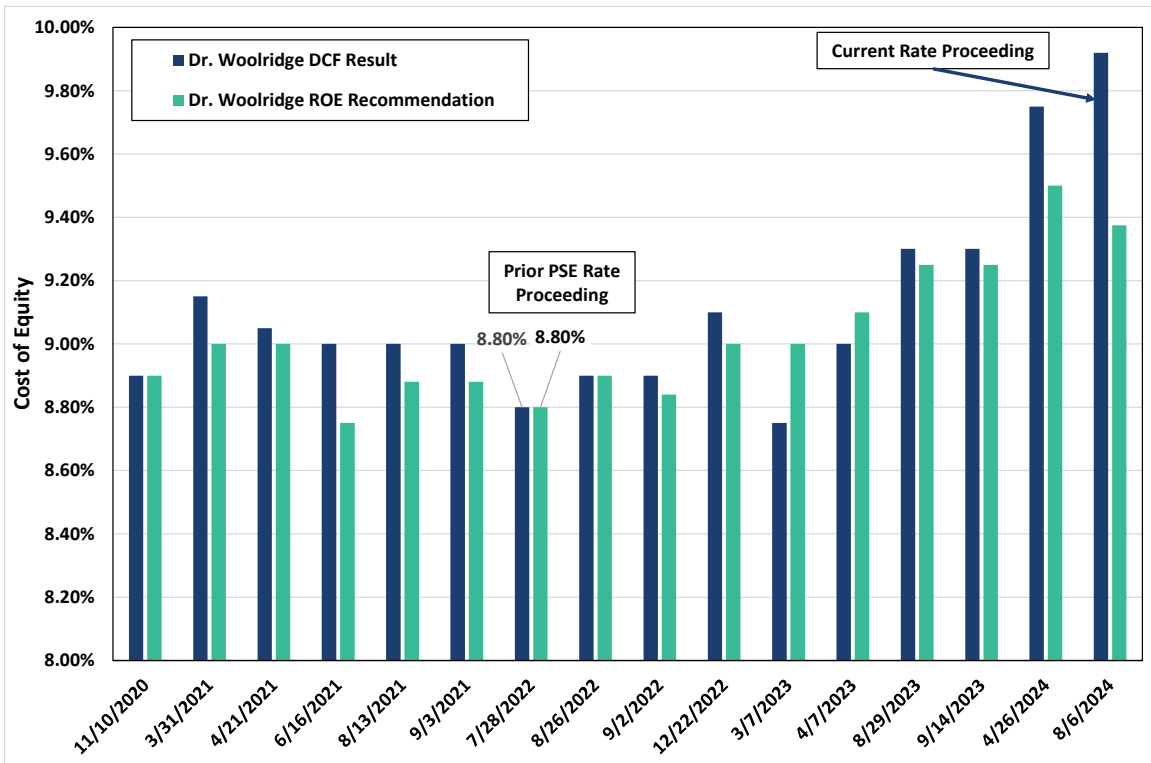
7   **Q.   Is the justification that Dr. Woolridge provides for not reflecting the increase**

8   **in the cost of equity in his ROE recommendation reasonable?**

9   A.   No. In stating that his ROE recommendation primarily relies on the results of his

10   DCF analyses, Dr. Woolridge also states that his recommendation is "recognizing

11   the recent lower interest rates and CAPM equity cost rates."[8] While Dr. Woolridge

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8   Woolridge, Exh. JRW-1T at 6:15-17.

1   does not clarify what he means by "recent," it should be noted that the 30-day

2   average of the 30-year Treasury bond yield as of mid-August 2024 (*i.e.*, 4.35

3   percent) is higher than it was in January and February 2024, and approximately the

4   same level as in March 2024. While the yield experienced a short-term peak in

5   April 2024, the current yield is also consistent with the longer-term consensus

6   estimate projected 30-year bond yield as reported by *Blue Chip Financial Forecasts*

7   (*i.e.*, 4.30 percent).[9]

8 **Q.   What are expectations for inflation and monetary policy over the near term?**

9 A.   Over the last several months the Federal Open Market Committee ("FOMC") has

10   been clear that it intends to rely on market data before making any changes to

11   interest rates. In the FOMC's most recent meeting on July 31, 2024, Chairman

12   Powell observed that the FOMC will make its decision "meeting by meeting."[10]

13   Further, while the FOMC currently forecasts one 25 basis point rate cut in 2024,[11]

14   Chairman Powell continued to state that in considering any adjustment to the target

15   range of the federal funds rate that the FOMC would "carefully assess incoming

16   data, the evolving outlook, and the balance of risks."[12]

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[9]   *Blue Chip Financial Forecasts*, Vol. 43, No. 6, May 31, 2024, at 14, available at Exh. AEB-39C.

[10]   Federal Reserve, *Transcript of Chair Powell's Press Conference*, July 31, 2024, at 3, available at
       https://www.federalreserve.gov/mediacenter/files/fomcpresconf20240731.pdf.

[11]   Federal Reserve, *Summary of Economic Projections*, June 12, 2024, at 2, available at
       https://www.federalreserve.gov/monetarypolicy/files/fomcprojtabl20240612.pdf.

[12]   Federal Reserve, Transcript of Chair Powell's Press Conference, July 31, 2024, at 3, available at
       https://www.federalreserve.gov/mediacenter/files/fomcpresconf20240731.pdf .

1	**Q.**	**What are investors' expectations for the yields on long-term government bonds?**

1 **Q.** **What are investors' expectations for the yields on long-term government**

2   **bonds?**

3 A.   Investors expect long-term interest rates to remain elevated. The most recent *Blue*

4   *Chip Financial Forecasts* report indicates that the consensus estimate of the

5   average yield on the 30-year Treasury bond is 4.32 percent through Q4/2025 and is

6   also 4.30 percent over the longer term through 2030, meaning long-term interest

7   rates are expected to remain elevated during the period that the Company's rates

8   will be in effect.[13]

9 **Q.** **What are your conclusions regarding current market conditions?**

10 A. Both short-term and long-term interest rates remain much higher than at the time

11   of the Company's last rate proceeding. While there is speculation as to the timing

12   of any interest rate reductions from the FOMC, particularly given the upcoming

13   presidential election in November, the FOMC's recent actions demonstrate that any

14   decision to reduce interest rates will be measured.

15 **Q.** **Do Parcell, Dr. Woolridge, or Dr. Kaufman discuss previously authorized**

16   **ROEs by other regulatory commissions across the U.S.?**

17 A. Yes. Parcell indicates that the average annual authorized ROE for electric utilities

18   in 2023 was 9.66 percent and for natural gas utilities in 2023 was 9.60 percent.[14]

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[13]   *Blue Chip Financial Forecasts*, Vol. 43, No. 7, July 1, 2024, at 2; and *Blue Chip Financial Forecasts*, Vol. 43, No. 6, May 31, 2024, at 14, available at Exh. AEB-39C.

[14]   Parcell, Exh. DCP-1T at 12:10-11.

1   Likewise, Dr. Woolridge indicates that the average annual authorized ROE for

2   electric utilities through the first quarter of 2024 was 9.66 percent and for natural

3   gas utilities in 2023 was 9.78 percent.[15]

4   **Q.**   **Parcell, Dr. Woolridge, and Dr. Kaufman all recommend an ROE for PSE in**

5   **this proceeding that is well below the average authorized ROE for other**

6   **vertically-integrated electric and natural gas utilities across the U.S. Based on**

7   **the circumstances in this proceeding, are such recommendations reasonable?**

8   A.   No. Given the change in capital market conditions that indicate a substantial

9   increase in the cost of equity since the Company's last rate proceeding, which the

10   results of Dr. Woolridge's own cost of equity analyses demonstrate, there is no

11   basis for each of these witnesses to recommend an ROE for PSE in this proceeding

12   that is well below the average authorized ROEs nationally. While Parcell and

13   McGuire suggest that PSE has lower business risk as a result of various cost

14   recovery mechanisms and thus should have a lower ROE, as discussed later herein,

15   neither Parcell nor McGuire have conducted any analysis to support their positions.

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[15]   Woolridge, JRW-1T at 22.

1   **Q.**   **Are you aware of examples where capital attraction and willingness to invest**

2   **have been hampered when a regulatory jurisdiction is perceived as not being**

3   **credit supportive?**

4   **A.**   Yes. Connecticut and Illinois are two recent examples. I discussed the challenges

5   in Illinois in my prefiled direct testimony, where market reactions to regulatory

6   decisions in December 2023 for Ameren Illinois Co. and Commonwealth Edison

7   Co. were universally negative and both utilities considered shifting investment to

8   their other utility operating subsidiaries outside of Illinois.

9   Connecticut, which is viewed by research analysts, equity analysts, and investors

10   as among the least credit supportive jurisdictions in the United States for utilities,

11   is the most recent example of where capital attraction and a willingness to invest

12   have been hampered. For example, Avangrid's utility operating subsidiaries in

13   Connecticut (*i.e.*, Connecticut Natural Gas Corporation ("CNG") and Southern

14   Connecticut Gas Company ("SCG")) have recently experienced difficulty fully

15   subscribing bond issuances, and while able to do so, the premiums were higher than

16   anticipated. Specifically, Avangrid has indicated in its most recent rate proceeding

17   that it experienced difficulties in attracting adequate subscription levels for debt

18   issuances by its Connecticut utilities that closed in December 2023, and the bonds

19   priced at a higher coupon rate than anticipated:[16]

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[16]   Public Utilities Regulatory Authority, Docket No. 23-11-02, Response of Connecticut Natural Gas
Corporation to data request RRU-402 (Feb. 27, 2024), available at Exh. AEB-39C.

The debt issuance was a private offering in which four banks served as lead placement agents and worked with the Company to market the transaction to investors in advance of pricing. On the day of pricing, November 15th, the subscriptions sought for CNG and SCG were only 65% and 50% fulfilled, respectively. This compares to the offering for one of the other Avangrid utilities which was more than two-times subscribed. After some additional negotiation, the banks were able to get one investor to fill the remaining portions of the issuance sought for CNG and SCG and the full transaction priced on the following day; however, the credit spreads were wider than anticipated across the Avangrid Connecticut utilities, raising the financing cost by approximately 10-15 basis points. *The bankers informed Avangrid that the difficulty in fulfilling the necessary subscription levels and the wider credit spreads attracted were caused in part by the limited interest to invest in Connecticut utilities due to concerns over the regulatory environment and potential impacts to current ratings.*[17]

V.   PROXY GROUP

Q.   Have other witnesses in this proceeding used the same proxy group as you have relied upon?

A.   Yes. Dr. Kaufman utilizes the same proxy group that I relied on in my prefiled direct testimony, and Dr. Woolridge has also relied on my proxy group for one version of his cost of equity analyses. However, Dr. Woolridge also relies on two additional proxy groups to develop his cost of equity analyses: (1) an electric utility proxy group with 24 companies; and (2) a natural gas utility proxy group with 8 companies. Parcell also utilizes an entirely different proxy group than I have relied on, which includes 10 companies.

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[17]   *Id.* (emphasis added).

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1 **Q.** **Are the screening criteria applied by Parcell and Dr. Woolridge for their respective proxy groups appropriate for establishing a proxy group of companies that are most comparable to PSE?**

4 A. No. I disagree with various aspects of the screening criteria and resulting companies in Parcell's and Dr. Woolridge's proxy groups. For example, Parcell claims to exclude companies that are engaged in mergers and acquisitions; however, he includes ALLETE, Inc., which is currently in the process of being acquired. The transaction was announced on May 6, 2024, which was prior to the end of the analytical period relied on by Parcell (June 30, 2024), and therefore, ALLETE, Inc. should have been excluded from his proxy group. Further, it is unclear how Parcell developed his screening criterion of excluding companies with a market capitalization that is either greater than $10 billion or less than $1 billion, and he has not provided any basis to exclude such companies.[18] The development of the screening criteria is intended to establish a proxy group that is reasonably comparable to the subject company, yet not so unnecessarily restrictive such that one individual estimated result can bias the analysis. As shown in Exh. DCP-8, twelve companies included in my proxy group were excluded from Parcell's proxy group due to his market capitalization screen. Given the number of companies excluded and the fact that Parcell has provided no support for its application, I believe his market capitalization screening criterion is overly restrictive. Neither

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[18] Parcell, Exh. DCP-1T at 31:17.

1   Dr. Woolridge nor Dr. Kaufman have applied a market capitalization screening

2   criterion.

3   Additionally, I disagree with Dr. Woolridge's use of either a revenue screen[19] or

4   inclusion of companies that do not own generation[20] for purposes of establishing

5   his electric proxy group, since doing so results in an electric proxy group that is not

6   as risk-comparable to the Company as my proxy group. Further, I disagree with Dr.

7   Woolridge's reliance on a single criterion for establishing his natural gas proxy

8   group. Dr. Woolridge establishes his group by requiring that a company be

9   classified by *Value Line Investment Survey* ("*Value Line*") as part of the "Natural

10   Gas Distribution Companies" industry group. However, *Value Line*'s natural gas

11   distribution company classification does not necessarily mean that a company is

12   comparable to the subject company given the fact that Dr. Woolridge does not rely

13   on all the electric utilities that *Value Line* classifies as electric utilities, but rather

14   applies a set of screening criteria as a means of establishing selecting companies

15   from that universe that are most comparable to PSE. Moreover, it is unclear how

16   Dr. Woolridge applies this criterion since UGI Corporation is classified by *Value*

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[19]   Woolridge, JRW-1T at 28:3-4.

[20]   *See* Moody's Investors Service, Rating Methodology: Regulated Electric and Gas Utilities, June 23, 2017, at 21, where Moody's concludes that generation ownership causes vertically integrated electric utilities to have higher business risk than electric transmission and distribution companies, available at https://ratings.moodys.com/api/rmc-documents/68547; *see also* Moody's Investors Services, Rating Methodology: Regulated Electric and Gas Utilities at 17, available at Regulated Electric and Gas Utilities | Rating Methodology | Moody's (moodys.com).

Line as part of the natural gas distribution company industry group but is excluded from his proxy group.

Q. **What is your conclusion regarding the appropriate proxy group for PSE?**

A. I continue to support the use of the screening criteria outlined in my prefiled direct testimony to develop the proxy group for PSE. However, while Parcell's and Dr. Woolridge's proxy groups have various issues rendering them less comparable to the Company than my proxy group, the differences in the results of our respective cost of equity models are largely not a function of proxy group differences, but rather methodological differences regarding the inputs to the cost of equity models. As a result, while I note my disagreements with their proxy groups, I will not further discuss those issues.

VI. DCF ANALYSES

Q. **Have each of the witnesses that have offered a recommended ROE in this proceeding conducted a DCF analysis?**

A. Yes. Parcell, Dr. Woolridge, and Dr. Kaufman have each conducted a constant growth DCF analysis. Specifically:

- Parcell calculates the dividend yields for the companies in his proxy group as an average of the high and low stock prices for the three-month period ending June 2024, and adjusts the dividend yield by one-half of the growth rate. For the growth rate, Parcell takes an average of five different indicators: (i) an average of the five-year average historical earnings retention growth rates per *Value Line*; (ii) an average of the five-year historical earnings per share ("EPS"), dividend per share ("DPS") and book value per share ("BVPS") growth rates per *Value Line*; (iii) an average of

1   the projected earnings retention growth rates per *Value Line*; (iv) an average
2   of the projected EPS, DPS and BVPS growth rates per *Value Line*; and (v)
3   an average of the projected consensus EPS growth rates from *Value Line*,
4   *First Call*, and *Zacks Investment Research* ("*Zacks*"). Parcell's constant
5   growth DCF model results in an average cost of equity of 8.6 percent (mean
6   and median) when an average of all five growth rates is utilized, but
7   recommends a range of 9.0 percent to 10.0 percent, with a midpoint of 9.5
8   percent, as the current cost of equity derived for his proxy group.[21]

9   - Dr. Woolridge calculates dividend yields for both his proxy groups and my
10   proxy group using average stock prices over three periods – 30 days, 90
11   days and 180 days – for the period ending August 1, 2024. Dr. Woolridge
12   reviews various growth rates, including historical and projected DPS,
13   BVPS, and EPS growth rates, and an estimate of a sustainable growth rate
14   calculated using *Value Line* projections. Dr. Woolridge dismisses the
15   historical growth rates and gives the most weight to the projected EPS
16   growth rates for his constant growth DCF analysis. The cost of equity
17   resulting from Dr. Woolridge's constant growth DCF models range from
18   9.56 percent (using his natural gas proxy group) to 9.92 percent (using his
19   electric proxy group).[22]

20   - Dr. Kaufman's constant growth DCF analysis is based on current dividend
21   yields using 30-, 90- and 180-day stock prices through November 30, 2023.
22   Dr. Kaufman assumes a growth rate for each proxy group company that is
23   calculated as an average growth rate over a 30-year period based on his
24   multi-stage DCF analysis. Specifically, Dr. Kaufman's growth rate for his
25   constant growth DCF analysis reflects (i) analysts' projected EPS growth
26   rates published by *Value Line*, *Yahoo! Finance*, and *Zacks* for years 1
27   through 5, (ii) a linear transition from the projected EPS growth rate to a
28   "terminal" growth rate in years 6 through 24; and (iii) a "terminal" growth
29   rate for years 25 through 30.[23]

30   In addition, Dr. Kaufman also conducts a multi-stage DCF analysis that includes

31   three stages, the first of which is years 1 through 5, the second of which is years 6

32   through 24, and the third of which is years 25 and beyond. For the dividend yield,

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[21]   Parcell, Exh. DCP-1T at 34:1-36:15.

[22]   Woolridge, Exh. JRW-7.

[23]   Kaufman, Exh LDK-1T at 43 and Exh. LDK-7C. As discussed later herein, the growth rate that Dr.
       Kaufman relies on for his 30-day average stock price scenario is incorrect.

1   Dr. Kaufman relies on stock prices for the proxy group as of November 30, 2023.

2   For the first stage growth rate, Dr. Kaufman relies on analysts' projected estimates

3   as published by *Yahoo! Finance*, *Zacks*, and *Value Line*, while for the third stage

4   he assumes an estimate of the projected compound annual growth in real GDP from

5   2045 to 2050 plus an average estimate of inflation over that same period as reported

6   by the Congressional Budget Office's Long-Term Budget Outlook. For the second

7   stage growth, Dr. Kaufman relies on a linear transition from the first stage growth

8   rate to the third stage growth rate.

9   **A.   Constant Growth DCF Analysis**

10   **Q.   What is your primary area of disagreement with the constant growth DCF**

11   **analyses developed by Parcell, Dr. Woolridge, and Dr. Kaufman?**

12   A.   My primary disagreement with these witnesses regarding their constant growth

13   DCF models is the growth rates to be used in the constant growth DCF model, and

14   the certain aspects of my DCF analysis with which these witnesses disagree.

15   **Q.   Are historical growth rates appropriate for determining the cost of equity in**

16   **the constant growth DCF analysis such as Parcell has done?**

17   A.   No. The cost of equity that is being set in this proceeding is the return that investors

18   expect on current and future investments in the Company. The constant growth

19   DCF model is a forward-looking model that evaluates investors' required returns

20   based on future cash flows. As such, the appropriate measure of growth is

21   investors' expectations, not historical results and should be based on current and

prospective market conditions. Historical growth rates may not reflect future

growth potential, which Dr. Woolridge, who also dismisses the use of historical

growth rates in his constant growth DCF analysis for this reason, acknowledges.[24]

Parcell has not provided any evidence that historical average growth rates for his

proxy group companies reflect the expected future growth rates. Furthermore,

securities analysts' projected EPS growth rates incorporate historical performance

to the extent the analysts believe that historical performance is relevant and

applicable for the future. Additional consideration of historical growth rates

provides no meaningful incremental information regarding the proxy companies'

future growth potential and places unwarranted weight on historical events.

Q. **Do you agree with Parcell's and Dr. Woolridge's consideration of projected**

DPS and BVPS growth rates?

A. No. There are multiple reasons why reliance on *Value Line* projections of DPS

growth and BVPS growth are not appropriate, and that projected EPS growth rates

should be utilized in the constant growth DCF analysis:

- Earnings are the fundamental determinant of a company's ability to pay
  dividends, and over the long-term dividend growth can only be sustained by
  earnings growth.[25] Therefore, EPS, not DPS or BVPS, should be relied on
  in the DCF analysis.

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[24] Woolridge, Exh. JRW-1T at 47.

[25] Eugene F. Brigham and Joel F. Houston, Fundamentals of Financial Management, at 317 (Concise
Fourth Edition, Thomson South-Western, 2004) available at Exh. AEB-39C. As noted by Brigham and
Houston: "Growth in dividends occurs primarily as a result of growth in earnings per share (EPS).
Earnings growth, in turn, results from a number of factors, including (1) inflation, (2) the amount of

- Management decisions to conserve cash for capital investments, to manage the dividend payout for the purpose of minimizing future dividend reductions, or to signal future earnings prospects can influence dividend growth rates in near-term periods. These decisions affect the dividends and the payout ratio in the short term but are not necessarily indicative of a firm's long-term earnings growth.

    o For example, forty S&P 500 companies suspended dividend payments in 2020 as a result of the increased uncertainty due to COVID-19.[26] These dividend suspensions occurred because companies believed earnings over the short term would decline and, therefore, elected to conserve cash to offset the financial effects of COVID-19.

    o Given that BVPS is the inverse of DPS, estimates of BVPS growth are also highly influenced by dividend policy. All else equal, investing earnings in assets increases BVPS, while paying dividends and not investing in assets decreases BVPS.

- There is significant academic research demonstrating that EPS growth rates are most relevant in stock price valuation.[27] For example, Liu, *et al.* (2002) examined "the valuation performance of a comprehensive list of value drivers" and found that "forward earnings explain stock prices remarkably well" and were generally superior to other value drivers analyzed. Gleason, *et al.* (2012) found that the sell-side analysts with the most accurate stock

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earnings the company retains and invests, and (3) the rate of return the company earns on its equity (ROE)."

[26] Karen Langley, *U.S. Companies Slashed Dividends at Fastest Pace in More Than a Decade*, Wall Street Journal (July 8, 2020); https://www.wsj.com/articles/u-s-companies-slashed-dividends-at-fastest-pace-in-more-than-a-decade-11594239429.

[27] *See, e.g.*, Robert S. Harris, "Using Analysts' Growth Forecasts to Estimate Shareholder Required Rates of Return," *Financial Management*, Spring 1986, at 66, available at Exh. AEB-39C; James H. Vander Weide and Willard T. Carleton, "Investor growth expectations: Analysts vs. history," *The Journal of Portfolio Management*, Spring, 1988, available at Exh. AEB-39C; Robert S. Harris and Felicia C. Marston, "Estimating Shareholder Risk Premia Using Analysts' Growth Forecasts," *Financial Management*, Summer, 1992, available at Exh. AEB-39C; Advanced Research Center, "Investor Growth Expectations," Summer 2004, available at Exh. AEB-39C; Eugene F. Brigham, Dilip K. Shome and Steve R. Vinson, "The Risk Premium Approach to Measuring a Utility's Cost of Equity," *Financial Management*, Vol. 14, No. 1, Spring, 1985, available at Exh. AEB-39C; Dr. Roger A. Morin, *New Regulatory Finance*, Public Utilities Reports, Inc., 2006, at 299-303, available at Exh. AEB-39C; Jing Liu, *et. al.*, "Equity Valuation Using Multiples," *Journal of Accounting Research*, Vol. 40 No. 1, March 2002, available at Exh. AEB-39C; C. A. Gleason, *et. al.*, "Valuation Model Use and the Price Target Performance of Sell-Side Equity Analysts," *Contemporary Accounting Research*, September 2011, available at Exh. AEB-39C; Bochun Jung, *et al.*, "Do financial analysts' long-term growth forecasts matter? Evidence from stock recommendations and career outcomes," *Journal of Accounting and Economics*, Vol. 53 Issues 1-2, February-April 2012, available at Exh. AEB-39C.

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1 price targets were those whom the researchers found to have more accurate
2 earnings forecasts.

3 - Investment analysts report predominant reliance on EPS growth
4   projections. In a survey completed by 297 members of the Association for
5   Investment Management and Research, the majority of respondents ranked
6   earnings as the most important variable in valuing a security (more
7   important than cash flow, dividends, or book value).[28]

8 - Projected DPS and BVPS growth rates from *Value Line* such as considered
9   by Parcell and Dr. Woolridge are the views of an individual analyst. In
10   contrast, projected EPS growth rates such as those available from *Yahoo!*
11   *Finance* and *Zacks* are based on consensus estimates from multiple sources
12   and thus the results are less likely to be biased in one direction or another.
13   Moreover, the fact that projected EPS growth estimates are available from
14   multiple sources on a consensus basis attests to the importance of projected
15   EPS growth rates to investors when developing long-term growth
16   expectations.

17 Therefore, for all of these reasons, projected EPS growth rates, not projected

18 DPS or BVPS growth rates, should be used for purposes of estimating the cost of

19 equity using the constant growth DCF analysis.

20 **Q. Have other regulatory commissions also relied on projected EPS growth rates**

21 **as the estimate of perpetual growth in the constant growth DCF model?**

22 A. Yes. For example, the Pennsylvania Public Utilities Commission ("Pennsylvania

23 PUC") has historically preferred the use of analysts' projected EPS growth rates in

24 the constant growth DCF analysis.[29] The Pennsylvania PUC has noted the

25 following:

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[28] Stanley B. Block, "A Study of Financial Analysts: Practice and Theory," *Financial Analysts Journal*, July/August 1999, available at Exh. AEB-39C.

[29] *See, e.g.,* Pennsylvania Public Utility Commission, Opinion and Order, October 4, 2018, at 93. *See, also*, Docket No. M-2018-3006643, Public Meeting held January 17, 2018, at 16, in which the

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1   Upon our consideration of the record evidence, we find that I&E's
2   DCF calculation correctly used forecasted earnings growth rates
3   instead of considering historical growth rates. The record indicates
4   that growth rate forecasts are made by analysts who already factor
5   historical data into their forecasts of earnings per share growth.
6   Although past performance can yield valuable information, relying
7   on it for a DCF analysis results in placing too much weight on past
8   performance. ***Thus, the best measure of growth for use in the DCF***
9   ***model are forecasted earnings growth rates***.[30]

10   **Q.   Has Parcell previously relied solely on projected EPS growth rates in prior**

11   **cases for establishing his recommended cost of equity range and midpoint for**

12   **his constant growth DCF analyses?**

13   A.   Yes. In September 2023 in the 2023 PacifiCorp d/b/a Pacific Power and Light

14   Company ("PacifiCorp") rate proceeding, Parcell also considered the same

15   historical and projected growth rates that he does in the current proceeding;

16   however, relied on the analysts' consensus projected EPS growth rates for

17   establishing his recommended range and midpoint of his constant growth DCF

18   analyses.[31] In contrast, in the current proceeding, Parcell considers historical and

19   projected EPS, DPS, BVPS, and retention growth rates, and then arbitrarily

20   establishes a range and midpoint based on the results of these analyses.

Commission discusses the method it uses to set the ROE for the Distribution System Improvement
Charge, available at Exh. AEB-39C.

[30]   Pennsylvania Public Utility Commission, Docket No. R-2020-3018929, Opinion and Order at 160
(June 17, 2021) (emphasis added).

[31]   *WUTC v. PacifiCorp*, Dockets UE-230172 and UE-210852, Testimony of David C. Parcell, Exh. DCP-
1T at 37 and Parcell, Exh. DCP-9 at 5 (September 14, 2023).

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1 **Q.   Are the projected DPS and BVPS growth rates from *Value Line* that Parcell**

2 **and Dr. Woolridge consider consistent with the required assumptions to**

3 **estimate the constant growth DCF model?**

4 A.   No. Dr. Woolridge and I agree that one of the primary assumptions of the constant

5 growth DCF model is that the growth rate needs to be constant.[32] Further, since

6 earnings are the fundamental determinant of a company's ability to pay dividends,

7 over the long-term, dividend growth can only be sustained by earnings growth.

8 From this fact, it can be reasonably concluded that: (1) since DPS growth is

9 sustained by EPS growth, DPS growth cannot exceed the growth in EPS over the

10 long-term; and (2) while DPS growth can grow at a lower rate than EPS, if a

11 company is retaining a larger portion of earnings, eventually DPS growth will

12 increase in the future if EPS and DPS are expected to grow at a constant rate.[33]

13 Additionally, if either condition were to exist, then the projected DPS growth rate

14 would be expected to change and thus could not be assumed in perpetuity as

15 required by the constant growth DCF model.

16 **Q.   Are *Value Line*'s projected DPS and EPS growth rates equivalent?**

17 A.   No. As shown in Figure 7, using in Dr. Woolridge's Panel A proxy group as an

18 example, *Value Line*'s projected DPS growth rates are only equivalent to its

19 projected EPS growth rates for 5 of his 24 proxy group companies. Projected DPS

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[32]   Woolridge, Exh. JRW-1T at 43.

[33]   Bente Villadsen, Michael J. Vilbert, Dan Harris, and A. Lawrence Kolbe, *Risk and Return for Regulated Industries*, 2017, at 99, available at Exh. AEB-39.

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growth rates for the remaining 19 companies are either less than or greater than the

projected EPS growth rates. As a result, it would not be reasonable to assume *Value*

Line's projected DPS growth rate in perpetuity for these companies.

Figure 7: *Value Line*'s Projected EPS and DPS Growth Rates, Dr. Woolridge's Panel A Proxy Group[34]

	Value Line Projected		Basis Point Difference
	EPS	DPS	(EPS - DPS)
Panel A Proxy Group			
Alliant Energy Corporation	6.0%	6.0%	0
Ameren Corporation	6.5%	6.5%	0
American Electric Power Co.	6.5%	5.5%	100
Avista Corporation	5.0%	4.0%	100
CMS Energy Corporation	5.0%	4.0%	100
Consolidated Edison, Inc.	6.0%	3.5%	250
Duke Energy Corporation	5.0%	2.0%	300
Edison International	6.0%	5.5%	50
Entergy Corporation	0.5%	3.5%	(300)
Evergy, Inc.	7.5%	7.0%	50
Eversource Energy	6.0%	6.0%	0
Exelon Corporation	NMF	NMF	NMF
IDACORP, Inc.	5.5%	5.5%	0
MGE Energy, Inc.	7.0%	3.5%	350
Nextera Energy, Inc.)	8.0%	9.0%	(100)
NorthWestern Corporation	4.0%	2.0%	200
OGE Energy Corp.	6.5%	3.0%	350
Pinnacle West Capital Corp.	4.5%	1.5%	300
Portland General Electric Company	6.0%	5.5%	50
PPL Corporation	7.5%	-0.5%	800
Public Service Enterprise Group Inc	5.0%	5.0%	0
Southern Company	6.5%	3.5%	300
WEC Energy Group	6.0%	7.0%	(100)
Xcel Energy Inc.	7.0%	5.5%	150

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[34]   Woolridge, Exh. JRW-7 at 4.

1   **Q. While Dr. Woolridge does not place primary weight on his sustainable growth**

2   **rates, he does consider them in selecting his overall growth rate. Are the results**

3   **of Dr. Woolridge's constant growth DCF using sustainable growth rates**

4   **reasonable?**

5   A.   No. While Dr. Woolridge does not estimate a cost of equity directly using his

6   sustainable growth rates, he does consider them in the overall growth rate that he

7   uses to estimate a cost of equity for both of his proxy groups and my proxy group.

8   Figure 8 highlights the fact that the sustainable growth rates that Dr. Woolridge has

9   included in his DCF analyses are unreasonable. As shown therein, if Dr. Woolridge

10   had relied solely on his sustainable growth rates, the resulting cost of equity range

11   from 7.98 percent to 8.23 percent. However, all of these cost of equity results are

12   significantly below the average comparable authorized ROEs for both electric

13   utilities and natural gas utilities since at least 1980 and clearly since the annual

14   average authorized ROEs since 2010 that Dr. Woolridge references in Table 3 of

15   his testimony.[35]   The *Hope* and *Bluefield* decisions, which Dr. Woolridge

16   acknowledges, require the authorized return to be comparable to other returns

17   available to investors in companies with similar risk. Dr. Woolridge's reliance on

18   sustainable growth rates for purposes of developing the overall growth rates that he

19   uses in his constant growth DCF analyses clearly do not meet this standard.

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[35]   Woolridge, Exh. JRW-1T at 21-22.

Figure 8: Cost of Equity Results Using Dr. Woolridge's Sustainable Growth Rates

	Dividend Yield	Adjmt Factor	Adj'd Dividend Yield	Woolridge Sustainable Growth Rate	Cost of Equity
Panel A (Woolridge Electric Proxy Group)	4.05%	1.0205	4.13%	4.10%	**8.23%**
Panel B (Bulkley Proxy Group)	4.05%	1.0215	4.14%	4.30%	**8.44%**
Panel C (Woolridge Gas Proxy Group)	3.80%	1.0205	3.88%	4.10%	**7.98%**

Q. Are there further reasons why Dr. Woolridge's sustainable growth rates are not reasonable for estimating the cost of equity using his constant growth DCF?

A. Yes. The use of a sustainable growth rate in the DCF suggests there is a positive relationship between future earnings and the retention ratio; however, this assumption that future earnings growth is inversely related to the dividend payout ratio does not necessarily hold in practice and academic research has found the opposite to be true (*i.e.*, there is a negative relationship between earnings growth rates and payout ratios).

For example, management may decide to (i) conserve cash for capital investments; (ii) manage the dividend payout for the purpose of minimizing future dividend reductions; (iii) manage its capital structure; or (iv) signal future earnings prospects. These decisions can and do influence the dividend payout (and therefore earnings retention) in the near-term, and such decisions have been seen recently in the market. For example, as a result of the economic effects of COVID-19, more than

forty S&P 500 companies temporarily suspended their dividends.[36] Counter to Dr. Woolridge's assumption, a company's management will alter dividend policy to respond to changes in earnings, and therefore dividend growth will not always reflect earnings growth (and vice versa).

Both Zhou and Ruland (2006) and Gwilym, *et al*. (2006) discussed the theory that high dividend payouts (*i.e.*, low retention ratios) are associated with low future earnings growth.[37] Each of these studies also cited Arnott and Asness (2003) that found, over the course of 130 years of data, future earnings growth is associated with high, rather than low payout ratios.[38] Specifically, Arnott and Asness (2003) concluded:

> Unlike optimistic new-paradigm advocates, we found that low payout ratios (high retention rates) historically precede low earnings growth. This relationship is statistically strong and robust. We found that the empirical facts conform to a world in which managers possess private information that causes them to pay out a large share of earnings when they are optimistic that dividend cuts will not be necessary and to pay out a small share when they are pessimistic, perhaps so that they can be confident of maintaining the dividend

[36] Karen Langley, "U.S. Companies Slashed Dividends at Fastest Pace in More Than a Decade," *Wall Street Journal*, July 8, 2020. https://www.wsj.com/articles/u-s-companies-slashed-dividends-at-fastest-pace-in-more-than-a-decade-11594239429.

[37] Ping Zhou and William Ruland, "Dividend Payout and Future Earnings Growth," *Financial Analysts Journal*, Vol. 62, No. 3, 2006 Dividend Payout and Future Earnings Growth: Financial Analysts Journal: Vol 62, No 3 (tandfonline.com), available at Exh. AEB-39C; Owain Gwilym, James Seaton, Karina Suddason, and Stephen Thomas, "International Evidence on the Payout Ratio, Earnings, Dividends and Returns," *Financial Analysts Journal*, Vol. 62, No. 1, 2006, available at Exh. AEB-39C.

[38] Robert Arnott and Clifford Asness, "Surprise: Higher Dividends = Higher Earnings Growth," *Financial Analysts Journal*, Vol. 59, No. 1, January/February 2003, available at Exh. AEB-39C. Since the payout ratio is the inverse of the retention ratio, the authors found that future earnings growth is negatively related to the retention ratio.

payouts. Alternatively, the facts also fit a world in which low payout ratios lead to, or come with, inefficient empire building and the funding of less than-ideal projects and investments, leading to poor subsequent growth, whereas high payout ratios lead to more carefully chosen projects. The empire-building story also fits the initial macroeconomic evidence quite well. At this point, these explanations are conjectures; more work on discriminating among competing stories is appropriate.[39]

All three studies found that there is a negative, not a positive, relationship between earnings growth rates and retention ratios.

For all of these reasons, Dr. Woolridge's reliance on sustainable growth rates in the constant growth DCF model is not appropriate.

Q. Please summarize the areas where you disagree with Dr. Kaufman's constant growth DCF analyses.

A. I disagree with several elements of Dr. Kaufman's constant growth DCF analyses including 1) the time period used for market data, 2) the calculation of the growth rates, and 3) the change he makes to the growth rates used in the DCF model. First, Dr. Kaufman relies on data as of the end of November 2023, which is outdated given that he filed his testimony in August 2024. There is no credible reason why Dr. Kaufman relied on data that is over eight months outdated for conducting his constant growth DCF analysis in this proceeding. In prior cases, Dr. Kaufman has relied on much more current data in the analyses he uses to estimate the cost of equity. For example, in his testimony filed in the 2023 PacifiCorp rate proceeding,

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[39] *Id.*

1   Dr. Kaufman's DCF analysis reflected data updated within three weeks of the filing

2   date of his testimony.[40]

3 Q. **Please explain why you disagree with Dr. Kaufman's growth rates used in his**

4   **DCF model.**

5 A.   There are two errors with Dr. Kaufman's as-filed constant growth DCF. In the 30-

6   day average stock price scenario, Dr. Kaufman has incorrectly calculated the

7   growth rate for each proxy group company. While his testimony states that he

8   averages his first, second, and third stage growth rates, and that is the approach he

9   uses in his 90-day and 180-day average stock price scenarios, his 30-day scenario

10   does not use this calculation. In the 30-day stock price scenario, Dr. Kaufman's

11   model incorrectly relies on the average of his second and third stage growth rates

12   from his multi-stage DCF analysis. The second error is that the expected dividend

13   yield calculation in each of Dr. Kaufman's constant growth DCF analyses

14   incorrectly relies on two different growth rates – one for calculating the expected

15   dividend yield and another for the growth rate used to estimate the cost of equity.

16   The correct specification of the constant growth form of the DCF model relies on a

17   single growth rate.

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[40] *WUTC v. PacifiCorp*, Dockets UE-230172 and UE-210852, Testimony of Lance D. Kaufman, Exh.
      LDK-1T at 7 (Sept. 14, 2023).

1   **Q.   How do Dr. Kaufman's growth rates in this proceeding differ from his prior**

2   **analyses?**

3   A.   In this proceeding, Dr. Kaufman has changed the growth rates that he relies on in

4   his constant growth DCF analyses. In both the 2023 PacifiCorp rate proceeding as

5   well as the 2023 Nevada Power Company rate proceeding, Dr. Kaufman relied on

6   a growth rate that was an average of (i) the projected EPS growth rates per *Value*

7   *Line*; and (ii) his own analysis of historical EPS growth rates using a Monte Carlo

8   simulation.[41] However, in the current proceeding, Dr. Kaufman is no longer using

9   either of these approaches, but is now using an average of his estimated first, second

10   stage, and third stage growth rates from his multi-stage DCF analysis. In other

11   words, Dr. Kaufman previously concluded that projected EPS growth rates from

12   *Value Line* were appropriate but has abandoned the use of these growth rates and

13   as shown on Exh. LDK-7C, relies on growth rates for the proxy group that are, on

14   average, 4.79 percent, which is 90 basis points lower than the average *Value Line*

15   growth rates for the proxy group of 5.69 percent.

16   Further, Dr. Kaufman has changed the terminal growth rate used in his multi-stage

17   DCF analysis. In his testimony filed in May 2024 in the Sierra Pacific rate

18   proceeding, Dr. Kaufman assumed a terminal growth rate for each proxy group

19   company based on the 30-day average of the 30-year Treasury bond yield, and in

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[41]   *WUTC v. PacifiCorp*, Dockets UE-230172 and UE-210852, Testimony of Lance D. Kaufman, Exh.
LDK-1T at 37 (Sept. 14, 2023); *Public Utilities Commission of Nevada*, Docket Nos. 23-06007 and
23-06008, Testimony of Lance D. Kaufman at 7 (Sept. 1, 2023).

1 another scenario, a terminal growth rate based on the average projected growth in

2 GDP from 2035 to 2054 as reported by the Congressional Budget Office.[42]

3 However, in the current proceeding, Dr. Kaufman has no longer relied on either of

4 these approaches for purposes of his constant growth or multi-stage DCF analyses.

5 Dr. Kaufman has provided no basis for continuously changing his methodologies

6 and it raises the concern that these changes have the effect of arbitrarily reducing

7 the growth rates used in his models. In light of the multitude of changes with his

8 analyses, the Commission should carefully consider the credibility of Dr.

9 Kaufman's testimony.

10 **Q.   Please summarize Parcell's criticism of state regarding your DCF analysis.**

11 A.   Parcell suggests that, by using the highest growth rate for each individual proxy

12   group company, my mean high results assume investors rely on the "rosiest"

13   projected EPS growth rate estimate, which Parcell believes is an "unlikely

14   assumption."[43]

15 **Q.   Do you agree with Parcell's characterization of your testimony?**

16 A.   No. First, it is important to note that my DCF models rely on three growth rate

17   scenarios, the lowest growth rates reported for each company, the mean and the

18   highest. Therefore, I have not relied on the "rosiest" scenario, but rather the full

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42   *Public Utilities Commission of Nevada*, Docket No. 24-02026, Testimony of Lance D. Kaufman at 12 (May 21, 2024).

43   Parcell, Exh. DCP-1T at 38:6-9.

range of potential growth rates projected by analysts. It is entirely reasonable to analyze the range of growth rates for the proxy group based on the average, highest, and lowest projected EPS growth rates such as I have done in my DCF analysis. Analysts have different views as to individual companies, and reviewing the range of projected growth rates for each individual proxy group company provides context as to the expectations for each company.

Q. Do you agree with Dr. Woolridge that projected EPS growth rates are "upwardly biased"? [44]

A. No. I disagree with Dr. Woolridge's position for multiple reasons.

First, it is important to recognize that while Dr. Woolridge criticizes my use of analysts' forecasts of EPS growth, as discussed previously, he also relies on projections of EPS growth rates as an input into his DCF model.[45] While Dr. Woolridge uses his assertion of upward bias as a justification to apply his judgment to the EPS growth rates, he provides no analytical framework that lends support to the adjustments that he makes to the published consensus EPS estimates.

Second, the Federal Energy Regulatory Commission ("FERC") addressed the concern raised by Dr. Woolridge about analyst growth rate forecasts nearly a

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[44] *See, e.g.*, Woolridge, Exh. JRW-1T at 9:10-12, 49:12-52:17, 86:5-11.

[45] *Id*. at 54:7-19.

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decade ago in Opinion No. 531-B.[46] In that decision, the FERC reaffirmed its

rejection of the argument that analyst growth rates should not be used in the DCF

analysis because the analysts making those projections allegedly are overly-

optimistic in their growth rate projections.[47] The FERC also noted that the

appropriate dividend growth rate to include in a DCF analysis is the growth rate

expected by the market. The FERC indicated that while the market may be wrong

in its expectations, the cost of common equity to a regulated enterprise depends

upon what the market expects, as reflected in the growth projections published by

the Institutional Broker's Estimate System (often referred to as IBES), not upon

precisely what is actually going to happen.[48] Since that time, the FERC has re-

evaluate the appropriate methodologies to establish an ROE in many opinions;

however, the use of projected EPS growth rates has been consistently applied in all

FERC opinions, including most recently in its Opinion No. 569-A in May 2020.[49]

Third, the 2003 Global Analysts Research Settlement (the "Global Settlement")

served to significantly reduce the bias referred to by Dr. Woolridge. The Global

Settlement required financial institutions to insulate investment banking from

analysis, prohibited analysts from participating in "road shows," and required the

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[46] Coakley Mass. Attorney Gen. v. Bangor Hydro-Elec. Co., Opinion No. 531-B, 150 FERC ¶ 61,165 (2015).

[47] *Id.* ¶ 71.

[48] *Id.* ¶ 72.

[49] *Ass'n of Businesses Advocating Tariff Equity v. Midcontinent Ind. Sys. Operator, Inc.*, Opinion No. 569-A, 171 FERC ¶ 61,154 (2020).

settling financial institutions to fund independent third-party research. In addition, analysts covering the common stock of the proxy companies certify that their analyses and recommendations are not related, either directly or indirectly, to their compensation. Thus, it is unclear why the EPS growth rates for the proxy companies would be susceptible to an upward bias.

Q. **Have several academic studies concluded that projected EPS growth rates are not upwardly biased?**

A. Yes. Several studies have been conducted on data since the Global Settlement decision was issued and concluded that the bias that may have existed prior to the settlement was no longer of concern and that any issues related to analysts' forecast pertained to firms with characteristics very different from those of utilities. For example, Hovakimian and Saenyasiri (2010) found that analyst forecast bias declined significantly or disappeared entirely since the Global Settlement:

> Introduced in 2002, the Global Settlement and related regulations had an even bigger impact than Reg FD on analyst behavior. After the Global Settlement, the mean forecast bias declined significantly, whereas the median forecast bias essentially disappeared. Although disentangling the impact of the Global Settlement from that or related rules and regulations aimed at mitigating analysts' conflicts of interest is impossible, forecast bias clearly declined around the time the Global Settlement was announced. These results suggest that the recent efforts of regulators have helped neutralize analysts' conflicts of interest.[50]

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[50] Armen Hovakimian and Ekkachai Saenyasiri, "Conflicts of Interest and Analyst Behavior: Evidence from Recent Changes in Regulation," *Financial Analysts Journal*, Vol. 66, Number 4 at 195 (July/Aug. 2010) available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1656981.

Other studies such as Hribar and McInnis (2012),[51] Scherbina (2004),[52] and Michel and Pandes (2012)[53] found that analyst earnings forecasts turn out to be too optimistic for stocks that are more difficult to value, for instance, stocks of smaller firms, firms with high volatility or turnover, younger firms, or firms whose prospects are uncertain. These characteristics describe companies that are more volatile and/or less transparent than the average firm – none of which is applicable to the more mature and stable utility companies in our respective proxy groups, where all companies had at least two analysts providing estimates and who, due to their regulated nature, have information transparency. Consequently, optimism bias is not expected to be an issue for utilities. In fact, Dr. Woolridge acknowledges that the economics of the public utility business is characterized by stability and maturity, and thus that is the reason he has relied on the constant growth DCF.[54]

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[51] Paul Hribar and John M. McInnis, "Investor Sentiment and Analysts' Earnings Forecast Errors," *Management Science* (Special Issue on *Behavioral Economics and Finance*), Vol. 58 (2) at 293-307, (Feb. 2012) available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1452893.

[52] Anna D. Scherbina, "Analyst Disagreement, Forecast Bias and Stock Returns," *Social Science Research Network* (June 2004) available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=894381.

[53] Jean-Sebastien Michel and J. Ari Pandes, "Are Analysts Really Too Optimistic?," *Social Science Research Network* (March 2012) available at https://www.efmaefm.org/0EFMAMEETINGS/EFMA%20ANNUAL%20MEETINGS/2012-Barcelona/papers/Analyst_Forecast_Information_Content.pdf.

[54] Woolridge, Exh. JRW-1T at 39:5-10.

1	Q.	**Is there other academic research that also supports your conclusion that the**
2		**analysts' projected EPS growth rates for utilities are not overly optimistic?**
3	A.	Yes. Behn, Choi and Kang (2008) examined the relationship between financial
4		audit quality and the accuracy of earning growth projections. Ultimately, the
5		authors concluded that the accuracy of analysts' earnings growth projections were
6		higher if the company was audited by a "Big 5" accounting firm.[55] At the time of
7		the study, the Big 5 accounting firms were Deloitte & Touche, Price Waterhouse,
8		KPMG, Ernst and Young, and Coopers and Lybrand. However, because of the
9		merger of Price Waterhouse and Coopers and Lybrand, there are currently four big
10		accounting firms. As shown in Figure 9, all of the companies included in Dr.
11		Woolridge's Proxy Group (as well as in my proxy group) are audited by a "Big 4"
12		accounting firm, thus indicating a higher forecast accuracy of earnings growth
13		projections for the proxy group companies.

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[55] Bruce K. Behn, Jong-Hag Choi and Tony Kang, "Audit Quality and Properties of Analysts Earnings Forecasts," *The Accounting Review,* Vol. 83, No. 2, March 2008, at 327-349, available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1029757.

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Figure 9: Auditors of the Proxy Group Companies

	Auditor
Electric Proxy Group	
Alliant Energy Corporation	Deloitte & Touche LLP
Ameren Corporation	PricewaterhouseCoopers LLP
American Electric Power Company, Inc.	PricewaterhouseCoopers LLP
Avista Corporation	Deloitte & Touche LLP
CMS Energy Corporation	PricewaterhouseCoopers LLP
Consolidated Edison, Inc.	PricewaterhouseCoopers LLP
Duke Energy Corporation	Deloitte & Touche LLP
Edison International	PricewaterhouseCoopers LLP
Entergy Corporation	Deloitte & Touche LLP
Evergy, Inc.	Deloitte & Touche LLP
Eversource Energy	Deloitte & Touche LLP
Exelon Corporation	PricewaterhouseCoopers LLP
IDACORP, Inc.	Deloitte & Touche LLP
MGE Energy, Inc.	PricewaterhouseCoopers LLP
NextEra Energy, Inc.	Deloitte & Touche LLP
NorthWestern Corporation	Deloitte & Touche LLP
OGE Energy Corporation	Ernst & Young
Pinnacle West Capital Corporation	Deloitte & Touche LLP
Portland General Electric Company	Deloitte & Touche LLP
PPL Corporation	Deloitte & Touche LLP
Public Service Enterprise Group Incorporated	Deloitte & Touche LLP
Southern Company	Deloitte & Touche LLP
WEC Energy Group, Inc.	Deloitte & Touche LLP
Xcel Energy Inc.	Deloitte & Touche LLP

1   **Q.   Are the studies cited by Dr. Woolridge that examine the potential bias in**

2   **analysts' EPS growth projections relevant in the evaluation of current EPS**

3   **growth rate projections?**

4   A.   No. Dr. Woolridge references a number of articles that he asserts prove the potential

5   bias in analysts' EPS projections.[56] However, all but one of these studies were

6   conducted prior to the Global Settlement in October 2003, which changed the

7   relationship between banking institutions and equity analysts. Therefore, any study

8   that relies on data prior to the Global Settlement and the changes made in the

9   banking industry at that time separating banking and equity analysts cannot be

10   relied upon as representative of current market data.

11   Further, the one study since the 2003 Global Settlement that Dr. Woolridge relies

12   upon was prepared by McKinsey and Company in April 2010. This study notes that

13   the earnings reported by S&P 500 companies met and exceeded the growth rate

14   projected by analysts between 2003 and 2006.[57] While the McKinsey study also

15   notes that analysts' projections exceeded actual earnings growth in 2007 and 2008,

16   this time-period reflected the start of the Great Recession. Therefore, the fact that

17   analysts' projections exceeded actual earnings growth during the 2007-2008 period

18   does not indicate analyst bias, but rather shows that analysts were unable to predict

19   the severity and magnitude of the financial crisis, which is no different than any

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[56]   Woolridge, Exh. JRW-1T at 49-51 n. 29, 30, 31, 33 and 78-80, n. 57, 58, 59, 60, 61, and 62.

[57]   Marc Goedhart, Rishi Raj, and Abhishek Saxena, "Equity analysts: Still too bullish," McKinsey and Company (April 1, 2010) available at https://www.mckinsey.com/capabilities/strategy-and-corporate-finance/our-insights/equity-analysts-still-too-bullish.

1   other recession or other unanticipated event (*e.g.*, the COVID-19 pandemic).

2   Furthermore, the McKinsey study examined analysts' EPS forecasts for a given

3   year at one, two, and three years out. It did not review the 3- to 5-year EPS growth

4   rates that I used in my constant growth DCF analysis, which are meant to represent

5   average growth for a company over a longer period of time.

6   **Q.   In addition to the studies he cites, Dr. Woolridge contends that he has also**

7   **developed his own analysis that demonstrates projected EPS growth rates are**

8   **"overly optimistic and upwardly biased."[58] Do you agree with his analysis?**

9   A.   No. There are two significant flaws with Dr. Woolridge's analysis that invalidate

10   his conclusion that projected EPS growth rates are upwardly biased; 1) the time

11   period used in his analyses, and 2) there are abnormalities in his study that render

12   it unreliable.

13   **Q.   Please explain why the time-period of Dr. Woolridge's study invalidates his**

14   **analyses.**

15   A.   Dr. Woolridge conducts his analysis over the period of 1985 through 2023;

16   however, the 2003 Global Analysts Research Settlement (the "Global Settlement")

17   served to significantly reduce the bias referred to by Dr. Woolridge. Specifically,

18   the Global Settlement:

19   • required financial institutions to insulate investment banking from analysis;
20   • prohibited analysts from participating in "road shows";

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[58]   *See, e.g.*, Woolridge, Exh. JRW-1T at 9:10-12, 49:12-52:17, and 86:5-11.

- required the settling financial institutions to fund independent third-party research; and

- required analysts covering the common stock of the proxy companies certify that their analyses and recommendations are not related, either directly or indirectly, to their compensation.

It is inappropriate to rely on data for the period from prior to the Global Settlement in an attempt to test for bias that may exist since the implementation of these significant reforms that were implemented to address potential bias. Therefore, the underlying data set relied upon by Dr. Woolridge is flawed as a result of his use of historical data that pre-dates the Global Settlement.

Q. What abnormalities have you identified in Dr. Woolridge's projected EPS growth rate study?

A. A review of Dr. Woolridge's projected EPS growth rate analysis identified that there are several examples of abnormally high or low EPS growth rates that bias his analysis. In addition, Dr. Woolridge has reported and relied on growth rates for companies that had merged and therefore could not reasonably have been estimated. Regarding the issue of bias, to estimate the actual three-to-five-year EPS growth rate, Dr. Woolridge calculates the compound annual growth rate ("CAGR") over a four-year period. For example, in his 2021 data, Dr. Woolridge estimates actual EPS growth as the CAGR over the period of 2017 through 2021. In this instance, since his calculation relies on actual EPS in 2017 and 2021, it is important to review the EPS in both years to determine if the EPS in either year is abnormally high or low and thus possibly affected by a one-time financial event. In fact, Dr.

Woolridge notes a similar concern when discussing *Value Line*'s projected EPS growth rates:

> I give less weight to the projected *Value Line* growth rates due to the unique methodology used to measure growth. *Value Line* projects from a three-year historic base period to a three-year future period. *Value Line*'s projected growth rates for gas companies are somewhat higher than Yahoo Finance and Zacks growth rates *due to abnormally low earnings for several companies in the three-year historic period*. The issue for gas companies also [*sic*] pronounced for this group due to the small number of gas companies in the group.[59]

Dr. Woolridge has also identified this same issue that effects his analyses in another recent proceeding:

> It should be noted that *Value Line* uses a different approach in estimating projected growth. *Value Line* does not project growth from today, but *Value Line* projects growth from a three-year base period – 2020-2022 – to a projected three-year period for the period 2026-2028. *Using this approach, the three-year based period can have a significant impact on the Value Line growth rate if this base period includes years with abnormally high or low earnings.* Therefore, I evaluate these growth rates separately from analysts EPS growth rates.[60]

While Dr. Woolridge has recognized the effect that abnormally high or low actual EPS could have on *Value Line*'s projected EPS growth rates, he does not account for this concern in his own comparison of actual to projected EPS growth rates for his sample of electric and natural gas utilities from 1985 to 2022. The following are examples of the compound annual growth rates that were included in Dr.

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[59] *Id.* at 48, n.18 (emphasis added).

[60] Public Utility Commission of Texas, Docket No. 56211, Direct Testimony and Exhibits of J. Randall Woolridge, Ph.D., June 19, 2024, at 44, n.19 (emphasis added), available at AEB-39C.

Woolridge's studies that were abnormally high or low and biased his study or were calculated for companies that had merged and were no longer operating independently:

- *PG&E Corporation ("PG&E")*: Dr. Woolridge calculated an actual compound annual growth rate from 2017 through 2021 of -26.40 percent. However, PG&E filed for bankruptcy in 2019 due to claims brought against the company as a result of billions of dollars of wildfire liabilities.[61] Therefore, Dr. Woolridge is calculating an actual EPS growth rate from 2017 through 2021, where EPS in 2017 is not affected by the bankruptcy while EPS in 2021 is affected by the bankruptcy, resulting in an EPS growth rate over this period of -26.40 percent. Dr. Woolridge should not have included this observation in his calculation of the average actual EPS growth rate for his sample of electric and natural gas utilities in 2021. Similarly, PG&E was also included in Dr. Woolridge's average for 2020, even though the same concern exists. In the 2020 data set calculated by Dr. Woolridge, PG&E's actual growth rate from 2016 through 2020 was -19.11 percent because he again relied on the pre-bankruptcy EPS from 2016 as the base for his calculation.

- *SCANA Corporation ("SCANA")*: While Dr. Woolridge developed a growth rate for this company in 2019, SCANA was acquired by Dominion Energy, Inc. on January 1, 2019, therefore it is not clear how Dr. Woolridge obtained an estimate of EPS for SCANA in 2019. Further, the EPS estimate he reported for 2019 was extremely low and resulted in an actual EPS growth rate of -49.24 percent for 2015 through 2019.

- *NSTAR*: Dr. Woolridge included NSTAR in his average actual EPS growth rate for his sample in 2015 even though NSTAR merged with Northeast Utilities to form Eversource Energy in April 2012. Dr. Woolridge estimated an actual EPS growth rate of -43.19 percent for NSTAR in 2015; a period that is several years past the period that NSTAR even existed. Thus, the inclusion of this growth rate in his 2015 sample is inappropriate, significantly biases the actual average EPS for his electric and natural gas sample group downwards and makes his comparison to the projected EPS growth rates invalid.

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[61] *Value Line* report for PG&E Corp, October 20, 2023.

1   It is important to note that the aforementioned examples of PG&E, SCANA, and

2   NSTAR are not an exhaustive list of the errors in Dr. Woolridge's analysis. The

3   examples simply demonstrate that Dr. Woolridge has not reviewed the actual EPS

4   data for the companies included in his sample to ensure that the results are not

5   biased by one-time financial events. It is evident given the concerns with Dr.

6   Woolridge's analysis that it is not reasonable to use his analysis as a basis to

7   conclude that projected EPS growth rates are "overly optimistic and upwardly

8   biased."

9   **B.   Multi-Stage DCF Analysis**

10   **Q.   Do you agree with Dr. Kaufman's use of a multi-stage DCF analysis to estimate**

11   **the cost of equity for the Company?**

12   A.   No. Neither Dr. Woolridge, Parcell, nor I have estimated the cost of equity using a

13   multi-stage DCF analysis. Both Dr. Woolridge and I agree that a multi-stage DCF

14   analysis is not necessary given that the utility industry is mature.[62] The utility

15   industry is considered a mature industry due to its regulated status and relatively

16   stable demand. Thus, financial projections such as earnings growth rate projections

17   are also likely to be relatively stable over the long-term. The relative stability of the

18   financial forecasts for utilities supports the use of a constant growth DCF model to

19   estimate the cost of equity for a mature industry like utilities. Therefore, the

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[62]   Woolridge, Exh. JRW-1T at 43:13-44:2.

constant growth DCF model is the more appropriate model to estimate the cost of

equity for the Company rather than the multi-stage analysis conducted by Dr.

Kaufman.

Q. Does the multi-stage form of the DCF model increase the number of subjective

inputs required to estimate the cost of equity?

A. Yes. The multi-stage DCF model introduces additional assumptions and potential

analyst bias. Specifically, the multi-stage DCF model presented by Dr. Kaufman in

this proceeding results in the following additional assumptions that require

subjective judgment:

- Specification of the Model: In this case, Dr. Kaufman presents a multi-stage DCF with three stages; however, there are also different forms of a multi-stage model (e.g., two-stage DCF model).

- Selection of the Growth Rates: Dr. Kaufman's specification of a multi-stage model requires the selection of a short-term and long-term growth rate and determine a resulting intermediate growth rate.

- Duration of the Stages of the Multi-Stage DCF Model: Dr. Kaufman assumes three growth stages, the first being years 1-5, the second years 6-29, and the third year 30 and beyond.

Given the number of additional subjective assumptions required, it is reasonable to

conclude that a multi-stage DCF analysis creates greater opportunity for an analyst

to influence the results of the model.

1 Q. **Do you agree with Dr. Kaufman's "terminal" or third stage growth rate**

2 **assumed in his multi-stage DCF analysis?**

3 A. No. There are multiple problems with the long-term growth rate that Dr. Kaufman

4 relies on for his multi-stage DCF analysis. Most importantly, the methodology Dr.

5 Kaufman uses to estimate the long-term growth rate is not supported by the

6 publisher of the data he references as support for the market risk premium in his

7 CAPM analysis. In addition, in this proceeding, Dr. Kaufman has changed his

8 methodology for estimating a terminal growth rate, which results in a lower overall

9 long-term growth rate, and has provided no support for this change in methodology.

10 First, *Morningstar*, the former publisher of the *Ibbotson* SBBI Yearbook that is now

11 owned by *Kroll*, which is a data source referenced by Dr. Kaufman as support for

12 his CAPM analysis, recommends estimating the projected long-term nominal GDP

13 growth rate by first calculating the historical growth in real GDP and then adding

14 the expected inflation rate:

15   Growth in real GDP (with only a few exceptions) has been
16   reasonably stable over time; therefore, its historical performance is
17   a good estimate of expected long-term future performance. *By*
18   *combining the inflation estimate with the real growth rate estimate,*
19   *a long-term estimate of nominal growth is formed.*[63]

20 Furthermore, regarding the use of long-term historical data, *Morningstar* notes:

21   The 87-year period starting with 1926 is representative of what can
22   happen: it includes high and low returns, volatile and quiet markets,

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[63] Ibbotson and Associates, Stocks, Bonds, Bills and Inflation, 1926-2012, 2013 Valuation Yearbook, at
52 (emphasis added), available at Exh. AEB-39C.

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war and peace, inflation and deflation, and prosperity and depression. Restricting attention to a shorter historical period underestimates the amount of change that could occur in a long future period. Finally, because historical event-types (not specific events) tend to repeat themselves, long-run capital market return studies can reveal a great deal about the future. Investors probably expect "unusual" events to occur from time to time, and their return expectations reflect this.[64]

Second, it is important to recognize that Dr. Kaufman's use of a multi-stage DCF analysis in this proceeding to estimate the cost of equity is also inconsistent with his testimony in two other proceedings within the past year. In both the 2023 PacifiCorp rate proceeding before the Commission,[65] as well as a 2023 Nevada Power Company d/b/a NV Energy rate proceeding,[66] Dr. Kaufman established his cost of equity estimate based solely on the result of a constant growth DCF model and did not conduct a multi-stage DCF analysis. There is no fundamental reason from those proceedings that would suggest a multi-stage DCF is necessary to estimate the cost of equity for PSE when that was not the methodology used by Dr. Kaufman in either the recent PacifiCorp or NV Energy proceedings.

Third, even in prior rate proceedings in which Dr. Kaufman has relied on a multi-stage DCF analysis, the approach he has utilized to estimate the terminal growth rate in this proceeding is inconsistent with how he has done so previously.

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[64] *Id.* at 59.

[65] *WUTC v. PacifiCorp*, Dockets UE-230172 and UE-210852, Testimony of Lance D. Kaufman, Exh. LDK-1T at 7:6-8:1 (Sept. 14, 2023).

[66] Public Utilities Commission of Nevada, Docket Nos. 23-06007 and 23-06008, Testimony of Lance D. Kaufman at 6:12-7:10 (Sept. 1, 2023).

1   Specifically, as discussed in my response to Dr. Kaufman's constant growth DCF,

2   in the 2024 Sierra Pacific rate proceeding, Dr. Kaufman assumes in one scenario a

3   terminal growth rate for each proxy group company based on the 30-day average

4   of the 30-year Treasury bond yield, and in another scenario, a terminal growth rate

5   based on the average projected growth in GDP from 2035 to 2054 as reported by

6   the Congressional Budget Office.[67]   However, in the current proceeding, Dr.

7   Kaufman has no longer relied on either of these approaches for purposes of his

8   constant growth or multi-stage DCF analyses. Rather, Dr. Kaufman now assumes

9   a terminal growth rate that is based solely on the average projected GDP from 2045

10   to 2050.

11   Lastly, Dr. Kaufman has not demonstrated that his long-term growth rate

12   reasonably represents the growth that is expected to occur in the electric utility

13   industry over the next 30 years, particularly given the significant capital spending

14   requirements to (i) transition to cleaner generation sources, which will include

15   substantial generation and transmission investment; (ii) effectuate grid

16   modernization investments for improved reliability and energy efficiency; and (iii)

17   facilitate the electrification of the economy to switch away from fossil fuels.

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[67]   Public Utilities of Nevada, Docket No. 24-02026, Testimony of Lance D. Kaufman at 12 (May 21, 2024).

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1 **Q.**   **What is the estimate of a long-term growth rate consistent with the**

2   **methodology outlined by _Morningstar_?**

3 **A.**   As shown in Exh. AEB-27, when longer-term GDP growth is estimated consistent

4   with the methodology outlined by _Morningstar_, the long-term nominal GDP

5   growth rate is 5.49 percent. Specifically, this reflects the real GDP growth rate of

6   3.17 percent from 1929 through 2023, and a projected inflation rate of 2.25 percent.

7   The projected rate of inflation is based on three measures: (1) the average long-

8   term projected growth rate in the Consumer Price Index ("CPI") of 2.20 percent, as

9   reported by _Blue Chip Financial Forecasts_;[68] (2) the compound annual growth rate

10   of the CPI for all urban consumers for 2035-2050 of 2.26 percent as projected by

11   the Energy Information Administration ("EIA") in its Annual Energy Outlook

12   2024; and (3) the compound annual growth rate of the GDP chain-type price index

13   for 2035-2050 of 2.30 percent, also reported by the EIA in the Annual Energy

14   Outlook 2024.[69]

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[68]   _Blue Chip Financial Forecasts_, Vol. 43, No. 6, May 31, 2023, at 14, available at Exh. AEB-39C.

[69]   Energy Information Administration, Annual Energy Outlook 2023 at Table 20, March 16, 2023, available at https://www.eia.gov/outlooks/aeo/data/browser/#/?id=18-AEO2023&cases=ref2023&sourcekey=0. Note, the EIA did not produce an Annual Energy Outlook in 2024.

1   **C.**   <u>**Adjusted DCF Results**</u>

2 **Q.**   **Is Parcell's recommended range and midpoint from his constant growth DCF**

3   **analyses consistent with his prior testimony in other recent proceedings?**

4 **A.**   No. As shown in Figure 10, in the Company's 2022 rate proceeding, Parcell

5   recommended a range for his constant growth DCF analysis that was based on the

6   "mean high" and "median high" results based on the recognition that the results of

7   his DCF analyses were relatively lower than historical DCF results.[70] As shown,

8   the highest cost of equity produced by Parcell's DCF analyses in that proceeding

9   was 8.80 percent. As also shown in Figure 10, in the 2023 PacifiCorp rate

10   proceeding, Parcell recommended a range for his constant growth DCF analysis

11   based on his "mean high" and "median high" results – even though the results of

12   all of his DCF analyses were significantly higher than the results of those same

13   analyses in the 2022 PSE rate proceeding.[71] However, now in the current

14   proceeding, the results of Parcell's DCF analyses are all *higher* than in the 2023

15   PacifiCorp rate proceeding, yet the midpoint of Parcell's recommended range is 25

16   basis points *lower*. Parcell's recommended range and midpoint are inconsistent

17   with his previous testimonies.

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[70] *WUTC v. Puget Sound Energy*, Dockets UE-220066, *et al.*, Testimony of David C. Parcell, Exh. DCP-1T at 34:6-15 (July 28, 2022).

[71] *WUTC v. PacifiCorp*, Dockets UE-230172 and UE-210852, Testimony of David C. Parcell, Exh. DCP-1T at 37:1-10 (Sept. 14, 2023).

Figure 10: Summary of Parcell's Constant Growth DCF Results and Recommended Range and Midpoint in Current Proceeding v. Two Recent Prior Proceedings[72]

	2022 PSE Rate Case [1]	2023 PacifiCorp Rate Case [2]	2024 PSE Rate Case [3]
Mr. Parcel DCF Scenario			
Mean (*All Gwth Rates*)	8.00%	8.40%	8.60%
Median (*All Gwth Rates*)	7.80%	8.40%	8.60%
Mean Low (*Lowest Avg Gwth Rate*)	7.00%	7.40%	7.80%
Median Low (*Lowest Median Gwth Rate*)	6.90%	7.50%	7.90%
Mean High (*Highest Avg Gwth Rate*)	**8.80%**	**9.60%**	**9.80%**
Median High (*Highest Median Gwth Rate*)	**8.70%**	**9.90%**	**10.60%**
Recommended Range	8.70% to 8.80%	9.60% to 9.90%	9.00% to 10.00%
Midpoint of Recommended Range	**8.75%**	**9.75%**	**9.50%**
Midpoint of Mean High / Median High	**8.75%**	**9.75%**	**10.20%**

[1] Docket Nos. UE-220066, UE-220067, UG-210918
[2] Docket Nos. UE-230172, UE-210850
[3] Docket Nos. UE-240004, UG-240005, UE-230810

Q. Given the problems that you have discussed regarding historical and projected retention, DPS, and BVPS growth rates, have you also evaluated the results of Parcell's constant growth DCF analysis if he had relied solely on his projected EPS growth rates?

A. Yes. As shown in Exh. AEB-28, when Parcell's constant growth DCF analysis is adjusted to rely solely on the average of his projected EPS growth rates, the resulting cost of equity is 9.85 percent (mean) and 10.11 percent (median).

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72 Woolridge, Exh. JRW-7 at 1, 6.

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1   **Q.**   **Similarly, if Dr. Woolridge had also appropriately relied solely on projected**

2   **EPS growth rates in the constant growth DCF model, what cost of equity range**

3   **would his constant growth DCF analyses produce?**

4   A.   As shown in Exh. AEB-29 and summarized below in Figure 11, when Dr.

5   Woolridge's constant growth DCF analysis is adjusted to rely on the average of his

6   projected EPS growth rates from Wall Street analysts and *Value Line*, the resulting

7   cost of equity ranges from 9.98 percent to 10.46 percent depending on the proxy

8   group and average stock prices utilized.

9   **Figure 11: Summary of the Cost of Equity Results of Dr. Woolridge's Proxy**
10   **Groups using EPS Growth Rates in the Constant Growth DCF Analyses**

	Panel A Woolridge Electric Proxy Group	Panel B Bulkley Proxy Group	Panel C Woolridge Nat Gas Proxy Group
As Filed	9.92%	9.87%	9.56%
Adjusted			
30-Day Average Stock Prices	10.16%	10.26%	9.98%
90-Day Average Stock Prices	10.22%	10.33%	10.04%
180-Day Average Stock Prices	10.22%	10.46%	10.04%
Average	10.20%	10.35%	10.02%

11   **Q.**   **What would the results of Dr. Kaufman's constant growth DCF analyses be if**

12   **the issues that you have identified are corrected?**

13   A.   Exh. AEB-30 reflects updated data through the end of July 2024, or eight months

14   more current than the data relied on by Dr. Kaufman, as well as the growth rates

1   for the proxy group companies that are the projected EPS growth rates as reported

2   by *Value Line*, which is consistent with the methodology Dr. Kaufman relied on in

3   his testimony in both the recent PacifiCorp and Nevada Power Company rate

4   proceedings.

5   As shown on Exh. AEB-30, if Dr. Kaufman had relied on updated data and solely

6   on the *Value Line* growth rates for the companies in the proxy group, the average

7   cost of equity for the proxy group would range from 9.84 percent to 10.06 percent,

8   depending on the period over which the average stock prices and thus dividend

9   yields are calculated. Both of the errors with Dr. Kaufman's as-filed constant

10   growth DCF analysis are also corrected in Exh. AEB-30.

11   **Q.   How do the results of Dr. Kaufman's multi-stage DCF analyses change when**

12   **the issues you raise are corrected?**

13   A.   Exh. AEB-31 reflects two changes to Dr. Kaufman's multi-stage DCF result; 1)

14   updated data through the end of July 2024, or eight months more current than the

15   data relied on by Dr. Kaufman and 2) updates the long-term growth rate to rely on

16   a methodology that is consistent with the methodology recommended by

17   *Morningstar*.

18   As shown on Exh. AEB-31, making these two changes, results in a range of returns

19   from 9.92 percent to 10.21 percent, depending on the period over which the average

20   stock prices and thus dividend yields are calculated.

VII. CAPM

Q.   **How do Parcell, Dr. Woolridge, and Dr. Kaufman conduct their respective CAPM analyses?**

A.   These witnesses have conducted their CAPM analysis as follows:

- Parcell uses a 3-month average historical 20-year Treasury bond yield as the risk-free rate and relies on the most recent beta coefficients reported by *Value Line* for his proxy group companies. Parcell calculates the market return component of his market risk premium as an average of 3 approaches:

  o the average risk premium of the historical return of the S&P 500 Index relative to the 20-year Treasury bond yields from 1978 to 2023, which results in a market risk premium of 7.93 percent;

  o the arithmetic mean of the total return on large cap stocks minus the total return on long-term government bonds over the period 1926-2022 as published in the Kroll *SBBI Yearbook* of 6.40 percent; and

  o the geometric mean of the total return on large cap stocks minus the total return on long-term government bonds over the period 1926-2022 as published in the Kroll *SBBI Yearbook* of 4.90 percent.

  Based on these inputs, Parcell's CAPM analysis results in a mean and median cost of equity of 10.7 percent and 10.8 percent, respectively.[73]

- Dr. Woolridge conducts three CAPM analyses – one using his electric proxy group, one using his natural gas proxy group, and one using my proxy group – and uses the same set of data for the assumptions in each model. Specifically, Dr. Woolridge relies on a risk-free rate that is the current 30-year Treasury yield, current betas for the proxy group as reported by *Value Line* and S&P, and a market risk premium that considers historical risk premia, projected market risk premium studies (both current and historical studies), surveys of financial professionals, and historical "building block" models of the expected market risk premium. Dr. Woolridge states that he gives the most weight to the market risk premium estimates of *Kroll*, J.P.

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[73]   Parcell, Exh. DCP-1T at 41:17-20.

Morgan, KPMG, Professor Damodaran, and the IESE Business School study.[74]

- Dr. Kaufman conducts six CAPM scenarios using the CAPM analyses that I developed in my prefiled direct testimony, which relied on data as of November 30, 2023. Dr. Kaufman states that he makes two adjustments to the assumptions the CAPM analyses from my prefiled direct testimony:

    o First, instead of relying on the *Bloomberg* betas that incorporate the Blume adjustment, which accounts for the tendency of beta to trend toward 1.00, Dr. Kaufman instead recalculates an alternative beta that assumes beta will trend toward a utility industry average rather than 1.0 such as in the Blume adjustment applied by both *Bloomberg* and *Value Line* in their beta estimates.[75] Dr. Kaufman relies on these alternative betas for each of his six CAPM analyses.

    o Second, Dr. Kaufman adjusts the market risk premium calculation. For three of his CAPM analyses, Dr. Kaufman calculates the market risk premium by including negative growth rates in the derivation of the market return using a constant growth DCF analysis for the S&P 500 companies. For the other three of his CAPM analyses, Dr. Kaufman relies on the market risk premium published by *Kroll*.[76]

The results of Dr. Kaufman's CAPM analyses using the projected DCF-derived market risk premium that includes negative growth rates range from 9.24 percent to 9.45 percent. The results of Dr. Kaufman's CAPM analyses using the *Kroll* market risk premium are 7.54 percent to 8.21 percent.

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[74] Woolridge, Exh. JRW-1T at 58:1-73:15.

[75] Kaufman, Exh. LDK-1T at 46:19 - 47:6.

[76] *Id*. at 64:3-8.

1	**A.** **Risk-Free Rate**
2	**Q.** **Is there any validity to Parcell's claim that the results of the CAPM should not**
3	**be relied on because the Federal Reserve's monetary policy has resulted in**
4	**upwardly biased yields on U.S. Treasury bonds that are expected to decline?[77]**
5	A. No. In fact, Parcell's conclusion regarding consideration of the CAPM results
6	appears to be in direct conflict with his conclusions regarding the consideration of
7	market conditions:

> *Security markets (stock market prices) reflect the collective impact of investors' perceptions of all relevant information*. As a result, any perceived impacts of inflation and interest rates are already incorporated in stock and other security prices and, as a result, an analysis of the current COC (using market-based methodologies such as DCF, RP, and my version of CE) incorporates these factors.[78]

Parcell contends that share prices reflect all known information which is the theory known as the Efficient Market Hypothesis ("EMH"). However, what Parcell fails to acknowledge is that the yields on long-term government bonds on which he, Dr. Woolridge, Dr. Kaufman, and I all rely as the estimate of the risk-free rate in the CAPM are not determined directly by the Federal Reserve, but rather, similar to stock prices, are determined primarily the buying and selling of the securities by investors in the secondary market. Therefore, according to Parcell's logic, which is based in the theory of the EMH, if stock prices were to reflect the impact of all

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[77] Parcell, Exh. DCP-1T at 42:14 – 43:3.

[78] *Id.* at 16:6-10 (emphasis added).

1   relevant information including inflation and Federal Reserve policy, then so too

2   would the yields on long-term government bonds – which means they would not be

3   biased such as Parcell contends.

4   Furthermore, as I discussed previously herein, investors expect long-term interest

5   rates to remain elevated. The most recent *Blue Chip Financial Forecasts* report

6   indicates that the consensus estimate of the average yield on the 30-year Treasury

7   bond is 4.34 percent through 4Q/2025 and is also 4.30 percent over the longer term

8   through 2030, meaning long-term interest rates are expected to remain elevated

9   during the period that the Company's rates will be in effect and thus there is no

10   basis for Parcell's contention that the results of the CAPM should not be relied

11   upon.[79]

12   Therefore, Parcell has not provided any support for excluding the results of the

13   CAPM when determining the ROE for PSE.

14   **B.   Beta**

15   **Q.   Do Parcell and Dr. Woolridge rely on the same betas as you do?**

16   A.   Yes. As noted, Parcell and Dr. Woolridge rely on the most current betas published

17   by Value Line for the companies in their respective proxy groups. As discussed in

18   my prefiled direct testimony, I also rely on the most current betas published by

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[79] *Blue Chip Financial Forecasts*, Vol. 43, No. 8, August 1, 2024, at 2 and Vol. 43, No. 6, May 31, 2024, at 14, available at Exh. AEB-39C.

1   *Value Line*, as well as the most current betas published by *Bloomberg*, and a long-

2   term historical average of the betas published by *Value Line*.

3   **Q.   What is Dr. Kaufman's criticism of the betas used in your CAPM analysis?**

4   A.   Dr. Kaufman has two concerns with the betas that I rely on in my prefiled direct

5   testimony. First, he contends that *Value Line* betas should not be relied on in the

6   CAPM because they have been affected by the changes in the market that occurred

7   in 2020 as a result of COVID-19. Second, he opposes my use of the beta

8   coefficients published by *Value Line* and *Bloomberg* because they reflect the Blume

9   adjustment, which accounts for the tendency of beta to trend to the market average

10   of 1.0 over time. Dr. Kaufman claims that the betas for utility stocks do not trend

11   to 1.0 over time and, as a result, use of the Blume adjustment overstates the betas

12   of utilities. According to Dr. Kaufman, raw beta coefficients should be adjusted to

13   the utility industry average as opposed to the market average. He contends that the

14   use of the industry average is supported by academic literature as well as his

15   analysis comparing the forecast accuracy of *Value Line* betas and industry average-

16   adjusted betas. As a result, Dr. Kaufman recalculates my CAPM analysis using the

17   beta coefficients that I rely on from *Bloomberg* as adjusted to remove the Blume

18   adjustment and instead revised to reflect an adjustment to the industry average.[80]

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[80]   Dr. Kaufman uses the proxy group average as a proxy for the industry average.

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1   **Q.**   **Did you review the academic literature that Dr. Kaufman provided to support**

2   **adjusting betas towards the industry average?**

3   **A.**   Yes. Dr. Kaufman states that Dr. Sharpe's book titled *Investments* concludes that it

4   is more reasonable to adjust a historical beta towards an industry average than

5   toward a value of 1.0 (*i.e.*, the average for all stocks).[81] While Dr. Sharpe did note

6   this regarding historical betas, he did not draw the same conclusion with regard to

7   "future betas," which is an important factor in this proceeding given that Dr.

8   Kaufman is estimating the cost of equity for PSE over the future period during

9   which the rates established by the Commission in this proceeding will be in effect.

10   Therefore, the estimated beta in the CAPM should reflect the beta expected during

11   the period that rates will be in effect, which is an area that Dr. Kaufman and I

12   agree.[82] According to Dr. Sharpe, "[t]he procedure used to "adjust" historical betas

13   involves an implicit *prediction equation* for future beta."[83] Dr. Sharpe contends

14   that prediction equations containing specific industry information, such as market

15   capitalization, dividend yields, and other measures of risk, are substantially better

16   predictors of future betas than only using historical betas.[84] However, Dr. Kaufman

17   assumes that historical betas for the utility industry, or in his case, the proxy group,

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[81]   Kaufman, Exh. LDK-1T at 56:1-17.

[82]   *Id.* at 58:1 – 60:5. While I will discuss the errors in Dr. Kaufman's analysis, he in part believes that the industry average adjustment is more appropriate because he claims his analysis shows that the industry average adjusted beta are better predictors of future betas than the *Value Line* betas.

[83]   *Investments*, 2d ed., Prentice-Hall, Inc., Englewood Cliffs, 1981, at 345.

[84]   *Id.* at 346.

1   are the best predictor of future betas – which is counter to the evidence presented

2   by Dr. Sharpe.

3 **Q.**   **Are there additional economic variables not considered by historical betas that**

4   **result in historical betas being poor predicators of future betas for utilities?**

5 **A.**   Yes. Consistent with Dr. Sharpe's theory that there are additional factors in addition

6   to historical betas that need to be considered to predict future betas, raw betas (*i.e.*,

7   historical betas) likely understate the true beta of utility stocks given that the utility

8   sector is not only correlated to the broader market but is also sensitive to changes

9   in interest rates that are not factored into the raw beta calculation. In other words,

10   the raw beta coefficients do not consider interest rate risk and thus likely understate

11   the actual risk and betas of the utility sector. For example, Dr. Morin noted:

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> There is an additional economic justification for the use of adjusted betas in the case of regulated utilities. Adjusted betas compensate for the tendency of regulated utilities to be extra interest-sensitive relative to industrials. In the same way that bondholders get compensated for inflation through an inflation premium in the allowed rate of return. Thus, utility company returns are sensitive to interest rates. This is because the market index typically used in estimating betas is a stocks-only index, such as the S&P 500. A focus on stocks alone distorts the betas of regulated companies. The true risk of regulated utilities relative to other companies is understated because when interest rates change, the stocks of regulated companies react the same way as bonds do. A nominal interest rate on the face value of a bond offers the same pattern of future cash flows as a nominal return applied on the book value rate base. Empirical studies of utility returns confirm that betas are higher when calculated in the same way that captures interest rate

1   sensitivity. The use of adjusted betas compensates for the interest
2   sensitivity of regulated companies.[85]

3 **Q. Do Dr. Kaufman's "industry adjusted" historical betas account for any**

4 **additional factors such as you just described?**

5 A.   No. Dr. Kaufman's "industry adjusted" betas produce the exact same CAPM result

6   as simply using the raw betas for each proxy group that Dr. Kaufman identifies.

7   Specifically, Dr. Kaufman's industry average adjustment results in raw betas above

8   the proxy group average raw beta being adjusted downwards, and the raw betas

9   below the proxy group average being adjusted upwards. As a result, while Dr.

10   Kaufman's "industry average" adjustment changes the individual betas of each

11   proxy group company, Dr. Kaufman's CAPM results are the same regardless of

12   whether raw betas or industry adjusted betas are used. This is because he selects

13   the proxy group average as the "industry average" upon which to base the

14   adjustment. In other words, the proxy group average beta is the same whether his

15   raw betas are used or whether his "industry adjusted" betas are used.

16   For example, Exh. AEB-32 presents Dr. Kaufman's CAPM scenario using the 30-

17   day average yield of the 30-year Treasury bond as the risk-free rate and his adjusted

18   S&P 500 market return, and in one scenario, Dr. Kaufman's raw betas and in the

19   other scenario Dr. Kaufman's "industry adjusted" betas. As shown, *regardless of*

20   *whether the raw betas or industry average betas are relied on in Dr. Kaufman's*

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[85]   Roger A. Morin, *Modern Regulatory Finance*, Public Utilities Reports, Inc., at 82, available at Exh.
       AEB-39C.

1 *CAPM scenario*, the mean CAPM result is 9.45 percent. As a result, because the

2 historical raw betas do not consider interest rate risk, the industry average

3 adjustment applied by Dr. Kaufman adjusts the raw betas towards an average beta

4 that is likely to be understated. Conversely, the Blume adjustment applied by *Value*

5 *Line* and *Bloomberg* adjusts the raw betas towards the market average of 1.0, thus

6 likely better reflecting both the correlation with the broader market and the interest

7 rate risk of the utility sector.

8 **Q.** **Dr. Kaufman references Michelfelder and Theodossiou (2013) as support for**

9 **his conclusion that the use of Blume adjusted betas in the CAPM overstates**

10 **the cost of equity for utilities.[86] Have you reviewed Michelfelder and**

11 **Theodossiou (2013)?**

12 A. Yes. While Michelfelder and Theodossiou (2013) concluded that Blume-adjusted

13 betas overstate the betas for utilities, their study did not consider that raw betas are

14 likely understated because they do not consider interest rate risk. Michelfelder and

15 Theodossiou (2013) calculated 5-, 7-, 8- and 9-year betas using monthly total

16 returns for electric and natural gas utilities and the market. The authors then used

17 the estimated betas to develop a regression where the prior period raw beta was

18 used to predict the raw beta for the subsequent period. According to Michelfelder

19 and Theodossiou (2013), if the Blume adjustment were to hold, the estimated

20 regression coefficients should be equivalent to the Blume Adjustment (*i.e.,* $\beta_{t+1} =$

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[86] Kaufman, Exh. LDK-1T at 58:1 - 60:5.

0.343 + 0.677 x β_t). However, as Dr. Sharpe noted, explanatory variables in addition to historical betas are needed to better predict future beta. One such factor for utilities is interest rate risk. In fact, Kolbe and Read (1984) showed that raw betas estimated using a "conventional" approach, such as five years of monthly returns against the S&P 500, understate the beta for utility stocks. The authors found that the betas for utility stocks increased significantly when betas were estimated using an "augmented" market index that considered fixed income securities such corporate and government bonds in addition to common stocks instead of the S&P 500.[87] Since Michelfelder and Theodossiou (2013) did not consider the effect of interest rate risk, their study, which relied on historical raw betas, cannot be relied upon to conclude that the Blume adjustment is not appropriate. However, the Blume adjustment, which, as noted, adjusts the raw betas towards the market average of 1.0, thus likely better reflects both the correlation with the broader market and the interest rate risk of the utility sector.

Q. Did Dr. Kaufman conduct an analysis to evaluate the forecast accuracy of his industry average-adjusted betas versus *Value Line* betas?

A. Yes. Dr. Kaufman conducts an analysis to compare (i) his estimate of the industry average-adjusted betas as well as the estimated *Value Line* betas for ALLETE, Inc. ("ALE") to (ii) ALE's historical beta over the period of 2013 through 2024, in order

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[87] A. L. Kolbe and J. A. Read, "Choice of Discount Rates in Utility Planning: A critique of Conventional Betas as Risk Indicators for Electric Utilities," Electric Power Research Institute, 1984, available at Exh. AEB-39C.

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to evaluate whether his industry-adjusted betas or the *Value Line* betas are more accurate predictors of the actual historical beta that resulted. Specifically, Dr. Kaufman calculates ALE's historical beta using five years of monthly returns relative to the S&P 500 Index for each month over the period of 2013 to 2024.[88] To evaluate the forecast accuracy of the *Value Line* betas, Dr. Kaufman relies on *Value Line's* estimate of the beta coefficient for ALE at the end of the year, and then compares that beta to his estimate of ALE's historical beta for the next one to three years.

For example, Dr. Kaufman assumes that *Value Line*'s beta for ALE as of December 31, 2013, is applicable for the 3-year period January 1, 2014, through December 31, 2016, and then compares that to his estimate of ALE's actual beta over this time period. Similar to his review of the *Value Line* betas, Dr. Kaufman relies on his estimate of the industry beta as of the end of each year from 2013 through 2022 and then compares that beta to his estimate of ALE's historical beta for the next one to three years.[89] Based on his analysis, Dr. Kaufman concludes the forecast accuracy of his industry average beta for ALE is superior to the *Value Line* beta for ALE.[90]

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[88] Kaufman, Exh. LDK-1T at 58:1-60:5.

[89] Dr. Kaufman appears to calculate his industry average beta for ALE based on his historical beta estimate for ALE and the average historical beta for a sample of electric utilities.

[90] Kaufman, Exh. LKD-1T at 60:1-3.

1 **Q. Do you have any concerns with Dr. Kaufman's evaluation of the forecast**

2 **accuracy of *Value Line* betas and his industry average betas?**

3 A. Yes. Dr. Kaufman's analysis contains a significant flaw that biases the results and

4 therefore cannot be relied upon to evaluate the forecast accuracy of the *Value Line*

5 betas. Specifically, Dr. Kaufman does not consider the interval effect, meaning that

6 the interval used to estimate beta (*i.e.*, daily, weekly or monthly) will affect the

7 calculated beta. The interval effect is due to non-synchronous trading (*i.e.*,

8 individual stocks may have different trading frequencies than the market index used

9 to calculate beta). For example, a shorter interval such as daily prices would not be

10 appropriate for stocks that are less frequently traded relative to the market index. A

11 stock that is traded less frequently than the stocks in the market index will have a

12 lower beta than the market due to the fact that its share price does not move in

13 tandem with the market given its lower trading frequency. The reason this is

14 applicable to Dr. Kaufman's analysis is because he is evaluating how well *Value*

15 *Line* betas, which are calculated using a *weekly* interval, can predict actual betas,

16 which he calculates using a *monthly* interval. Further, similar to the actual beta

17 estimates, Dr. Kaufman appears to have estimated his industry average betas using

18 a monthly interval. Since it is clear that the interval can have an effect on the

19 estimated beta, Dr. Kaufman's analysis cannot be used to draw any meaningful

20 conclusions.

1	Q.	**Has Dr. Kaufman provided prior regulatory commission precedent to support**
2		**his use of industry average adjusted betas in the CAPM?**
3	A.	Dr. Kaufman references an order issued by the Oregon Public Utility Commission
4		("OPUC") from April 2000 as support for his position.
5	Q.	**Does Dr. Kaufman's cited reference support his position in this proceeding?**
6	A.	No. The OPUC order cited by Dr. Kaufman related to a rate proceeding for a
7		telecommunications company more than 20 years ago. Dr. Kaufman has provided
8		no precedent related to either the electric or natural gas utility industry, or for that
9		matter, any recent regulatory support where a utility regulatory commission
10		supports the use of industry average adjusted betas in the CAPM.
11	Q.	**Have any of the other witnesses in this proceeding relied on industry average**
12		**adjusted betas in their CAPM analyses such as Dr. Kaufman has done?**
13	A.	No. Parcell, Dr. Woolridge, and I have all relied on the current betas for our
14		respective proxy groups as reported by *Value Line*, which have been adjusted to
15		account for the tendency of beta to regress towards the market average beta of 1.0
16		over time. Further, Dr. Woolridge also relies on current betas from S&P, and he
17		specifically applies the Blume adjustment to those betas.

1 **Q. Are the Blume-adjusted betas reported by *Value Line* and *Bloomberg* relied**

2 **upon widely by investors?**

3 A. Yes. Both *Value Line* and *Bloomberg* have reported adjusted betas for decades, and

4 it is clear that investors rely on these well-known and respected sources of financial

5 data.

6 **Q. Is it appropriate to rely on Blume-adjusted betas as opposed to betas adjusted**

7 **using an industry average?**

8 A. Yes. As discussed, because raw betas do not account for the interest rate risk of

9 utilities, the use of raw betas likely understate the betas of utilities. As a result, the

10 industry average adjustment would be inappropriate because the raw betas would

11 be adjusted towards an average beta that is likely to be understated. Conversely, the

12 Blume adjustment, which adjusts the raw betas towards the market average of 1.0,

13 likely better reflects both the correlation with the broader market and the interest

14 rate risk of utilities. Further, Dr. Kaufman's evaluation of the forecast accuracy of

15 *Value Line* betas (Blume adjusted) and industry average adjusted betas is severely

16 biased by the interval effect since the betas used in his analysis are not calculated

17 using the same interval (weekly data for *Value Line* as opposed to monthly data for

18 both the actual historical beta and Dr. Kaufman's estimated industry average-

19 adjusted beta). Therefore, Dr. Kaufman has not provided any evidence to support

20 his conclusion that my CAPM results (and the CAPM results of Parcell and Dr.

21 Woolridge) are biased due to my reliance on beta coefficients from *Value Line* and

22 *Bloomberg*, which reflect the Blume adjustment.

1   **C.**   **Market Risk Premium**

2 **Q.**   **Do you agree with Parcell's use of a historical market risk premium for**

3   **estimating the CAPM?**

4 A.   No. I have multiple concerns with Parcell's use of a historical market risk premium.

5   Fundamentally, the market return and market risk premium should be forward-

6   looking, and Parcell's historically-derived market return and market risk premium

7   estimates are certainly not forward-looking and nor has he provided any evidence

8   that the historical averages on which he relies are reflective of the expected market

9   conditions during the period in which the Company's proposed rates will be in

10   effect. As *Morningstar* has observed, the market risk premium is a forward-looking

11   concept, not a historical analysis.

12   It is important to note that the expected equity risk premium, as it is
13   used in discount rates and the cost of capital analysis, is a forward-
14   looking concept. ***That is, the equity risk premium that is used in***
15   ***the discount rate should be reflective of what investors think the***
16   ***risk premium will be going forward.***[91]

17   Likewise, while I also disagree with Dr. Kaufman's approach to estimating the

18   market risk premium, he also agrees that historical market risk premiums are not

19   forward-looking.[92]

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[91]   Ibbotson SBBI Valuation Yearbook, *Morningstar, Inc.* at 55 (2010) (emphasis added), available at Exh. AEB-39C.

[92]   Kaufman, Exh. LDK-1T at 66:2-9.

1   Although the use of a historically-derived average market return and market risk

2   premium are reflective of the returns realized by investors under different market

3   and economic conditions, they are not necessarily reflective of the market return

4   required by investors in the current and expected market environment. As

5   discussed, long-term interest rates have increased substantially and are expected to

6   remain elevated over at least the next year and inflation remains above the Federal

7   Reserve's target level. In fact, as I will discuss in more detail, the Federal Reserve

8   Bank of New York published a study in 2015 evaluating a number of models used

9   to estimate the market risk premium in which they concluded that the market risk

10   premium is higher during periods of increased inflation.[93] Therefore, the *average*

11   real return of the S&P 500 that Parcell relies on to calculate his market risk premium

12   is not reflective of current market conditions and their effect on the investor return

13   requirement.

14   **Q.   Do you have any additional concerns with Parcell's reliance on a historical**

15   **market risk premium to estimate his CAPM?**

16   A.   Yes. There are a number of additional problems with the historically-derived

17   market risk premia relied on by Parcell:

18   - In one of his three estimates of the historical market risk premium, Parcell
19   has incorrectly relied on the geometric mean risk premium.

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[93]   Fernando Duarte and Carla Rosa, "The Equity Risk Premium: A Review of Models," Federal Reserve
Bank of New York at 50 (2015), available at
https://www.newyorkfed.org/medialibrary/media/research/epr/2015/2015_EPR_equity-risk-
premium.pdf?sc_lang=en&hash=C889266A02FA8CB4CA370BB787FD6892.

1	• In two of his three estimates of the historical market risk premium, Parcell has incorrectly used the *total return* on long-term government bonds to calculate his historical market risk premium instead of the *income-only* return on long-term government bonds.
2	
3	
4	
5	• Each of Parcell's historical market risk premia also fail to consider the inverse relationship between interest rates and the market risk premium under current market conditions (*i.e.*, as interest rates decrease, the market risk premium increases).
6	
7	
8	

9 Q. **Why is it inappropriate to consider the historical geometric mean risk**

10   **premium?**

11 A. Geometric and arithmetic means are used for different purposes. The geometric

12   mean is the compound rate that equates a beginning value to its ending value. It is

13   used to determine the exact rate of compounded return between a specific starting

14   and ending point. The arithmetic mean, which is the appropriate calculation to be

15   used for this purpose, is the simple average of single period rates of return and best

16   approximates the uncertainty associated with returns from year to year. The

17   important distinction between the two methods is that the arithmetic mean assumes

18   that each periodic return is an independent observation and, therefore, incorporates

19   uncertainty into the calculation of the long-term average. In contrast, the geometric

20   mean does not incorporate the same degree of uncertainty because it assumes that

21   returns remain constant from year to year.

22   Cooper (2006) reviewed the literature on the topic and noted the following rationale

23   for using the arithmetic mean:

24   Note that the arithmetic mean, not the geometric mean is the relevant
25   value for this purpose. The quantity desired is the rate of return that

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investors expect over the next year for the random annual rate of
return on the market. The arithmetic mean, or simple average, is the
unbiased measure of the expected value of repeated observations of
a random variable, not the geometric mean.…[The] geometric mean
underestimates the expected annual rate of return.[94]

Furthermore, Pratt and Grabowski noted the following in their review of the
literature:

> The choice between which average to use is a matter of
> disagreement among practitioners. The arithmetic average receives
> the most support in the literature, though other authors recommend
> a geometric average. The use of the arithmetic average relies on the
> assumption that (1) market returns are serially independent (not
> correlated) and (2) the distribution of market returns is stable (not
> time-varying). Under these assumptions, an arithmetic average
> gives an unbiased estimate of expected future returns assuming
> expected conditions in the future are similar to conditions during the
> observation period. Moreover, the more observations available, the
> more accurate will be the estimate.[95]

Q. **Is there support that it is appropriate to use the income-only return on long-term government bonds to calculate the historical risk premium?**

A.   Yes. Setting aside that it is not appropriate to use historical data to calculate the

market risk premium for the reasons discussed, Parcell has also not correctly used

that data to estimate a market risk premium. In calculating a historical market risk

premium, the market return should be reduced by the *income-only* return on the

risk-free investment. The market risk premium is estimating the premium necessary

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[94]   Ian Cooper, "Arithmetic versus geometric mean estimators: Setting discount rates for capital budgeting," *European Financial Management*, Vol. 2, No. 2 at 158 (1996), available at Exh. AEB-39C.

[95]   Shannon P. Pratt and Roger J. Grabowski, *Cost of Capital: Applications and Examples*, Wiley, 2008, at 96, available at Exh. AEB-39C.

to hold equity as compared to a risk-free investment. Therefore, the proper calculation is the return on the market less the income-only return on the risk-free investment. Parcell has incorrectly deducted the *total return* on the risk-free investment, which is the return on and of capital.

Morningstar, the former publisher of the historical data on which Parcell relies, states that a historical market risk premium is appropriately calculated by subtracting the *income-only* portion of the government bond return from the total return on large company stocks:

> Another point to keep in mind when calculating the equity risk premium is that the income return on the appropriate-horizon Treasury security, rather than the total return, is used in the calculation. The total return is comprised of three return components: the income return, the capital appreciation return, and the reinvestment return…The income return is thus used in the estimation of the equity risk premium because it represents the truly riskless portion of the return.[96]

Because Parcell is deducting the total return on government bonds, as opposed to just the *income-only* return on those bonds, means that his market risk premium is lower than it should otherwise be, and thus understates his CAPM result.

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[96] Ibbotson SBBI Valuation Yearbook. Morningstar Inc., at 55 (2012), available at Exh. AEB-39C.

1	**Q.** **Why does the historical market risk premium relied upon by Parcell fail to**
2	**account for the inverse relationship between interest rates and the market risk**
3	**premia?**
4	A. Parcell's use of a historical market risk premium in the CAPM with a current
5	interest rate disregards the demonstrated relationship between interest rates and the
6	market risk premium. However, applying that historical market risk premium to a
7	*current* risk-free rate is incorrect because the current risk-free rate bears no
8	relationship to the average historical interest rate underlying the average historical
9	market risk premia on which Parcell relies. The use of assumptions from different
10	time periods fails to account for the inverse relationship that exists between the
11	risk-free rate and the equity risk premium. Both academic literature and market
12	evidence indicate that the equity risk premium is inversely related to the level of
13	interest rates (*i.e.*, as interest rates increase, the equity risk premium decreases, and
14	vice versa).[97]
15	**Q.** **Does Parcell acknowledge the historical relationship between interest rates**
16	**and the market risk premium?**
17	A. Yes. Parcell specifically acknowledges this relationship that as interest rates
18	decrease, the market risk premium increases, and vice versa, when discussing his

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[97] *See, e.g.*, S. Keith Berry, "Interest Rate Risk and Utility Risk Premia during 1982-93," *Managerial and Decision Economics*, Vol. 19, No. 2, March 1998, available at Exh. AEB-39C; *see also*, Robert S. Harris, "Using Analysts' Growth Forecasts to Estimate Shareholder Required Rates of Return," *Financial Management*, Spring 1986, at 66, available at Exh. AEB-39C.

1   BYRP analysis. This relationship is also shown in the BYRP analysis in my prefiled

2   direct testimony.

3 **Q.**   **How does this error affect the market risk premium that Parcell relies on?**

4 A.   By subtracting the total return on the risk-free investment from the market return,

5   Parcell has understated the market risk premium. To illustrate this point, in one of

6   Parcell's estimates of the historical market risk premium, he relies on the arithmetic

7   market risk premium for the period of 1926-2022 as reported by *Kroll*. Relying on

8   that historical data, when calculated as the difference between the return on large

9   company stocks and the *income-only* return on long-term government bond, the

10   historical market risk premium for 1926-2022 is 7.17 percent. Further, the historical

11   *income-only* return on government bonds over that same period was 4.85 percent;[98]

12   however, the three-month average risk-free rate on long-term government bonds as

13   of June 30, 2024, that Parcell has relied on in his CAPM is 4.67 percent. Therefore,

14   because current interest rates on long-term government bonds (*i.e.*, 4.67 percent)

15   are below the historical average (*i.e.*, 4.85 percent), the inverse relationship

16   between interest rates and the market risk premium indicates that the current market

17   risk premium should be above the long-term historical average of 7.17 percent –

18   not below such as assumed by Parcell. Consequently, Parcell's use of a historical

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[98]   Kroll, Valuation Handbook: Guide to Cost of Capital, 2023.

1   market risk premium understates the market risk premium in the current market

2   environment.

3 **Q.   Is there also evidence that the use of a historical market premium can produce**

4 **counter-intuitive results?**

5 A.   Yes. Figure 12 illustrates the problem with relying on the historical market risk

6   premium such as Parcell has done. Specifically, the figure shows that from 2007-

7   2009, the historical market risk premium decreased even as market volatility (the

8   primary statistical measure of risk) significantly increased. Further, this figure

9   demonstrates the significant swings in the annual equity risk premium that were

10   averaged into the long-term historical average calculations. As shown, in 2008, the

11   annual equity "premium" was negative, which implies a discount. It is

12   incomprehensible that the perceived risk to equity was negative (implying a lower

13   required return) in the height of the financial market collapse when the overall

14   market return was a negative 37 percent. This individual observation, which runs

15   counter to the theory of the equity risk premium, reduced the average market risk

16   premium for the prior 80 years by 60 basis points.

Figure 12: Historical Market Risk Premium and Market Volatility

	Market Volatility	Market Return	Annual Equity Premium	Long-term Average Historical Market Risk Premium[99]
2007	17.54	5.49%	0.63%	7.10%
2008	32.69	-37.00%	-41.45%	6.50%
2009	31.48	26.46%	3.47%	6.70%

The assumption that investors would expect or require a lower risk premium during periods of increased volatility is counter-intuitive and leads to unreliable analytical results. As noted earlier, the relevant objective in the application of the CAPM is to ensure that all three components of the model (*i.e.*, the risk-free rate, the beta, and the market risk premium) are consistent with market conditions and investor perceptions. The forecasted market risk premium estimates used in my original and updated CAPM analyses specifically address that concern.

Q. **Are the market risk premia specified by Dr. Woolridge also inconsistent with the inverse relationship between interest rates and the market risk premium?**

A. Yes. As discussed and as shown in Figure 13, Dr. Woolridge's market risk premia are also inconsistent with the inverse relationship between interest rates and the market risk premium. Specifically, Dr. Woolridge's risk-free rate is below the long-term average risk-free rate, and yet contrary to the inverse relationship between

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[99] *Ibbotson SBBI Yearbook*, Morningstar Inc. 2008, at 28; *Ibbotson SBBI Yearbook. Morningstar Inc.* 2009, at 23; *Ibbotson SBBI Yearbook, Morningstar Inc*. 2010, at 23; each available at Exh. AEB-39C. The historical market risk premium equals the total return on large company stocks less the income-only return on long-term government securities.

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interest rates and the market risk premium, his respective market risk premia are

also well below the long-term term average market risk premium.

Figure 13: Misalignment of Market Risk Premia Relied on by Dr. Woolridge[100]

Witness	Source	Market Risk Premium	Amount Below Long-Term Avg.	Risk-Free Rate	Amount Below Long-Term Avg.
	Long-Term Historical Avg.	**7.17%**		**4.87%**	
Woolridge	*Kroll* - Normalized	5.00%	-2.17%	4.25%	-0.62%
Woolridge	Professor Damodaran	4.12%	-3.05%	4.25%	-0.62%
Woolridge	KPMG	5.00%	-2.17%	4.25%	-0.62%
Woolridge	Fernandez Survey	5.50%	-1.67%	4.25%	-0.62%
Woolridge	J.P. Morgan	4.40%	-2.77%	4.25%	-0.62%

Q.   Dr. Woolridge states that he gives primary weight to the market risk premium

from the survey conducted by Professor Fernandez. Are there drawbacks to

the use of survey data?

A.   Yes. The drawbacks include biased responses and biased sampling as noted by

Brigham, Shome, and Vinson (1985).[101]   Further, Professor Damodaran, whose

market risk premium estimate Dr. Woolridge has also given primary weight to in

his CAPM, noted that survey results were affected by how the questions were asked

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[100]   As discussed, Parcell relies on data from 1926-2022; however, Figure 13 relies on the market risk premium from 1926-2023, which is calculated as the average return on the S&P 500 Index from 1926-2023 (12.04 percent) minus the average income-only return on long-term government bonds over the same time-period (4.87 percent). *Kroll*, Cost of Capital Navigator, 2023.

[101]   Eugene F. Brigham, Dilip K. Shome, and Steve R. Vinson, "The Risk Premium Approach to Measuring Utility's Cost of Equity," *Financial Management*, Vol. 14, No 1, at 33 (1985), available at https://icc.illinois.gov/downloads/public/edocket/466474.PDF.

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1   in the survey and on recent stock price movements.[102] Additionally, the response

2   rates to surveys can be limited, as Graham and Harvey (2018) noted in their CFO

3   survey where the response rate was only 5 percent to 8 percent.[103]   Finally, and

4   most importantly, even Professor Fernandez, the author of the study relied on by

5   Dr. Woolridge, specifically states that the average of the distribution of the required

6   equity premium from the survey *cannot be interpreted as the required equity*

7   *premium of the market nor of a representative investor*.[104]

8   **Q.   Does Dr. Kaufman also rely on an estimate of the market risk premium that**

9   **does not reflect the inverse relationship between interest rates and the market**

10   **risk premium?**

11   A.   Yes. Similar to Dr. Woolridge, Dr. Kaufman also considers the *Kroll* market risk

12   premium of 5.00 percent. However, given that the range of risk-free rates of 4.10

13   percent to 4.77 percent that Dr. Kaufman relies on in his CAPM are below the

14   historical average interest rate of those same bonds as shown in Figure 13, the

15   market risk premium should be greater than the long-term historical average market

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[102]   Aswath Damodaran, "Equity Risk Premiums (ERP): Determinants, Estimation, and Implications," March 23, 2023, at 28 available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4398884.

[103]   John R. Graham, and Campbell R Harvey, "The Equity Risk Premium in 2018," *Social Science Research Network*, March 27, 2018, available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3151162.

[104]   Pablo Fernandez, Diego Garcia de la Garza, and Lucia Fernandez Acin, "Survey: Market Risk Premium and Risk-Free Rate used for 96 countries in 2024," IESE Business School, March 11, 2024, at 11 (emphasis added) available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4754347.

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1   risk premium of 7.17 percent – which is not the case for the Dr. Kaufman's market

2   risk premium of 5.00 percent.

3   **Q.   As a threshold matter, are Dr. Kaufman's resulting cost of equity estimates**

4   **using the *Kroll* market risk premium reasonable?**

5   A.   No. As noted previously, Dr. Kaufman's CAPM results relying on this assumption

6   range from 7.54 percent to 8.21 percent. These results are well below any

7   authorized ROE since at least 1980 in a jurisdiction with a comparable regulatory

8   framework to Washington. Given that the *Hope* and *Bluefield* decisions,[105] which

9   Dr. Kaufman agrees identify appropriate guidance for establishing fair and

10   reasonable rates,[106] require an authorized ROE to be comparable to the returns of

11   other utilities of similar risk, it is clear the results of Dr. Kaufman's CAPM analyses

12   would not meet the *Hope* and *Bluefield* standard. As such, it would be reasonable

13   for the Commission to disregard the results of Dr. Kaufman's CAPM analyses in

14   establishing the ROE for PSE in this proceeding.

15   **Q.   Do you agree with Dr. Kaufman's "adjusted" version of your market return,**

16   **and thus market risk premium, in three of his CAPM analyses?**

17   A.   No. Similar to my previous discussion regarding Dr. Kaufman's DCF analysis, this

18   is another example of a change in Dr. Kaufman's methodology from recent prior

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[105]   *Fed. Power Comm'n v. Hope Nat. Gas Co.*, 320 U.S. 591 (1944) ("Hope"); *Bluefield Waterworks & Improvement Co., v. Pub. Serv. Comm'n of West Virginia*, 262 U.S. 679 (1923) ("Bluefield").

[106]   Kaufman, Exh. LDK-1T at 38:3-13.

1   proceedings in which he has testified. While in the current case Dr. Kaufman

2   suggests that an adjustment to my market return is required, he relied on my market

3   return and market risk premium in calculating his average market risk premium in

4   the 2023 PacifiCorp rate proceeding before this Commission.[107] In that proceeding,

5   where Dr. Kaufman filed testimony less than a year ago, he made **no adjustment** to

6   my market return, which was calculated in the same manner in that proceeding as I

7   have done in this proceeding, and thus no adjustment to my market risk premium.

8   **Q.   Is Dr. Kaufman's "adjusted" version of your market return consistent with**

9   **the FERC's methodology?**

10 A.   No. Dr. Kaufman's use of projected EPS growth rates that are negative (*i.e.*,

11   excluding only those growth rates that are less than negative 20 percent) is

12   inconsistent with the constant growth DCF model that is used in calculating the

13   market return, and is also inconsistent with FERC precedent. As the FERC has

14   concluded, negative growth rates are unsustainable, and therefore, should be

15   excluded from the calculation of the market return.[108]   Dr. Kaufman provides no

16   basis for modifying the FERC's rationale for estimating the market return to include

17   firms with up to a negative 20 percent growth rate.

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[107] *WUTC v. PacifiCorp*, Docket UE-230172, Testimony of Lance D. Kaufman, Exh. LDK-1T at 22
       (Sept. 14, 2023).

[108] *Ass'n of Bus. Advocating Tariff Equity v. Midcontinent Ind. Sys. Operator, Inc.*, Opinion No. 569-A,
       171 FERC ¶ 61,154 at ¶ 77 (2020).

1 **Q. What are the primary disagreements that Parcell, Dr. Woolridge, and Dr.**

2 **Kaufman have regarding your CAPM analyses?**

3 A. Parcell, Dr. Woolridge and Dr. Kaufman contend that the forward-looking market

4 return, and thus market risk premium, in my CAPM analyses are overstated.

5 **Q. Is the market return, and thus market risk premium, you have relied on**

6 **overstated as claimed by Parcell, Dr. Woolridge and Dr. Kaufman?**

7 A. No. There are multiple reasons why there is no basis to these witnesses' contentions

8 regarding the market return and market risk premia used in my CAPM analyses.

9 First, as I previously discussed, Parcell's and Dr. Woolridge's market risk premia,

10 as well as the *Kroll* market risk premium relied on by Dr. Kaufman, are understated

11 because of the failure to account for the inverse relationship between interest rates

12 and the market risk premium. Therefore, this error invalidates any comparison that

13 these witnesses attempt to make using that data to suggest that the market risk

14 premium in my CAPM analysis is overstated.

15 Second, as stated in my prefiled direct testimony, the expected market return is

16 reasonable and consistent with the range of annual equity returns that have been

17 observed over the past century, whereby the realized equity return over this period

18 was at least as high as my market return or greater.[109] The market return in my

19 updated CAPM analysis is 12.67 percent, or generally consistent with the 12.56

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[109] Bulkley, Exh. AEB-1T at 46:15-47:2.

1   percent market return that I relied on in my prefiled direct testimony, and thus

2   continues to be consistent with the frequency of historical market returns at or

3   above my estimate, which demonstrates it is a reasonable expectation for the

4   market.

5   Third, in a recent cost of capital proceeding for the electric utilities, the California

6   Public Utilities Commission noted that all parties recognized that historical market

7   returns and economically logical projections fall within the range of 12 percent.[110]

8   This recognition is consistent with the market return utilized in my initial CAPM

9   analysis in my prefiled direct testimony and herein in my updated CAPM analysis

10 in my rebuttal testimony.

11 Fourth, various regulatory commissions have supported the use of a constant

12 growth DCF model to estimate the market return in the CAPM such as I have done.

13 For example, in Opinion No. 569-A, the FERC continued to support the use of the

14 constant growth DCF model to calculate the market return for the CAPM noting:

15   We also continue to find that the CAPM should use a one-step DCF
16   for its risk premium. This is because the rationale for using a two-
17   step DCF methodology for a specific group of utilities does not
18   apply when conducting a DCF study of the dividend-paying
19   companies in the S&P 500, as the Commission found in Opinion
20   Nos. 531-B and 569.172 A long-term component is unnecessary
21   because of the regular updates to the S&P 500, which allows it to
22   continue to grow at a short-term growth rate and because S&P 500

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[110]   California Public Utilities Commission, Application 22-04-008, *et al*., Decision 22-12-031 at 23 (Dec. 15, 2022).

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companies include stocks that are both new and mature, the latter of which have a moderating effect on the short-term growth rates.[111]

Likewise, various state utility regulatory commissions have also supported the use of a constant growth DCF model to estimate the market return in the CAPM. As shown in Figure 14, the Staff of the Illinois Commerce Commission ("ICC"), the Bureau of Investigation and Enforcement ("I&E") of the Pennsylvania Public Utility Commission ("Pennsylvania PUC"), and the Staff of the Maine Public Utilities Commission ("Maine PUC") have each supported the forward-looking market risk premium, and the market return estimates using the constant growth DCF model. In each of these cases, the respective regulatory commission relied on the estimated CAPM results by these parties to determine the authorized ROE and did not dispute the use of the constant growth DCF model to calculate the market return.

Figure 14: Examples of Jurisdictions Where Market Return Estimated Using the Constant Growth DCF Model

Intervening Party	Applicant	Docket No.	Approach of Intervening Party to Calculating the Market Return	Date of Order	Did the Commission Rely on the Intervening Party's CAPM?
Staff of the ICC	North Shore Gas Company	20-0810	CGDCF of the dividend-paying companies in the S&P 500 (11.95%)[112]	9/8/21	Yes[113]

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111 *Ass'n. of Businesses Advocating Tariff Equity v. Midcontinent Indep. Sys. Operator, Inc.*, 171 FERC ¶ 61,154, ¶ 85 (2020).

112 Illinois Commerce Commission, Docket No. 20-0810, Order at 71 (Sept. 8, 2021).

113 *Id*. at 86-87.

Intervening Party	Applicant	Docket No.	Approach of Intervening Party to Calculating the Market Return	Date of Order	Did the Commission Rely on the Intervening Party's CAPM?
I&E	Aqua Pennsylvania, Inc.	R-2021-3027385	CGDCF of the Value Line Universe and S&P 500 (12.14%)[114]	5/12/22	Yes, the regulator placed primary weight on I&E's CAPM[115]
Staff of the Maine PUC	Northern Utilities, Inc.	2019-00092	CGDCF of the dividend-paying companies in the S&P 500 (11.33%-13.49%)[116]	4/1/20	Yes[117]

Lastly, the U.S. Court of Appeals for the District of Columbia has addressed the concern regarding the use of projected EPS growth rates in a constant growth DCF model to estimate the market return in its review of FERC Opinion No. 569-B. In the Court's decision, it acknowledged that the FERC has relied on the use of EPS growth rates in the calculation of the forward-looking market return on the S&P 500 because the S&P 500 is regularly updated to include companies with high market capitalization and it includes companies at all stages of growth, including lower and higher growth potential. The court determined that FERC's rationale for using projected EPS growth rates was sufficient and did not accept the challenge to this assumption.[118]

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[114] Pennsylvania Public Utility Commission, Docket No. R-2021-3027385, Opinion and Order at 147, (May 16, 2022).

[115] *Id*. at 178.

[116] Maine Public Utilities Commission, Docket No. 2019-00092, Bench Analysis at 21 (Oct. 29, 2019).

[117] *Id*., Order Part II at 58 (April 1, 2020).

[118] *MISO Transmission Owners, et al. v. FERC*, 45 F.4th 248 (D.C. Cir. 2022).

1   For all of these reasons, there is no basis to the contentions made by Parcell, Dr.

2   Woolridge, or Dr. Kaufman that the market return or market risk premia in my cost

3   of equity analyses are overstated.

4 Q. **Have you reviewed any studies that have evaluated the reasonableness of**

5   **market risk premium estimates?**

6 A. Yes. The Federal Reserve Bank of New York published an analysis in 2015 that

7   reviewed 20 methodologies (including the historical market risk premium relied on

8   by Parcell, as well as survey results similar to the IESE Business School survey and

9   the methodology relied on by Dr. Damodaran, each of which were relied on by Dr.

10   Woolridge) over the period 1960 through 2013 for estimating the market risk

11   premium.[119] The results of this study demonstrate that the market risk premium

12   estimates that I relied on in my prefiled direct testimony, which are in the range of

13   7.78 percent to 8.46 percent, are reasonable. Specifically, the key conclusions from

14   this study are:

15   • The 20 methodologies reviewed reflected a range for the market risk
16   premium of between -1.0 percent to 14.5 percent.

17   • As shown in Figure 15, the principal component analysis of the 20 models
18   (*i.e.*, the bold black line) produced a range for the market risk premium of
19   approximately 0 percent to over 10 percent from 1960 through 2013.

20   • The one-year-ahead market risk premium was consistently greater than 10
21   percent following the financial crisis of 2008/09.
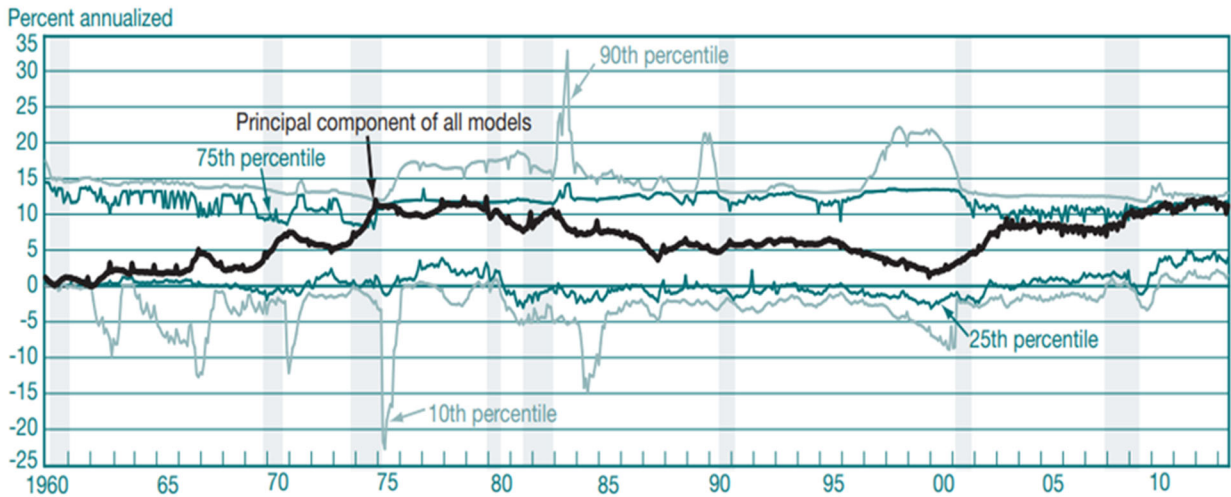
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[119] Fernando Duarte and Carla Rosa, "The Equity Risk Premium: A Review of Models," Federal Reserve
Bank of New York (2015) *available at*
https://www.newyorkfed.org/medialibrary/media/research/epr/2015/2015_EPR_equity-risk-
premium.pdf?sc_lang=en&hash=C889266A02FA8CB4CA370BB787FD6892.

Figure 15: The Federal Reserve Bank of New York, One-Year-Ahead Market Risk Premium[120]

Further, the Federal Reserve Bank of New York also noted the following:

Chart 2 shows the first principal component of all twenty models in black (the black line is the same principal component shown in black in each of the panels of Chart 1). ***As expected, the principal component tends to peak during financial turmoil, recessions, and periods of low real GDP growth or high inflation***. It tends to bottom out after periods of sustained bullish stock markets and high real GDP growth. Evaluated by the first principal component, the one-year ahead ERP [equity risk premium] reaches a local peak in June 2012 at 12.2 percent. The surrounding months have ERP estimates of similar magnitude, with the most recent estimate in June 2013 at 11.2 percent. This behavior is not so clearly seen by simply looking at the collection of individual models in Chart 1, a finding that highlights the usefulness of principal component analysis. Similarly high levels were observed in the mid- and late 1970s, during a period of stagflation, while the recent financial crisis had slightly lower ERP estimates, closer to 10 percent.[121]

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[120] *Id.* at 50.

[121] *Id.* (emphasis and clarification added).

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1   In summary, the Federal Reserve Bank of New York noted that the market risk

2   premium is higher during periods of increased inflation. As discussed at length in

3   my prefiled direct testimony as well as herein, inflation remains above the Federal

4   Reserve's target of 2 percent and is expected to remain elevated over the near-term.

5   **Q.   Dr. Woolridge claims that your market return is overstated by referencing a**

6   **long-term average growth rate of 4.00 to 4.50 percent.[122] Is this consistent with**

7   **his own CAPM analysis?**

8   A.   No. While Dr. Woolridge contends that the market return in my CAPM analysis is

9   too high by referencing a long-term average growth rate of 4.00 to 4.50 percent, his

10   own CAPM analysis relies on an implied market return that is significantly higher

11   than his referenced long-term average growth rate, thus invalidating his critique.

12   Figure 16 summarizes the sources of Dr. Woolridge's market risk premia, the

13   implied market returns for each of those sources, and the implied long-term EPS

14   growth rate of the market of each of those sources. As shown, Dr. Woolridge's four

15   market risk premium estimates imply market returns that range from 7.90 percent

16   to 9.44 percent. After deducting the market dividend yield from the market return,

17   the implied long-term average market growth rates range from 6.16 percent to 7.69

18   percent. These market growth rates are all substantially higher than the benchmark

19   growth rate of 4.00 percent to 4.50 percent that Dr. Woolridge suggests

20   demonstrates my market return is too high. Therefore, while Dr. Woolridge relies

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[122]   Woolridge, Exh. JRW-1T at 64:7-10.

---

1   on these four sources to allege that my market return is too high, ironically, that

2   same data invalidates his own CAPM analysis.

3   **Figure 16: Inconsistency between Dr. Woolridge's Long-Term Market Growth**
4   **Rates in His CAPM Relative to His Claimed Long-Term Market Growth Rates[123]**

	Source of Market Risk Premium			
	Kroll Normalized	Prof. Damodaran	KPMG	J.P. Morgan
Market Risk Premium	5.00%	4.12%	5.00%	4.40%
Plus: Risk-Free Rate	4.44%	4.53%	4.38%	3.50%
Implied Market Return	9.44%	8.65%	9.38%	7.90%
Avg. Dividend Yield of Market	1.69%	1.69%	1.69%	1.69%
Dr. Woolridge's Implied Long-Term Market EPS Growth Rate in CAPM	7.69%	6.90%	7.63%	6.16%
Dr. Woolridge Claimed Long-Term Market EPS Growth Rate	4.00% - 4.50%			

5

6

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[123] Note that Dr. Woolridge does not specify a market return for his market risk premia; however, the implied market return for each of the market risk premia sources on which he relies for his CAPM analysis can be estimated based on the risk-free rate specified by each of those same sources. Specifically, Dr. Woolridge's *Kroll* market risk premium reflects the spot yield on the 20-year Treasury bond as of July 31, 2024, as the risk-free rate based on *Kroll*'s approach of using the higher of their recommended risk-free rate or the 20-year Treasury bond yield. Similarly, KPMG does not specifically cite a risk-free rate used to develop the implied market risk premium; however, KPMG notes that the yields on long-term government bonds were reviewed to estimate the implied market risk premium. Therefore, since KPMG's implied market risk premia is as of March 31, 2024, the 30-day average of the 30-year Treasury bond yield as of March 31, 2024, is used as the estimate of the risk-free rate to calculate the implied market return.

1	**Q.** **To support his position that your market return is too high, Dr. Woolridge**
2	**references a geometric average (or compounded) annual return on the U.S.**
3	**stock market of approximately 10 percent from 1928-2023.[124] Is this data point**
4	**instructive for the Commission in this proceeding?**
5	A. No, for the same reasons that I previously discussed regarding Parcell's estimation
6	of the market return. As discussed, the geometric average return is useful under the
7	circumstances where the analyst or investor may be interested in the return over a
8	specific holding period; however, that is not the relevant return when estimating the
9	market risk premium. Dr. Woolridge's suggested use of the geometric average or
10	compound annual return also fails to consider that annual returns are independent
11	observations, unrelated to the prior year return. Therefore, the compound annual
12	return over the historical time period does not recognize the wide range of returns
13	over that period. In order to recognize the independent nature of the market returns
14	from year to year, the appropriate measure is the arithmetic average. Had Dr.
15	Woolridge relied on the arithmetic average from *Kroll*, he would have calculated
16	an average market return from 1926 through 2023 of 12.04 percent,[125] which is
17	consistent with the market return that I relied on in my prefiled direct testimony
18	and as updated herein in my rebuttal testimony.

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[124] Woolridge, Exh. JRW-1T at 83:5-12.

[125] *Kroll*, Cost of Capital Navigator, 2023.

1	Q.	**Is there support for the use of the arithmetic average annual market return in**
2		**the calculation of the market risk premium?**
3	A.	Yes. *Kroll*, one of the sources that Dr. Woolridge relies on for his CAPM analysis,
4		states the following on the use of the arithmetic versus geometric mean:

> 5 The equity risk premium data presented in this book are arithmetic
> 6 average risk premiums as opposed to geometric average risk
> 7 premiums. The arithmetic average equity risk premium can be
> 8 demonstrated to be most appropriate when discounting future cash
> 9 flows. For use as the expected equity risk premium in either the
> 10 CAPM or the building-block approach, the arithmetic mean or the
> 11 simple difference of the arithmetic means of stock market returns
> 12 and riskless rates is the relevant number.

> 13 This is because both the CAPM and building block approach are
> 14 additive models, in which the cost of capital is the sum of its parts.
> 15 The geometric average is more appropriate for reporting past
> 16 performance because it represents the compound average return.[126]

D.   **Adjustments to Intervenor Witnesses CAPM Analyses**

18	Q.	**Have you recalculated Parcell's CAPM analysis to address your concerns with**
19		**his estimates of the historical market risk premium?**
20	A.	Yes. I have adjusted Parcell's CAPM analysis to calculate the market risk premium
21		as the return on large company stocks from 1926 through 2023 minus the current
22		risk-free rate that Parcell has relied on.[127] While I do not agree with the use of a
23		historical market return and historical market risk premium to estimate the forward-

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[126]   2022 SBBI Yearbook, Kroll, at 201, available at Exh. AEB-39C.

[127]   While Parcell relied on the average arithmetic return on large company stocks from 1926 to 2022 in his CAPM, *Kroll* has updated the average arithmetic return to include 2023. Therefore, I relied on the average arithmetic return on the S&P 500 as calculated by *Kroll* from 1926-2023 to adjusted Parcell's CAPM analysis.

looking cost of equity for all of the reasons discussed, a calculation that at least

derives the market risk premium from the risk-free rate that is being used in the

CAPM to estimate the cost of equity is more appropriate than the calculation

performed by Parcell for two reasons:

- First, by relying on the current three-month average yield on the 20-year Treasury bond as opposed to the long-term historical average yield on long-term governments bonds, the estimated market risk premium more reasonably reflects the inverse relationship between interest rates and the market risk premium (*i.e.*, because current interest rates are lower than the long-term historical average, the market risk premium should be greater than the historical average risk premium). As noted, this is a concept that Parcell has acknowledged and applied when developing his Risk Premium analysis.[128]

- Second, the CAPM formula identifies <u>one</u> estimate of the risk-free rate to be used as the estimate of the risk-free rate and in the calculation of the market risk premium. The formula does not specify the use of two different risk-free rates as Parcell has assumed in his CAPM analysis. The use of Parcell's risk-free rate of 4.67 percent (*i.e.*, the three-month average yield on the 20-year Treasury bond) as both the risk-free rate in the CAPM formula as well as in the calculation of the market risk premium also used in the CAPM formula is internally consistent.

As shown in Exh. AEB-33, by making reasonable adjustments to Parcell's estimate

of the market risk premium as just discussed, Parcell's mean and median CAPM

results increase from 10.7 percent and 10.8 percent, respectively, to 11.6 percent

and 11.7 percent, respectively.

---

[128] Parcell, Exh. DCP-1T at 56:1-9.

1   Q.   **Did you also recalculate Dr. Woolridge's CAPM analysis to address your**

2   **concerns with his estimate of the market risk premium?**

3   A.   Yes. As shown in Exh. AEB-34, I have developed two adjusted versions of Dr.

4   Woolridge's CAPM analysis. The first, similar to my adjustment to Parcell's

5   CAPM analysis, relies on the historical arithmetic average market return as reported

6   by *Kroll* for the period 1926 through 2023 to estimate the market risk premium,[129]

7   and the second relies on the most current forward-looking market return as of the

8   end of July 2024. As shown, the results of Dr. Woolridge's CAPM analysis are

9   understated by approximately 225 basis points when the historical arithmetic

10   average market return is utilized and understated by approximately 275 basis points

11   when the forward-looking market return is utilized.

12   Q.   **What would the results of Dr. Kaufman's CAPM analysis be if the issues that**

13   **you have identified are corrected?**

14   A.   Exh. AEB-35 reflects a CAPM analysis that has been adjusted to address the issues

15   that I have discussed regarding Dr. Kaufman's betas and market risk premium.

16   Specifically, I have adjusted Dr. Kaufman's CAPM analysis to: (1) rely on the

17   *Bloomberg* betas, which reflect the Blume adjustment, as opposed to Dr.

18   Kaufman's betas that he adjusted to an industry average; and (2) instead of Dr.

19   Kaufman's *Kroll* market risk premium, only rely on his "adjusted" market return to

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[129]   As discussed, while I do not agree with the use of the historical return on large company stocks as the estimate of the projected market return for the reasons outlined, this specification of the market risk premium is more appropriate than the estimates relied by Dr. Woolridge.

---

1   estimate the market risk premium, even though I disagree with this "adjusted"

2   market return for the reasons that I have discussed.

3   As shown on Exh. AEB-35, even when Dr. Kaufman's incorrectly "adjusted"

4   market return is retained and the *Bloomberg* betas are utilized, the resulting cost of

5   equity range is 10.02 percent to 10.16 percent, which is substantially higher than

6   the results of Dr. Kaufman's CAPM results, which range from 9.24 percent to 9.45

7   percent when his incorrectly "adjusted" market return is used and from 7.54 percent

8   to 8.21 percent when *Kroll's* market risk premium is used. Further, as shown in

9   Exh. AEB-6, had Dr. Kaufman relied on the *Bloomberg* betas and my market return

10   estimate (*i.e.*, before Dr. Kaufman's adjustment to include negative growth rates in

11   the calculation of the weighted average growth rate for the S&P 500 Index), his

12   CAPM results would have ranged from 10.79 percent to 10.93 percent.

VIII. ECAPM

14 **Q.**   **Have any of the witnesses conducted an ECAPM analysis?**

15 A.   Yes, Dr. Kaufman also conducts an ECAPM analysis. He uses the same inputs in

16   his ECAPM analysis as he uses in his CAPM analyses and reflects the same

17   weighting factors as I have used in my ECAPM analyses.

18 **Q.**   **Do you agree with Dr. Kaufman's ECAPM analysis?**

19 A.   No. For the same reasons that I have discussed regarding Dr. Kaufman's CAPM

20   analyses, I also disagree with his ECAPM analyses given that he uses the same

inputs in his ECAPM as he uses in his CAPM analyses. Further, just as with this CAPM, the results of his ECAPM where he relies on the *Kroll* market risk premium are below any authorized ROE for either an electric or natural gas utility since at least 1980 in a jurisdiction with a comparable regulatory framework to Washington. Finally, as shown on Exh. AEB-35, even if Dr. Kaufman's ECAPM is only adjusted using *Bloomberg* betas as opposed to his industry average-adjusted betas, and the analysis still relies on his incorrectly "adjusted" market return the resulting cost of equity ranges from 10.41 percent to 10.52 percent, which is substantially higher than the results of his ECAPM results.[130]

Q. **What are the positions of Parcell and Dr. Woolridge regarding your ECAPM analyses?**

A. Parcell and Dr. Woolridge have stated the following regarding my ECAPM analyses:

- Parcell claims that it is improper to use the ECAPM because it does not use the actual betas of the proxy group but rather calculates hypothetical betas. Additionally, Parcell contends that the ECAPM assumes that investors who subscribe to *Value Line* do not actually rely on the beta published by *Value Line* but "rather 'modify' the published betas in an arbitrary fashion."[131]

- Dr. Woolridge contends that the use of an adjusted beta in the ECAPM is duplicative and thus produces overstated results. In addition, Dr. Woolridge also asserts that there is no academic support to show that the CAPM model

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[130] The results of Dr. Kaufman's ECAPM range from 9.83 percent to 9.98 percent using his incorrectly "adjusted" market return, and from 7.93 percent to 8.60 percent using *Kroll's* market risk premium.

[131] Parcell, Exh. DCP-1T at 44:17-45:2.

1 underestimates the cost of equity for regulated utilities and that the ECAPM
2 adjustment is necessary.[132]

3 **Q. Do you agree with Parcell and Dr. Woolridge that the ECAPM**

4 **inappropriately adjusts the betas and thus produces overstated results?**

5 A. No. As discussed, the purpose of adjusting beta in the CAPM is to account for the

6 tendency of beta to trend back over time to the market beta of 1.00. The betas

7 published by *Value Line* include this adjustment, which was first proposed by

8 Marshall E. Blume in 1975.[133] The use of adjusted betas in the CAPM is important

9 because if beta trends towards 1.00, as Blume noted, then the adjusted beta will be

10 more reflective of the beta that can be expected over the near-term. This is equally

11 important in the specification of the CAPM in this case since we are estimating the

12 cost of equity for the Company over the near-term.

13 In contrast, the ECAPM does not account for the tendency of beta to trend toward

14 1.00. The purpose of the ECAPM is to account for the fact that the risk-return

15 relationship is flatter than what is estimated by the CAPM, *even when using*

16 *adjusted betas*. While beta is not observable and must be estimated, the theory

17 behind the ECAPM is that even if the true value of a stock's beta were observable,

18 the CAPM would understate the results for stocks with betas less than 1.00 and

19 overstate the results for stocks with betas greater than 1.00. Therefore, contrary to

---

[132] Woolridge, Exh. JRW-1T at 81:7-82:3.

[133] Marshall E. Blume, "Betas And Their Regression Tendencies," *The Journal of Finance*, Vol. 30, No. 3 at 785–795 (1975), available at https://www.scribd.com/document/419756244/Betas-and-Their-Regression-Tendencies.

---

1   the assertions of Parcell and Dr. Woolridge, the purpose of each adjustment is

2   different, and thus applying both adjustments in the ECAPM is not duplicative.

3   The concept of the ECAPM and the conclusion that the risk-return relationship is

4   flatter than predicted by the CAPM is generally accepted in financial literature. For

5   example, in *Modern Regulatory Finance*, Dr. Morin provides a list of studies, each

6   of which concludes that the CAPM understates the returns for companies with betas

7   less than 1.0 and overstates the return for companies with betas greater than 1.0.[134]

8   It is these empirical studies that formed the basis of the development of alternative

9   models such as the ECAPM that would better predict the risk return-relationship

10   observed when reviewing actual market data.

11 **Q.**   **Can you demonstrate that using adjusted betas in the CAPM and relying on**

12   **the ECAPM are two distinct adjustments to the CAPM?**

13 A.   Yes. Figure 17 demonstrates the point that adjusting betas and adjusting the slope

14   of the risk/return relationship through the ECAPM are two distinct adjustments and

15   are not duplicative as alleged by Dr. Woolridge. As shown in Figure 17, when beta

16   is adjusted to recognize that betas revert to the market mean of 1.0 over time and

17   used in the CAPM, the resulting adjustment is shown by the darker gray arrow in

18   the lower right-hand corner. Separately, when the ECAPM is employed to

19   recognize that the risk/return relationship is flatter than predicted by the CAPM, the

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[134] Dr. Roger A. Morin, *Modern Regulatory Finance*, Public Utilities Reports, Inc., 2021, at 206-208, available at Exh. AEB-39C.

1 resulting adjustment is shown by the lighter gray arrow (on top of the darker gray

2 arrow) in the lower right-hand corner. To the extent that a company with a beta

3 greater than 1.0 were being evaluated, the same process of two separate adjustments

4 would apply, albeit in the opposite direction from what is shown in Figure 17 and

5 would result in a decrease in the cost of equity otherwise predicted by the CAPM.

Figure 17: Risk/Return Relationship between CAPM and ECAPM
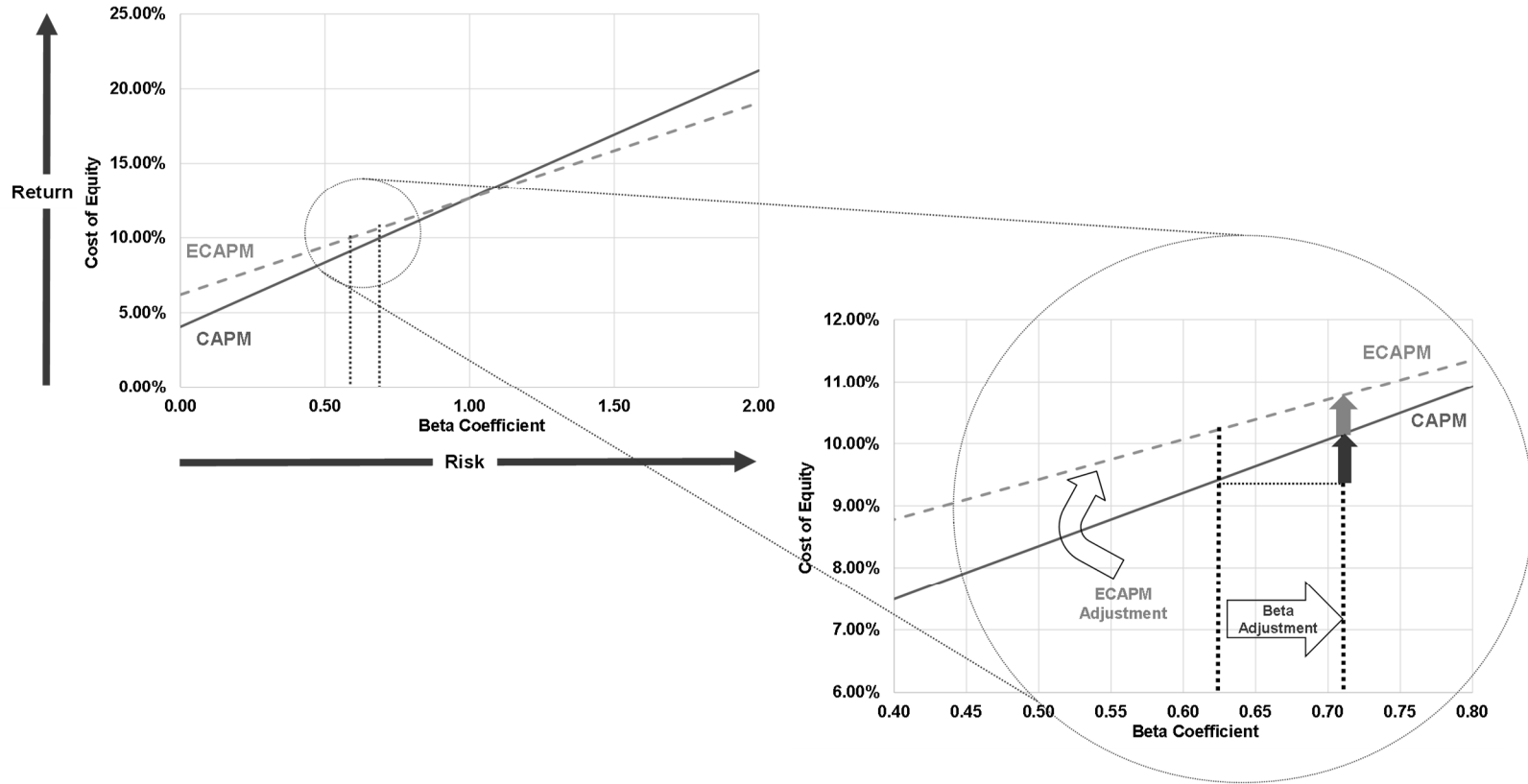
1 **Q.   Have you previously presented academic studies to Dr. Woolridge that have**

2 **used adjusted betas to estimate the ECAPM?**

3 A.   Yes. While Dr. Woolridge suggests that he is not aware of any tests that rely on

4   adjusted betas in the ECAPM, I have referenced the Chrétien and Coggins (2011)

5   study in prior rate proceedings in response to Dr. Woolridge that addresses this

6   concern.[135] Specifically, Chrétien and Coggins (2011) studied the CAPM and its

7   ability to estimate the risk premium for the utility industry in particular subgroups

8   of utilities for a data set that included market data through the end of 2006.[136]

9   Chrétien and Coggins (2011) considered the CAPM, the Fama-French three-factor

10   model and a model similar to the ECAPM. The study shows that the ECAPM

11   significantly outperformed the traditional CAPM at predicting the observed risk

12   premium for the various utility subgroups.

13   Additionally, Litzenberger, Ramaswamy, and Howard (1980) found that the CAPM

14   tends to understate the return for stocks such as utilities that have a beta less than

15   1.00.[137] To develop their analysis, the authors used historical (*i.e.,* "raw") betas to

16   estimate the "alpha" factor in the ECAPM. However, the authors also showed that

[135] *See, e.g*., Connecticut Public Utility Regulatory Authority, Docket No. 22-08-08, Direct Testimony of Ann E. Bulkley, January 6, 2023, at 53:9-54:2; Connecticut Public Utility Regulatory Authority, Docket No. 23-08-32, Rebuttal Testimony of Ann E. Bulkley, January 4, 2024, 115:1-116:2; Connecticut Public Utility Regulatory Authority, Docket No. 23-11-02, Rebuttal Testimony of Ann E. Bulkley, February 28, 2024, 118:1-119:20.

[136] Stéphane Chrétien and Frank Coggins, "Cost Of Equity For Energy Utilities: Beyond The CAPM," *Energy Studies Review*, Vol. 18, No. 2, 2011, available at Exh. AEB-39C.

[137] Robert Litzenberger, *et al*., "On the CAPM Approach to the Estimation of A Public Utility's Cost of Equity Capital," *The Journal of Finance*, Vol. 35, No. 2, 1980, at 369-383, available at https://www.icc.illinois.gov/docket/P2020-0308/documents/303195/files/528715.pdf.

1   an "alpha" factor can be derived for betas adjusted using the Blume procedure

2   discussed above and the results of their analysis for raw betas. The Blume

3   adjustment is shown in the following equation:

$$\beta_i = \omega\beta_{i(historical)} + (1 - \omega) \qquad [1]$$

5   Where:

6   β_i = adjusted beta

7   β_i [historical] = raw beta

8   ω = Blume Adjustment factor (*i.e.*, 0.67)

9   The estimate of "alpha" using Blume-adjusted betas can be derived using the results

10   presented in the "Raw Beta" section of Table 1 on page 380 and the equations on

11   page 376:

$$a = a' - b'\left(\frac{1-\omega}{\omega}\right) = 0.326 - 0.330\left(\frac{0.33}{0.67}\right) = 0.163 \qquad [2]$$

13   Where:

14   a = estimated alpha factor for Blume adjusted betas

15   a' = estimated alpha factor using raw betas

16   b' = estimated excess return over the risk-free rate using raw betas

17   Because the authors relied on monthly returns for stocks in the New York Stock

18   Exchange, the estimated "alpha" factor using adjusted betas of 0.163 percent must

19   be annualized.[138]   When annualized, the estimated "alpha" factor is 1.97 percent

20   using Blume-adjusted betas, which is consistent with the "alpha" factor relied on

21   by Dr. Morin of 1 to 2 percent to develop the 0.25 and 0.75 factors included in the

---

[138]   (1.00163)^12-1 = 1.97 percent.

ECAPM that I rely on in both my prefiled direct and prefiled rebuttal testimonies. Therefore, the Litzenberger, *et al.* (1980) study shows that the adjustment to beta and the use of the ECAPM are not duplicative, but rather account for two different factors in the CAPM.

Additionally, Parcell's and Dr. Woolridge's concern with the ECAPM analysis is addressed directly by Dr. Morin in his 2021 text *Modern Regulatory Finance* as follows:

> Because of this adjustment, some critics of the ECAPM argue that the use of Value Line adjusted betas in the traditional CAPM amounts to using an ECAPM. This is incorrect. The use of adjusted betas in a CAPM analysis is not equivalent to the ECAPM. Betas are adjusted because of the regression tendency of betas to converge towards 1.0 over time. We have seen that numerous empirical studies have determined that the SML [Security Market Line] described by the CAPM formula at *any given moment* in time is not as steeply sloped as the predicted SML. The slope of the SML should not be confused with Beta. On the point, Eugene F. Brigham, finance professor and the author of many financial textbooks states:
>
> > The Slope of the SML (5% in Figure 6-16) reflects the degree of risk aversion in the economy. The greater the average investor's aversion to risk, then (a) the steeper the slope of the line, (b) the greater the risk premium for all stocks, and (c) the higher required rate of return on all stocks. Students sometimes confuse beta with the slope of the SML. This is a mistake.
>
> The use of an adjusted beta by Value Line is correcting for a different problem than the ECAPM. The adjusted beta captures the fact that betas regress towards one over time. The ECAPM corrects for the fact that the CAPM under-predicts observed returns when

1   beta is less than one and over-predicts observed returns when beta

2   is greater than one.[139]

3 **Q.**   **Are you aware of any state regulatory commissions that have accepted the use**

4   **of the ECAPM in the manner as you have conducted?**

5 A.   Yes. There are various regulatory commissions that have supported the use of the

6   ECAPM in establishing an authorized ROE and have done so when adjusted betas

7   are used in the ECAPM analysis. For example, the New York Public Service

8   Commission ("NYPSC"), the Montana Public Service Commission ("Montana

9   PSC"), and North Carolina Utilities Commission ("NCUC") have accepted the

10   ECAPM analysis with the use of adjusted beta coefficients in establishing the

11   authorized ROE for regulated utilities. Specifically, the NYPSC gives equal weight

12   to the CAPM and ECAPM (which it refers to as the "Zero Beta" CAPM) results,[140]

13   the Montana PSC has expressed preference for the ECAPM analysis,[141] and the

14   NCUC has recently found that both the adjustment to beta in the CAPM and the

15   adjustment in the ECAPM were needed because they correct for different things.[142]

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[139]   Roger A. Morin, *Modern Regulatory Finance*, Public Utilities Report, Inc. (2021), at 223-224 (emphasis added), available at Exh. AEB-39C.

[140]   New York Public Service Commission, Case No. 20-G-0101, Order at 44-46 (May 19, 2021).

[141]   Montana Public Service Commission, Docket No. D2017.9.80, Order No. 7575c at 46 (Sept. 26, 2018) at 46.

[142]   North Carolina Utilities Commission, Docket No. E-2, SUB 1300, Order Accepting Stipulations, Granting Partial Rate Increase, and Requiring Public Notice at 162-63 (Aug. 18, 2023).

IX. BOND YIELD PLUS RISK PREMIUM

Q. Have any of the witnesses conducted a Risk Premium analysis?

A. Yes. Parcell has also conducted a Risk Premium analysis. Specifically, Parcell conducts his analysis using an historical average risk premium based on the difference between authorized ROEs and Moody's Investors Service ("Moody's") Baa-rated utility bond yields over the periods of 2012-2019 and 2012-2023. While he contends the risk premia for the 2020-2023 period are "impacted by the COVID-19 pandemic, as well as the Federal Reserve's anti-inflation monetary policies," Parcell concludes that they are consistent with the risk premia for the period of 2012 – 2019 and therefore, also relies on the risk premia averages for the period of 2012 – 2023.[143] Parcell then adjusts the historical average risk premium for both the period 2012-2019 and the period 2012-2023 using the results of my risk premium regression analysis to reflect the fact that current utility bond yields are greater than the historical average for both period. Parcell adds his adjusted historical average risk premium for both 2012-2019 and 2012-2023 to the current yields on the Moody's Baa-rated utility bonds. Parcell's Risk Premium analysis results in a cost of equity range of 9.91 percent to 10.50 percent using the period 2012-2019 and 9.44 percent to 10.80 percent using the period 2012-2023.[144] As result, Parcell

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[143] Parcell, Exh. DCP-1T at 53:21-54:4.

[144] *See* Exh. DCP-15.

---

1 concludes that his Risk Premium analysis supports a cost of equity in the range of

2 9.40 percent to 10.80 percent, with a midpoint of 10.10 percent.

3 **Q.** **Do you agree with Parcell's Risk Premium analysis?**

4 **A.** No. While I disagree with numerous aspects of Parcell's Risk Premium analysis, I

5 have two primary concerns. First, Parcell indicates that he has relied on the 3-month

6 average yield on Moody's Baa-rated utility bonds for the period of April through

7 June 2024 as the estimate of current interest rates. However, it appears he

8 incorrectly relies on the 3-month average for the period of March through May

9 2024.

10 Second, he relies on a historical average risk premium for the periods of 2012-2019

11 and 2012-2023; however, when he selects the historical Moody's Baa-rated utility

12 bond yield for 2012-2019 and 2012-2023, he relies on the minimum and maximum

13 Moody's Baa-rated utility bond yield for each period instead of the average yield

14 over the periods of 2012-2019 and 2012-2023. Therefore, the historical Moody's

15 Baa-rated utility bond yields do not correspond to the historical average risk

16 premium.

17 For example, as shown in Exh. DCP-15, for the period of 2012-2023, Parcell relies

18 on a historical average risk premium of 5.04 percent for his "low scenario," which

19 corresponds to a historical average Moody's Baa-rated utility bond yield of 4.60

20 percent over this same period. However, Parcell selects a Moody's Baa-rated utility

21 bond yield of 3.28 percent, which is the minimum annual average Moody's Baa-

1   rated utility bond yield for 2012-2023. Therefore, while Parcell uses the results of

2   my risk premium regression analysis to reflect the fact that current utility bond

3   yields are greater than the historical bond yields, because Parcell is applying the

4   adjustment to a historical bond yield (3.28 percent) that is lower than Moody's Baa-

5   rated bond yield (4.60 percent) that corresponds to the historical risk premia (5.04

6   percent), the cost of equity estimate is likely to be understated. The reverse will

7   occur for Parcell's "high scenario" since the historical bond yield will be greater

8   than Moody's Baa-rated bond yield that corresponds to the historical risk premia.

9   To more accurately account for the inverse relationship between interest rates and

10   the risk premium. Parcell should have relied on the historical average Moody's Baa-

11   rated utility bond yield that corresponds to his selected historical average risk

12   premium.

13   **Q.   Have you adjusted Parcell's Risk Premium analysis?**

14   A.   Yes. I have adjusted Parcell's Risk Premium analysis to: (1) rely on the correct 3-

15   month average yield on Moody's Baa-rated utility bonds for the period of April

16   through June 2024; and (2) rely on the historical average Moody's Baa-rated utility

17   bond yield for the period of 2012-2019 and 2012-2023 that corresponds to his

18   selected historical average risk premium for both periods. As shown in Exh. AEB-

19   36, by making these reasonable adjustments, Parcell's Risk Premium analysis

20   results in cost of equity range of 10.16 percent to 10.24 percent for 2012-2019 and

21   10.21 percent to 10.23 percent for 2012-2023.

1   Q.   **Have any witnesses commented on your Risk Premium analyses?**

2   A.   Yes. Parcell, Dr. Woolridge, and Dr. Kaufman have commented on my Risk

3   Premium analyses:

4   - Parcell claims that my Risk Premium analysis, which includes data back to
5   1992, does not recognize or account for other changes in the risk premium
6   other than changes in interest rates, such as the increased use of regulatory
7   cost recovery mechanisms, and thus does not reasonably capture the current
8   relationship between authorized ROEs and interest rates.[145]

9   - Dr. Woolridge disagrees with the Risk Premium approach because: (1) he
10   contends that the analysis is a gauge of commission behavior rather than
11   investor behavior; (2) he disagrees with the use of projected Treasury yields;
12   and (3) he suggests that regulatory commissions have been setting ROEs
13   above the cost of equity for decades, which, invalidates the use of the
14   underlying time series data.[146]

15   - Dr. Kaufman recommends that the Commission disregard the results of my
16   Risk Premium analysis because: (1) my Risk Premium analysis does not
17   consider the market to book ratio for utilities; (2) the model is circular in
18   that past authorized returns are used to predict future authorized returns; (3)
19   the regression analysis contains autocorrelation and therefore does not
20   produce reliable results; and (4) the Risk Premium analysis is not limited to
21   a peer group and likely contains the returns for utilities that are not
22   comparable to PSE.[147]

23   Q.   **Is there any validity to Parcell's contention regarding your Risk Premium**

24   **analysis?**

25   A.   No. It is clear from the regression analysis that I have conducted between

26   authorized ROEs and interest rates over the past 30 years that there is a strong

27   inverse relationship between these two variables that can be reasonably used to

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[145]   Parcell, Exh. DCP-1T at 51:14-52:13.

[146]   Woolridge, Exh. JRW-1T at 100:18-102:2.

[147]   Kaufman, Exh. LDK-1T at 68:4-70:9.

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1   estimate the cost of equity based on current and projected interest rates. As shown

2   in Exh. AEB-9 of my prefiled direct testimony, as well as in Exh. AEB-25 of my

3   prefiled rebuttal testimony, the regression equation in my Risk Premium analyses

4   has an R-squared that ranges between 0.81 and 0.84, which means that 81-84

5   percent of the change in the estimated risk premium can be explained by changes

6   in the level of Treasury bond yields. While other factors may influence the

7   authorized return, the regression equation indicates that Treasury bond yields have

8   been an important variable over this period.

9   Furthermore, although Parcell suggests my Risk Premium analysis is deficient, he

10 specifically relies on the estimated coefficient of my regression equation in order

11 to reflect the inverse relationship between interest rates and the risk premium in his

12 own Risk Premium analysis. In fact, Parcell notes that "[i]n my RP analyses, I

13 accept Company Witness Bulkley's assumption of this relationship between risk

14 premium of interest rate changes."[148]   Therefore, it is disingenuous of Parcell to

15 critique my Risk Premium analysis when he relies on my regression to calculate his

16 Risk Premium analysis.

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[148]   Parcell, Exh. DCP-1T at 56:7-8.

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1 **Q. Do you agree with Dr. Woolridge and Dr. Kaufman that the Risk Premium**

2 **methodology is not valid because it does not measure investor behavior?**

3 A. No. It is unquestionable that both credit rating agencies and investors consider the

4 authorized ROE data in their determination of the valuation of utility stocks.

5 Therefore, the relationship between recently authorized ROEs and the prevailing

6 interest rates at the time that the ROE was authorized is reasonable to consider when

7 setting the ROE in the context of a rate proceeding. To the extent that the returns in

8 a jurisdiction are lower than the returns that have been authorized more broadly,

9 credit rating agencies will consider this in the overall risk assessment of the

10 regulatory jurisdiction in which the company operates. As I discussed in my

11 prefiled direct testimony, both credit rating agencies and investors have responded

12 negatively to authorized ROEs deemed to be low.

13 **Q. Are Dr. Woolridge's concerns with your Risk Premium analyses consistent**

14 **with his own consideration of previously authorized ROEs?**

15 A. No. On the one hand, Dr. Woolridge suggests that my Risk Premium analyses

16 cannot be relied upon because the authorized ROEs are reflective of regulatory

17 commission behavior and not investor behavior; however, on the other hand, he

18 devotes an entire section of his testimony to an analysis of the same data that I use

19 in my Risk Premium analysis (*i.e.*, authorized ROEs and 30-year Treasury bond

20 yields),[149] and upon which he also relies as support for his recommended ROE.

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[149] Woolridge, Exh. JRW-1T at 14:1-27:13.

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1   Therefore, while Dr. Woolridge suggests that my Risk Premium analysis cannot be

2   considered because it reflects other factors such as capital structure, credit ratings,

3   and other risk measures used by regulatory commissions to determine appropriate

4   ROEs, he disregards these concerns when he relies on this data to support his ROE

5   recommendation.[150]

6   **Q.   Dr. Woolridge claims that my Risk Premium analysis cannot be relied upon**

7   **because it relies on projected Treasury bond yields that are "always forecasted**

8   **to increase." [151] Do you agree with this position?**

9   A.   No. Dr. Woolridge's claim implies that I have only relied on forecasted Treasury

10   bond yields in my Risk Premium analysis, which is incorrect. As shown on Exh.

11   AEB-6 and Exh. AEB-22, I have relied on both a current Treasury bond yield (*i.e.*,

12   the current 30-day average of the 30-year Treasury bond yield), as well as two

13   projections of the Treasury bond yield from the *Blue Chip Financial Forecast* in

14   my Risk Premium analyses. Thus, Dr. Woolridge's suggestion that I have only

15   relied on projected Treasury bond yields is incorrect. Moreover, as shown in Exh.

16   AEB-6 and Exh. AEB-22, the near-term and long-term projections of the yield on

17   the 30-year Treasury bond are lower than the current 30-day average of the 30-year

18   Treasury bond yield, which demonstrates Dr. Woolridge's conclusion that Treasury

19   bond yield are always forecasted to increase is incorrect.

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[150]   *Id.* at 100:18 - 101:10.

[151]   *Id.* at 101:11-16.

1   **Q.   Is Dr. Woolridge's contention reasonable that your BYRP analysis cannot be**
2   **relied on because it relies on authorized ROEs, yet the Werner and Jarvis**
3   **study (2022) showed that authorized ROEs have historically consistently**
4   **exceeded the cost of equity for utilities?**

5   A.   No. The Werner and Jarvis (2022) study is based on several assumptions that do

6   not hold, including: (1) a 1-to-1 relationship between yields on Treasury bonds and

7   changes in authorized returns; (2) that the form of the CAPM they rely on produces

8   accurate results under all market conditions; and (3) the assumption that there is no

9   difference in the regulatory environment between the US and United Kingdom

10   ("UK"). Given that these assumptions do not hold, the study cannot be relied upon

11   to demonstrate that authorized ROEs in the US overstate the cost of equity.

12   First, the study's benchmarking of authorized returns to corporate and Treasury

13   bond yields incorrectly assumes that a one percentage point change in the yield on

14   Treasury bonds will result in a one percentage point change in the authorized

15   returns. However, the authors did not provide any references to studies to support

16   this assumption. Further, when the study calculated an alternative scenario that

17   assumed the authorized return would change at only half the rate of change in the

18   Treasury yield (*i.e.*, a 100 basis point increase in the Treasury yield would result in

19   a 50 basis point increase in the authorized ROE), the spread between the estimated

20   benchmark returns and the authorized returns decreased significantly and did not

21   show an increasing trend over the study period.

Second, the study's comparison of authorized returns to the cost of equity estimates of the CAPM relies entirely on the authors' selected data inputs being the correct inputs to estimate the CAPM, as well as the assumption that the CAPM will produce accurate results under all market conditions. This assumption is highly unlikely particularly since the authors rely on two CAPM analyses that consider different inputs – and specifically acknowledge that "[s]eemingly objective methods like the capital asset pricing model cannot provide a definitive answer on the cost of equity."[152] For example, the first CAPM analysis resulted in a spread between the estimated cost of equity and the authorized return of 5.60 percentage points in 2020, while the second CAPM analysis produced a spread of only 0.786 percentage points.[153] In addition, while the authors estimate that the approved ROEs have been higher than various benchmarks and historical relationships suggest, they acknowledge that their results are "necessarily uncertain."[154]

Finally, it is not reasonable to draw conclusions from a comparison of the authorized returns of electric and natural gas utilities in the US to the returns authorized for utilities in the UK without considering the effect that the different regulatory and capital market environments have on the business risk of the utilities and investor return requirements. As Werner and Jarvis acknowledge, "there are

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[152] Karl Dunkle Werner and Stephen Jarvis, "Rate of Return Regulation Revisited," Working Paper, Energy Institute, University of California at Berkeley, 2022, at 36, available at https://elearning.unimib.it/pluginfile.php/1495414/mod_resource/content/1/WP329_RoRR.pdf.

[153] *Id.* at 26.

[154] *Id.* at 35.

1   many differences between the utility sector and investor environment in the US and

2   UK."[155]   Werner and Jarvis have not considered the effect of the regulatory

3   environment on the cost of equity for the electric and natural gas utilities in either

4   the UK or US; therefore, it is not reasonable to conclude that the authorized ROEs

5   in the US are too high based on a comparison to the returns authorized to utilities

6   in the UK. As a result, given the limitations of the Werner and Jarvis (2022) study,

7   it is not reasonable for Dr. Woolridge to use this study to conclude that prior

8   authorized returns for utilities have exceeded the cost of equity.

9   **Q.   Do you agree with Dr. Woolridge that authorized ROEs are above investors'**

10   **required returns because the market-to-book ratios for utilities are greater**

11   **than 1.0?**

12   A.   No. There are several reasons why the market-to-book ratio for utilities may exceed

13   1.0 other than the ROE exceeding the cost of equity. For example, Dr. Lawrence

14   Kolbe and Dr. Michael Vilbert outlined a few factors in a 2016 presentation to the

15   California Public Utilities Commission. As Drs. Kolbe and Vilbert noted, even if

16   one assumes that the theory of the EMH holds,[156] there are several important

17   conditions that must hold before one can assume that the ROE equals the cost of

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[155]   *Id.* at 28.

[156]   The theory of the EMH contends that all information that is currently known by investors is already reflected in current stock prices. *See, e.g.*, R. J. Shiller, "Do Stock Prices Move Too Much to be Justified by Subsequent Changes in Dividends?" *The American Economic Review*, Vol. 71, No. 3, 1981, at 421-436, available at https://www.aeaweb.org/aer/top20/71.3.421-436.pdf.

equity at a market-to-book ratio of 1.0 for regulated utilities. Those conditions include:

- A utility has to be regulated on rate base identical to its GAAP book value.
- A utility has to have 100 percent regulated operations.
- The regulatory system has to be in full equilibrium (*i.e.,* there cannot be a lag in the adjustment of the authorized ROE to the market cost of equity); and,
- The ROE expected, on average, has to equal the authorized ROE.[157]

As Drs. Kolbe and Vilbert concluded, it is very unlikely that all of these conditions will be satisfied. For example, changes in cost trends or regulatory lag can cause a utility to earn more or less than the allowed return, and if the expected return deviates from the allowed return, then the allowed return will not equal the cost of equity and the market-to-book ratio will not equal 1.0.

Moreover, as also noted by Dr. Kolbe and Dr. Vilbert: (1) there is no consensus among economists regarding whether the theory of the EMH holds and share prices are rationally priced; and (2) even if the EMH holds, there is also no consensus regarding which model (*i.e.*, DCF, CAPM, ECAPM) produces reasonable estimates of the cost of equity. In fact, Nobel Prize-winning economist Dr. Robert Shiller and others have provided compelling evidence against the EMH, concluding that share prices are not rationally priced, and that the DCF model does not fully explain

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[157] A. Lawrence Kolbe, Ph.D. and Michael J. Vilbert, Ph.D., "Moving Toward Value in Utility Compensation Shareholder Value Concept," Presented to the California Public Utilities Commission, (June 13, 2016) available at https://www.brattle.com/wp-content/uploads/2017/10/5660_moving_toward_value_in_utility_compensation_shareholder_value_concept_.pdf.

changes in share prices and thus will not accurately estimate the required return of investors.[158] There are numerous practical examples supporting this position (*e.g.*, large sudden declines in the market such as Black Monday in 1987, the Great Recession of 2008/09, the COVID-19 crash in March 2020, and the "tech bubble" of the late 1990s) that cannot be explained by new information regarding dividends.[159]

Q. Dr. Kaufman concludes that the results of your Risk Premium analyses are not reliable because your regression has "high" autocorrelation.[160] What is your response?

A. Autocorrelation, or serial correlation, is the correlation of the observations in a data series over time. A linear regression model requires that autocorrelation not be present in the residuals or error term.[161] If autocorrelation exists in a regression, it is likely that the variances of the residuals and the coefficients are understated. This can result in an overstated R^2 as well as incorrect conclusions regarding the

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[158] R. J. Shiller, "Do Stock Prices Move Too Much to be Justified by Subsequent Changes in Dividends?," *The American Economic Review*, 1981, Vol. 71, No. 3, at 42-436, available at https://www.aeaweb.org/aer/top20/71.3.421-436.pdf.

[159] *See also*, R. J. Shiller, "From Efficient Markets Theory to Behavioral Finance," *Journal of Economic Perspectives,* 2003, Vol. 17, No. 1, at 83-104, available at https://pubs.aeaweb.org/doi/pdfplus/10.1257/089533003321164967. Dr. Shiller contended that there were "asset bubbles" such as the "tech boom" from 1994 to 2000 that resulted in substantial increases in share prices that could not be explained by market fundamentals.

[160] Kaufman, Exh. LDK-1T at 69:11-70:2.

[161] Residual equals actual value minus the predicted value.

significance of the regression and the coefficients. However, it is important to note that autocorrelation does not affect the estimates of the regression coefficients.

In this case, Dr. Kaufman contends that my regression analysis has "high" autocorrelation and therefore does not produce reliable results. Thus, it appears Dr. Kaufman believes that autocorrelation has resulted in the incorrect conclusion that: (1) my independent variable (*i.e.*, the 30-year Treasury bond yield) is significant; and (2) the 30-year Treasury bond yield explains a significant portion of the variation in the risk premium. A common approach to correct for the possibility of autocorrelation is to rely on heteroskedasticity and autocorrelation consistent ("HAC") standard errors, which can be specified in statistical programs when estimating a regression.

While I did not rely on HAC standard errors when developing the risk premium presented in Exh. AEB-9, I have relied on HAC standard errors when developing my Risk Premium analyses presented in Exh. AEB-27 of my rebuttal testimony. As shown in Exh. AEB-37, the R^2 for my regression analysis that relied on authorized returns for vertically-integrated electric utilities is 0.81 and the coefficients are significant at the 99 percent confidence level. Similarly, the R^2 for my regression analysis that relies on authorized returns for natural gas utilities is 0.84 and the coefficients are significant at the 99 percent confidence level. Therefore, after correcting for autocorrelation, the coefficients are significant and the 30-year Treasury bond yield still explains a significant portion of the variation in the risk

1   premium. As a result, it is incorrect for Dr. Kaufman to conclude that

2   autocorrelation has biased the results of my Risk Premium analysis.

X.   COMPARABLE EARNINGS / EXPECTED EARNINGS

4   **Q.   Have any of the witnesses conducted a Comparable Earnings analysis?**

5   A.   Yes, Parcell has also conducted a Comparable Earnings analysis. Specifically, as

6   shown on Exh. DCP-12 at page 1, Parcell conducts a Comparable Earnings analysis

7   by evaluating historical earned returns on equity for his proxy group over three

8   periods. Additionally, as shown on Exh. DCP-13, Parcell also evaluates the

9   historical earned returns for the S&P 500 Index over the period of 2002-2023, as it

10   is an example of the returns earned in "competitive sectors of the economy" and

11   shows that the utility sector has achieved similar risk metrics while having lower

12   earned returns.[162] Parcell concludes that the range of ROEs for his proxy group

13   ranges from no more than 9.0 percent to 9.5 percent, with a midpoint of 9.25

14   percent.[163]

15   **Q.   Do you have any concerns with Parcell's Comparable Earnings analysis?**

16   A.   Yes. My primary concern with Parcell's Comparable Earnings analysis is that his

17   evaluation of the earned returns on the S&P 500 Index provides shows that a return

18   for utilities in the range of 9.00 percent to 9.50 percent is unreasonable. As Parcell

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[162]   Parcell, Exh. DCP-1T at 48:1-18.

[163]   *Id.* at 49:1-14.

explains the Comparable Earnings analysis is based on the concept of opportunity

cost as measured by the ROE. Among assets of similar risk, investors are likely to

allocate capital to those that achieve the highest returns. This is the purpose of the

comparable return standard of *Hope* and *Bluefield* as an awarded return

substantially below those of that have been awarded to assets of similar risk could

affect a company's ability to access capital.

According to Parcell, the average realized returns for the S&P 500 Index were 12.4

percent from 2002-2008 and 14.5 percent from 2009-2023 with returns over the

period of 2021-2023 ranging from 17.0 percent to 20.5 percent.[164] Further, Parcell

shows that the average *Value Line* beta for his proxy group is 0.95, while the

average *Value Line* beta for the S&P 500 Index is 1.04. Based on these betas cited

by Parcell, the risk currently in the market for utilities is only slightly below that of

the overall market. Therefore, if one assumes for illustrative purposes that investors

expect to achieve a 14.5 percent return on the S&P 500 Index, and then the CAPM

is calculated using Parcell's risk-free rate of 4.67 percent and average *Value Line*

beta for utilities in his proxy group of 0.95, the resulting cost of equity would be

13.93 percent. Based on the returns on S&P 500 Index referenced by Parcell and

the current level of risk for utilities relative to the market, it is unclear how he

concludes that his Comparable Earnings analysis supports a return in the range of

9.0 percent to 9.50 percent. A return at this level would clearly place utilities at a

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[164] Parcell, Exh. DCP-13.

1   disadvantage in the current market given the return investors could achieve

2   elsewhere in the market.

3 **XI.   SUMMARY OF THE ADJUSTED RESULTS OF THE COST OF EQUITY**
4   **ANALYSES OF PARCELL, DR. WOOLRIDGE, AND DR. KAUFMAN**

5 **Q.   Have you considered how the ROE recommendations of Parcell, Dr.**

6   **Woolridge, and Dr. Kaufman would change if their cost of equity analyses**

7   **were corrected for the issues you have identified with each of their analyses?**

8 A.   Yes, I have evaluated how each of these witnesses' ROE recommendations would

9   change once their analyses are updated and corrected.

10 **Q.   How do the results of Parcell's cost of equity analyses change if the issues that**

11   **you have identified are addressed with each of his analyses?**

12 A.   Figure 18 presents the results of Parcell's cost of equity analyses as filed in his

13   testimony as compared to those same analyses reflecting the corrections to those

14   analyses that I have discussed. Parcell does not specifically indicate how he derives

15   the range of his recommended ROE. Therefore, as shown in Figure 18, I have

16   calculated the average of each of analyses (*i.e.*, the constant growth DCF, the

17   CAPM, the ECAPM, the Expected Earnings, and the Risk Premium). When the

18   results of Parcell's cost of equity analyses based on corrections to those analyses

19   that I have discussed are considered, the average cost of equity resulting from his

20   analyses support the Company's requested ROEs for each year of the MYRP.

Figure 18: Results of Parcell's As Filed and Adjusted Cost of Equity Analyses

	As Filed		Adjusted	
	Range	Midpoint	Range	Midpoint
Constant Growth DCF	9.00% to 10.00%	9.50%	9.85% to 10.11%	9.98%
CAPM	10.70% to 10.80%	10.75%	11.63% to 11.67%	11.65%
Comparable Earnings	9.00% to 9.50%	9.25%	n/a	n/a
Risk Premium	9.40% to 10.80%	10.10%	10.21% to 10.23%	10.22%

Q. **How do the results of Dr. Woolridge's cost of equity analyses change if the issues that you have identified are addressed with each of his analyses?**

A.   Figure 19 presents the results of Dr. Woolridge's cost of equity analyses based on the corrections to his analyses that I have discussed. As shown, the results of Dr. Woolridge's analyses also supports the Company's requested ROEs in this proceeding.

Figure 19: Results of Dr. Woolridge's As Filed and Adjusted Cost of Equity Analyses

	As Filed	Adjusted
Constant Growth DCF		
Panel A (Woolridge Elec Proxy Grp)	9.92%	10.20%
Panel B (Bulkley Proxy Grp)	9.87%	10.35%
Panel C (Woolridge Gas Proxy Grp)	9.56%	10.02%
CAPM		
Panel A (Woolridge Elec Proxy Grp)	8.30%	10.82%
Panel B (Bulkley Proxy Grp)	8.25%	10.73%
Panel C (Woolridge Gas Proxy Grp)	8.29%	10.80%

1　Q.　**Lastly, how do the results of Dr. Kaufman's cost of equity analyses change if**

2　　**the issues that you have identified are addressed with each of his analyses?**

3　A.　Figure 20 presents the results of Dr. Kaufman's cost of equity analyses based on

4　　the updates to his outdated analyses, as well as the corrections to his analyses that

5　　I have discussed. As shown, Dr. Kaufman's analyses support the Company's

6　　requested ROEs in this proceeding.

7　　**Figure 20: Results of Dr. Kaufman's As Filed and Adjusted Cost of Equity**
8　　**Analyses**

	As Filed	Adjusted
Constant Growth DCF		
Range	8.94% to 9.15%	9.84% to 10.06%
Midpoint	9.05%	9.95%
Multi-Stage DCF		
Range	8.96% to 9.27%	9.92% to 10.21%
Midpoint	9.11%	10.07%
CAPM		
Range	7.54% 9.45%	10.02% to 10.16%
Midpoint	8.49%	10.09%
ECAPM		
Range	7.93% 9.98%	10.41% to 10.52%
Midpoint	8.96%	10.46%

1 **Q. Do the adjustments that you have reflected to Parcell's, Dr. Woolridge's, and**
2 **Dr. Kaufman's cost of equity analyses sufficiently reflect the cost of equity for**
3 **the Company in this proceeding?**

4 A. No, not entirely. As I have discussed, I disagree with various inputs that Parcell,
5 Dr. Woolridge, and Dr. Kaufman have applied in their cost of equity analyses.
6 While the adjustments that I have made to their cost of equity analyses are intended
7 to "correct" for the issues that I have identified with their respective analyses, it is
8 not possible to entirely resolve the issues identified, and thus I continue to support
9 the cost of equity resulting from each of the analyses that I have developed and that
10 are presented previously in Figure 2 herein.

11 ### XII. BUSINESS AND REGULATORY RISKS

12 **Q. What do Parcell, McGuire, and Dr. Woolridge state regarding the risks to**
13 **which the Company is subject in establishing the ROE in this proceeding?[165]**

14 A. Parcell contends that SB 5295, which was passed in May 2021 and requires a gas
15 or electric utility to pursue a MYRP and set performance measures to assess a utility
16 under the MYRP, provides a more stable regulatory and financial environment, and
17 thus means that the Company is less risky on a "post-legislation" basis than it was
18 on a "pre-legislation" basis. Based on this position, Parcell recommends that the
19 ROE established in this proceeding be set at a level that is no higher than the

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[165] Dr. Kaufman claims that the Company has a similar risk profile as the proxy group, but he provides no
further discussion, analysis, or support for his position.

"bottom of the market-determined ROE for the proxy group," which he states is 9.50 percent.[166]

McGuire contends that 11 percent of PSE's electric business and 56 percent of PSE's natural gas business are not exposed to variance risk and are recovered through the various riders that are approved for the Company.[167] According to McGuire, the risk to shareholders decreases as the percentage of revenue recovered through riders increases. As a result, McGuire concludes that the Commission should consider the percentage of revenue recovered through riders for PSE when determining the Company's authorized return.[168]

Finally, Dr. Woolridge claims that the regulatory and business risk factors that I reviewed in my prefiled direct testimony are already encompassed within the credit ratings of PSE, meaning consideration of these factors is redundant, and PSE has benefited from recent legislation that "should be credit positives to the Company in the years to come."[169]

[166] Parcell, Exh. DCP-1T at 23:2-16.

[167] McGuire, Exh. CRM-1T at 66:1-9.

[168] *Id.*

[169] Woolridge, Exh. JRW-1T at 107:1-108:20.

1 **Q. Do you agree with Dr. Woolridge's assessment regarding the risk factors that**
2 **you evaluated?**

3 A. No, I do not agree with Dr. Woolridge's comparison of credit ratings as being

4   dispositive of PSE's relative risk to the proxy group. Credit ratings are assessments

5   of the likelihood that a company could default on its *debt*, whereas the topic of

6   estimating the cost of equity is to determine the riskiness and cost of the Company's

7   *equity*. In addition, while credit rating agencies consider the business risks of an

8   individual company when establishing its debt credit rating, they do not conduct a

9   comparative analysis of business risks relative to the proxy group.

10   The development of the investor-required ROE is based on a proxy group of risk-

11   comparable companies. In developing the proxy group, it is essential to balance the

12   relative risk of the companies included in the proxy group with the overall size of

13   the group. Therefore, it is always the case that the proxy companies do not have

14   exactly the same risk profile as the subject company. As such, it is reasonable to

15   review the relative risks of the proxy group companies and the subject company to

16   determine how the subject company's risk profile compares with the group in order

17   to determine the appropriate placement of the ROE within the range of results

18   established using the proxy group companies.

1	Q.	**Have either Parcell, McGuire, or Dr. Woolridge conducted any analysis of the**
2		**specific risks of the Company relative to the proxy group?**
3	A.	No. Neither Parcell nor Dr. Woolridge have independently evaluated the
4		comparative risk of the Company relative to their respective proxy groups. Further,
5		McGuire has not conducted any analysis to estimate the cost of equity for PSE nor
6		has he reviewed the proxy groups of any of the witnesses in this case recommending
7		an ROE for purposes of assessing the comparative risk of PSE.
8	Q.	**Is there any basis for either Parcell's contention that the ROE for the**
9		**Company should be set at the lower end of his range because the MYRP**
10		**reduces the risk of the Company or McGuire's contention that PSE's cost**
11		**recovery mechanisms reduce the Company's risk which should be considered**
12		**in setting the authorized return?**
13	A.	No. Simply because a utility operates under an MYRP and has certain cost recovery
14		mechanisms does not mean that it is rationale or appropriate to otherwise reduce its
15		authorized ROE as both Parcell and McGuire contend. As noted, the appropriate
16		approach is to compare the regulatory risk of PSE to the regulatory risk of the proxy
17		group being used to develop the ROE to determine if the Company has either
18		greater or less regulatory risk than the proxy group. As discussed in my prefiled
19		direct testimony:

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- The Company has a significant capital expenditure plan due in part to achieving PSE's commitment to the Clean Energy Transformation Act ("CETA"). The Company's proposed capital tracking mechanisms (*i.e.,* to recover cost associated with wildfire prevention, clean generation

resources, and gas decarbonization) and MYRP will allow PSE the opportunity to recovery its capital investments on a more timely basis. The Company's proposals are consistent with the overwhelming majority of the operating utilities of the proxy group, which also have capital cost recovery mechanisms. However, if the Company's proposals are not approved then the Company's capital cost recovery risk would increase significantly relative to the proxy group.

- The Company does have a revenue decoupling mechanism. Similarly, approximately 54.05 percent of the utility operating subsidiaries of the proxy group companies have implemented either straight fixed variable rate design, a revenue decoupling mechanism, and/or a formula rate plan to provide protection against volumetric risk and provide revenue stabilization.

- The Company is proposing to continue to include annual power cost updates in it proposed MYRP, which would allow the Company to update the variable potion of its baseline power costs each year similar to PSE's purchased gas adjustment. The Company's proposal is consistent with the overwhelming majority of the operating utilities of the proxy group, which are allowed to pass through fuel costs and purchased power costs directly to ratepayers. However, if the Commission were not authorize the annual power cost updates, the Company's risk associated with respect to the recovery of power costs will be significantly greater than the proxy group.

- The RRA jurisdictional ranking and S&P credit supportiveness ranking for Washington is below the average for the proxy group.

- The authorized ROEs in Washington have been below the national average for electric and natural gas utilities.[170]

Therefore, for all these reasons, I concluded that the Washington regulatory framework has somewhat greater risk than the jurisdictions in which the utility operating subsidiaries of the proxy group companies provide service. Given neither Parcell nor McGuire have provided any analysis to compare the regulatory risk of the Company relative to the proxy group, both Parcell and McGuire are unable to comment on the risk of PSE relative to the proxy group let alone conclude that

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[170] Bulkley, Exh. AEB-1T at 56:1-91:11.

1 PSE's ROE should be set of the low-end of his recommended range as suggested

2 by Parcell.

3 **Q.** **Staff witness McGuire proposes that the Commission require a risk sharing**

4 **mechanism on trackers and cost recovery mechanisms.[171] Are you aware of**

5 **any jurisdictions that require sharing as proposed by Staff witness McGuire?**

6 A. No. Excluding the PCA cost recovery mechanisms in Washington and a few other

7 regulatory jurisdictions, I have not routinely encountered sharing mechanisms as

8 an element of a cost recovery tracking mechanism.

9 **XIII.   CAPITAL STRUCTURE**

10 **Q.** **What have Parcell, Dr. Wooldridge, and Dr. Kaufman proposed regarding the**

11 **Company capital structure?**

12 A. Parcell recommends an equity ratio of 48.50 percent for both years of the MYRP,

13 while Dr. Woolridge and Dr. Kaufman recommend an equity ratio of 49.00 percent

14 for both years of the MYRP. Specifically:

15 • Parcell concludes that the Company has not provided sufficient evidence to
16 justify increasing its equity ratio to 50.00 percent in the first year of the
17 MYRP and 51.00 percent in the second year of the MYRP. Instead, Parcell
18 recommends an equity ratio of 48.5 percent because it: (1) is consistent with
19 the recent actual common equity ratios for PSE; (2) "matches" the capital
20 structure that PSE was awarded by the Commission in PSE's last rate
21 proceeding; and (3) is consistent with the capital structures of "other electric
22 and combination electric utilities."[172]

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[171] McGuire, Exh. CRM-1T at 52:4-5.
[172] Parcell, Exh. DCP-1T at 29:8-30:13.

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1   • Dr. Woolridge states that the average common equity ratios of the companies in the proxy group are much lower than the Company's proposed equity ratio, and thus the Company's proposed capital structure has less financial risk than the proxy group.[173] As a result, Dr. Woolridge recommends an equity ratio of 49.00 percent (*i.e.,* the Company's currently authorized equity ratio) on the basis that it is: (1) consistent with the Company's historical capitalization; (ii) consistent with the Commission's past policies on utility capitalizations; and (iii) more reflective of the capital structures of Dr. Woolridge's proxy groups.[174]

   • Dr. Kaufman opposes the Company's proposed "hypothetical" capital structure comprised of 50.00 percent common equity for the first year of the MYRP and 51.00 percent for the second year of the MYRP. Dr. Kaufman instead recommends that PSE's forecasted common equity ratio for 2024 of 49.00 percent should be used for each year of the MYRP.[175]

Q. Does Parcell's recommended equity ratio of 48.50 percent match the equity ratio that was approved for PSE in the Company's last rate proceeding?

A. No. It is decision in PSE's late rate proceeding, the Commission approved a capital structure consisting of 49.00 percent common equity and 51.00 percent long-term debt.[176] As a result, the Company's currently approved common equity ratio is 49.00 percent and not 48.50 percent as referenced by Parcell.

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[173] Woolridge, Exh. JRW-1T at 31:16-23.

[174] *Id*. at 32:3-15.

[175] Kaufman, Exh. LDK-1T at 71:7-72:10.

[176] *WUTC v. Puget Sound Energy*, Dockets UE-220066 & UG-220067, Order 24 ¶ 122 (December 22, 2022).

1   **Q.** **Have any of the witnesses in this proceeding demonstrated that PSE's**

2   **previously authorized equity ratio is reasonable based on the circumstances in**

3   **the current proceeding?**

4   A.   No. While Parcell, Dr. Woolridge, and Dr. Kaufman recommend maintaining

5   PSE's equity ratio constant in this proceeding, neither has offered any support or

6   analysis to support this position other than it is reasonable to maintain the status

7   quo. However, simply because the Company was awarded an equity ratio for

8   ratemaking purposes in a prior case does not justify maintaining the same equity

9   ratio in this proceeding. As the Company has discussed in its testimony, the

10   Company's proposal will maintain its credit rating, provide credit rating stability

11   over the long run, maintain competitive access to capital markets, and restore pre-

12   tax reform cash flow over time.[177]

13   **Q.** **Is Parcell's recommended equity ratio consistent with the data that he presents**

14   **to support his proposal?**

15   A.   No. Parcell presents the average equity ratio of his proxy group for 2019-2023, as

16   well as the average common equity ratios adopted by state regulatory commissions

17   in electric proceedings since 2015, and in both cases, Parcell's analyses actually

18   support the Company's proposed capital structure. Specifically, the Company's

19   proposed equity ratio is 50.00 percent for the first year of the MYRP and 51.00

20   percent for the second year of the MYRP. Parcell acknowledges that the average

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[177] Doyle, Exh. DAD-1CT at 44:21-45:11.

equity ratio of his proxy group is approximately 52 percent,[178] and that the average

common equity ratios adopted by state regulatory commissions in electric

proceedings since 2015 have all been higher than his proposed equity ratio of 48.50

percent.[179]   In other words, the Company's proposed equity ratios are *below* the

data that he presents, and thus support the Company's proposals. While Parcell's

comparison of the average equity ratios of his proxy group to PSE is not relevant

for reasons I will discuss further, he provides no basis for why the Company's

equity ratio should be set at a level for ratemaking purposes that is significantly

lower than the average equity ratios of his proxy group and the average equity ratios

authorized in electric proceedings across the United States.

Q. **Are Parcell's and Dr. Woolridge's comparisons of the Company's proposed**

equity ratio to the actual equity ratios of the holding companies in the proxy

group reasonable?[180]

A.   No. There are two problems with Parcell's and Dr. Woolrdige's comparisons of the

Company's proposed equity ratios to the equity ratios of the proxy group holding

companies. First, it is not appropriate to compare the proposed equity ratios of the

Company to the average equity ratio of the proxy group at the holding company

level. Second, even though it is not appropriate, if the capital structures at the

holding company level are considered for comparison to the Company's proposal,

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[178]   Parcell, Exh. DCP-1T Testimony at 25:20.

[179]   *Id*. at 26:8-13.

[180]   Parcell, Exh. DCP-1T at 25:20; Woolridge, Exh. JRW-1T at 31:16-23.

1		the market value of debt and equity must be used to estimate the percentage of debt
2		and equity in the capital structure, not the book value of debt and equity.
3	Q.	**First, why is it inappropriate to rely on the holding company capital structures**
4		**to set the capital structure for the utility subsidiary?**
5	A.	The holding company data on which Parcell and Dr. Woolridge rely includes
6		corporate-level debt that is not part of the regulated or financial capital structure of
7		the operating utilities. Simply because the parent companies in the proxy group are
8		used to estimate the Company's cost of equity does not mean that the *holding*
9		*company* capital structures are the relevant comparators for establishing the
10		Company's authorized capital structure. There is no question that the utility
11		subsidiaries of those holding companies are *more* comparable to the Company in
12		terms of risk. Holding companies have multiple regulated utility subsidiaries,
13		including in multiple jurisdictions, as well as unregulated operations or other
14		business activities, which differs from the Company's purely regulated utility
15		operations in a single jurisdiction. In fact, Dr. Woolridge acknowledges this fact in
16		arguing against reliance on the Expected Earnings analysis, where he states:

17		**The Proxies' ROEs Reflect Earnings on Business Activities that**
18		**are not Representative of the Company's Rate-Regulated Utility**
19		**Activities**: The numerators of the proxy companies' ROEs include
20		earnings from business activities that are riskier and produce more
21		projected earnings per dollar of book investment than does regulated
22		electric utility service. These include earnings from: (1) unregulated

1   businesses including merchant generation; (2) electric generation;
2   and (3) international operations.[181]

3   Therefore, consistent with Dr. Woolridge's own argument, the appropriate

4   comparison for the Company's proposed capital structures is a comparison to the

5   capital structures of the utility subsidiaries of the proxy group companies since they

6   are the most comparable to the Company.

7 **Q.**   **Is the Company's proposed equity ratio consistent with the actual capital**

8   **structures of the operating utilities of the proxy group companies?**

9 A.   Yes. As shown on Exh. AEB-16 to my prefiled direct testimony, the equity ratios

10   for my proxy group are in the range of 45.52 percent to 66.21 percent with a mean

11   of 54.99 percent. PSE's proposed rate year 1 and rate year 2 equity ratios of 50.00

12   percent and 51.00 percent, respectively, are well below the average equity ratio of

13   the utility operating subsidiaries of my proxy group.

14 **Q.**   **Second, why is it inappropriate for Parcell and Dr. Woolridge to rely on the**

15   **book value of the capital structures of the proxy group companies at the**

16   **holding company level as a comparison to PSE's proposed capital structures?**

17 A.   The use of the book value of debt and equity for the proxy group companies at the

18   holding company level creates a mismatch between the capital structure data that is

19   being used to determine the reasonableness of the Company's proposed equity

20   ratios and the data that is being used to estimate the DCF and the CAPM analyses

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[181]   Woolridge, Exh. JRW-1T at 104:8-14 (emphasis in original).

1   to determine the cost of equity for the Company. For example, both Parcell and Dr.

2   Woolridge consider the constant growth DCF model to determine the cost of equity

3   for the Company and estimate the dividend yield based on the expected dividends

4   of the proxy group companies and their respective current stock prices – which is

5   the current *market value* of their equity. Similarly, both Parcell and Dr. Woolridge

6   also rely on the CAPM to estimate the cost of equity for the Company, and in doing

7   so, rely on beta coefficients – which reflect the returns of each proxy group

8   company based on that company's respective *market value*. Therefore, the cost of

9   equity developed by these witnesses is intended to represent the percentage return

10   required by investors on the market value of equity not the book value.

11   **Q.   Does Dr. Woolridge acknowledge in his testimony that the cost of equity is the**

12   **return on the market value of common equity and that the book value and**

13   **market value of common equity can be different?**

14   A.   Yes, he does. In his discussion of the Expected Earnings Approach, Dr. Woolridge

15   notes the following:

16   Investors had no opportunity to invest in the proxy companies at the
17   accounting book value of equity. In other words, the equity's book
18   value to investors is tied to market prices, which means that
19   investors' required return on market-priced equity aligns with
20   expected return on book equity only when the equity's market price
21   and book value are aligned.[182]

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[182]   Woolridge, Exh. JRW-1T at 103:9-13.

1 Q. **What is the effect of relying on the required return on the market value of**

2 **equity for assessing the cost of equity, but then the book value of debt and**

3 **equity for assessing the capital structure?**

4 A. If the market value of debt and equity are substantially different than the book value

5 of debt and equity, then the resulting cost of equity estimate would not reflect the

6 financial risk of the book value capital structure.

7 Q. **Can you illustrate why this is the case?**

8 A. Yes. This is illustrated in the following set of equations found readily in corporate

9 finance textbooks.[183] As shown in Equation [3], the value of a company (or asset)

10 is determined as follows:

11 $$V = D + E \qquad [3]$$

12 Where:
13 V = Market value of a company/asset
14 D = Market value of debt
15 E = Market value of equity

16 For simplicity, if it is assumed that there are no taxes, based on Equation [3], the

17 total return on V can be estimated as follows:

18 $$r_V = \frac{D}{D + E} \times r_D + \frac{E}{E + D} \times r_E \qquad [4]$$

19 Where:
20 r_V = expected return on assets / weighted-average cost of capital
21 r_D = expected return on debt

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[183] Richard A. Brealey, Stewart Myers, and Franklin Allen, *Principles of Corporate Finance*, 13th Ed., at
452-462 (2002), available at Exh. AEB-39C.

1   r_E = expected return on equity

2   Then, Equation [4] can be rearranged into the following form to solve for the

3   expected return on equity, r_E:

4
$$r_E = r_V + (r_V - r_D)\frac{D}{E} \qquad [5]$$

5   As shown in Equation [5], the expected return on the market value of equity is a

6   function of the market value debt-to-equity ratio. As the percentage of debt

7   increases, the financial risk of the firm increases, and thus investors require a higher

8   return to compensate for the additional financial risk. Therefore, if the book value

9   debt-to-equity ratio for the proxy group is substantially different than market value

10   debt-to-equity ratio, the expected return on equity will also be substantially

11   different.

12 **Q.**   **Is the book value debt-to-equity ratio different from the market value debt-to-**

13   **equity ratio for your proxy group in this proceeding?**

14 A.   Yes, quite different. As shown in Exh. AEB-38, the average market value common

15   equity ratio for my proxy group as of December 31, 2023, was 54.56 percent, which

16   means that the cost of equity estimated by Dr. Woolridge using my proxy group

17   reflects the financial risk of a market value common equity ratio of 54.56 percent.

18   This market value common equity ratio is significantly greater than the average

19   book value equity ratios calculated by Dr. Woolridge for his and my proxy group

20   that range from 40.9 percent (Dr. Woolridge's electric proxy group) to 42.3 percent

1 (my proxy group) to 43.2 percent (Dr. Woolridge's natural gas proxy group). Given

2 the greater financial risk of the book value capital structures relied on by Dr.

3 Woolridge because of the higher amount of leverage, investors would require a

4 much higher cost of equity than estimated by his DCF and CAPM analyses. In other

5 words, Dr. Woolridge's reliance on a cost of equity estimate based on market

6 values, but then a capital structure based on book values, is a mismatch that results

7 in the incorrect conclusion that an ROE reflecting the financial risk of the market

8 value equity ratio would be sufficient to compensate investors for a much more

9 highly levered capital structure based on book value.

10 **Q.** **How does the Company's proposed equity ratio in each year of the MYRP**

11 **compare to the market value equity ratio of the proxy group?**

12 A. As noted, the average market value common equity ratio for my proxy group as of

13 December 31, 2023 was 54.56 percent, or significantly higher than the Company's

14 proposed capital structure, which consists of 50.00 percent common equity for the

15 first year of the MYRP and 51.00 percent for the second year of the MYRP.

16 Therefore, while evaluating the capital structures of the holding companies of the

17 proxy group relative to the Company is not appropriate for the reasons discussed,

18 when the comparison based on this approach as supported by Parcell and Dr.

19 Woolridge is done correctly, it demonstrates that the Company's proposed equity

20 ratio is reasonable.

1	**Q.**	**How does the Company's proposed equity ratio compare to the equity ratios**
2		**that have been authorized for vertically-integrated electric utilities in the past**
3		**ten years?**
4	A.	Figure 21 presents the authorized equity ratios for vertically-integrated electric
5		utilities across the U.S. for the last three years, properly excluding both limited
6		issue rider cases and authorizations in Arkansas, Indiana, Michigan and Florida due
7		to the inclusion of zero cost capital items in the capital structure.[184] Likewise,
8		Figure 22 presents the authorized equity ratios for natural gas utilities across the
9		U.S. over the same time period. As shown in both Figure 21 and Figure 22, the
10		Company's proposed equity ratios in each year of the MYRP (*i.e.*, 50.00 percent
11		the first year and 51.00 percent for the second year) are below both the mean and
12		median equity ratios for utilities across the U.S. in the past three years.

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[184] The average annual authorized equity ratios reflected in Figure 21 differ from the average authorized equity ratios presented at 26:13 of Parcell's testimony. While Parcell does not specify or provide a workpaper as to how he develops his average annual authorized equity ratios, it appears that his analysis is incorrect and has included: (i) utilities in jurisdictions that include zero cost of capital items in the capital structure; (ii) authorized equity ratios in limited issue rider proceedings; and (iii) authorized equity ratios for transmission and distribution-only electric utilities.

Figure 21: Authorized Equity Ratios for Vertically-Integrated Electric Utilities for 2021-2023[185]

Year	Avg.	Median	Min	Max
2021	51.12%	51.92%	43.25%	55.00%
2022	52.35%	52.00%	48.90%	58.22%
2023	52.41%	52.25%	48.02%	60.70%

Figure 22: Authorized Equity Ratios for Natural Gas Utilities for 2021-2023[186]

Year	Avg.	Median	Min	Max
2021	51.88%	52.00%	47.45%	59.88%
2022	51.80%	52.00%	47.00%	60.59%
2023	52.04%	52.00%	48.00%	62.20%

Q. **What is your conclusion regarding the appropriate capital structure for the Company?**

A. I continue to conclude that that the Company's proposed capital structure is reasonable. The Company's proposed equity ratio consisting of 50.00 percent common equity for the first year of the MYRP and 51.00 percent for the second year of the MYRP is both: (1) below the average actual equity ratio of the utility subsidiaries of the proxy group companies (*i.e.*, utilities with risk profiles that are similar to the Company's risk profile); and (2) below the average equity ratios authorized for vertically-integrated electric and natural gas utilities across the U.S.

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[185] S&P Capital IQ Pro; data through August 15, 2024.

[186] *Id.*

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1 over the past three years. Further, while I disagree with the approach supported by

2 Parcell and Dr. Woolridge to compare the Company's proposed equity ratio to the

3 average equity ratios of the proxy group holding companies, if that analysis is done

4 correctly, it also demonstrates that, contrary to their conclusions, the Company's

5 proposed equity ratio is well below those of the proxy group and thus reasonable.

XIV. CONCLUSION

7 **Q. Does this conclude your prefiled rebuttal testimony?**

8 A.   Yes.