

Exh. AEB-15T
Docket UE-230172
Witness: Ann E. Bulkley

**BEFORE THE WASHINGTON
UTILITIES AND TRANSPORTATION COMMISSION**

WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION,

Complainant,

v.

PACIFICORP dba
PACIFIC POWER & LIGHT COMPANY

Respondent.

Docket UE-230172
(Consolidated)

In the Matter of

ALLIANCE OF WESTERN ENERGY
CONSUMERS'

Petition for Order Approving Deferral of
Increased Fly Ash Revenues

Docket UE-210852
(Consolidated)

PACIFICORP

REBUTTAL TESTIMONY OF ANN E. BULKLEY

October 2023

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	SUMMARY OF ANALYSES AND CONCLUSIONS	3
III.	CAPITAL MARKET CONDITIONS AND A COMPARABLE RETURN	9
IV.	UPDATED COST OF EQUITY ANALYSES.....	22
V.	PROXY GROUP	24
VI.	CONSTANT GROWTH DCF	26
	A. Growth Rate	27
	B. Intervenor Criticisms	38
VII.	CAPM	42
	A. Market Risk Premium	44
	B. Unadjusted Betas	54
	C. Intervenor Criticisms	55
VIII.	ECAPM.....	63
IX.	RISK PREMIUM.....	70
X.	COMPARABLE EARNINGS / EXPECTED EARNINGS	78
XI.	BUSINESS AND REGULATORY RISKS.....	81
XII.	CAPITAL STRUCTURE	84

ATTACHED EXHIBITS

Exhibit No. AEB-16—Summary of Results
Exhibit No. AEB-17—Constant Growth DCF Model
Exhibit No. AEB-18—Capital Asset Pricing Model
Exhibit No. AEB-19—Long-term Beta Analysis
Exhibit No. AEB-20—Market Return Calculation
Exhibit No. AEB-21—Risk Premium Approach
Exhibit No. AEB-22—Expected Earnings Analysis
Exhibit No. AEB-23—Adjusted Witness Woolridge DCF Analysis Reflecting Projected EPS Growth Rates
Exhibit No. AEB-24—Adjusted Witness Parcell CAPM Analysis
Exhibit No. AEB-25—Market Value Debt and Equity Ratios of the Proxy Group

1 **I. INTRODUCTION**

2 **Q. Are you the same Ann E. Bulkley who previously submitted direct testimony in**
3 **this proceeding?**

4 A. Yes. I am submitting this rebuttal testimony before the Washington Utilities and
5 Transportation Commission (Commission) on behalf of the PacifiCorp d/b/a Pacific
6 Power & Light Company (PacifiCorp or the Company).

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

8 A. The purpose of my rebuttal testimony is to respond to the direct testimonies of
9 witness David C. Parcell on behalf of the Staff of the Commission (Staff),¹ witness J.
10 Randall Woolridge on behalf of the Washington State Office of the Attorney General
11 Public Counsel Unit (Public Counsel),² witness Lance D. Kaufman on behalf of the
12 Alliance of Western Energy Consumers (AWEC),³ and witness Alex J. Kronauer on
13 behalf of Walmart, Inc.⁴ regarding the just and reasonable return on equity (ROE) and
14 the appropriate capital structure for the Company. Given that witness Kronauer does
15 not provide an ROE recommendation, my response to their testimony is limited.
16 Further, I have not attempted to respond to every position offered by these witnesses,
17 and the fact that I may not have responded to any particular position or statement
18 made by these witnesses does not indicate my agreement with that position or
19 statement.⁵

¹ Parcell, Exhibit (Exh.) DCP-1T.

² Woolridge, Exh. JRW-1T.

³ Kaufman, Exh. LDK-1CT.

⁴ Kronauer, Exh. AJK-1T.

⁵ Unless personal pronouns are specified by a witness in their testimony, in my rebuttal testimony I use “they/them” when using a pronoun to refer to a witness.

1 **Q. Are you sponsoring any exhibits as part of your rebuttal testimony?**

2 A. Yes. I am sponsoring Exhibit Nos. AEB-16 through AEB-25, which have been
3 prepared by me or under my direct supervision.

4 **Q. Have you updated the cost of equity analyses that you presented in your direct**
5 **testimony to reflect current market conditions?**

6 A. Yes. As discussed in more detail herein, I have updated my cost of equity analyses
7 based on market data through September 30, 2023. The results of my updated
8 analyses demonstrate that the cost of equity has increased since the filing of my direct
9 testimony. However, since the filing of its application in this proceeding, the
10 Company has revised its requested ROE to 10.00 percent. The results of my updated
11 cost of equity analyses demonstrate that the Company's revised proposal is
12 conservative. My conclusion that the Company's requested ROE is reasonable
13 continues to be based on not only the results of multiple cost of equity models, but
14 also other factors, including capital market conditions, the capital attraction and
15 comparable return standards, and the Company's specific risks.

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

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

- 18 • Section II provides a summary and overview of my rebuttal testimony and the
19 important factors to be considered in establishing the authorized ROE for the
20 Company.
- 21 • Section III discusses the changes in capital market conditions since my direct
22 testimony, their effect on the cost of equity, and the comparable return.
- 23 • Section IV provides the update to my cost of equity analyses based on market data
24 as of September 30, 2023.

- 1 • Section V provides my response to the issues raised by the parties regarding the
2 proxy group.
- 3 • Section VI provides my response to the issues raised by the parties regarding the
4 constant growth Discounted Cash Flow (DCF) model.
- 5 • Section VII provides my response to the issues raised by the parties regarding the
6 Capital Asset Pricing Model (CAPM) analysis.
- 7 • Section VIII provides my response to the issues raised by the parties regarding the
8 Empirical Capital Asset Pricing Model (ECAPM) analysis.
- 9 • Section IX provides my response to the issues raised by the parties regarding the
10 Risk Premium analysis.
- 11 • Section X provides my response to the issues raised by the parties regarding the
12 Comparable Earnings / Expected Earnings analysis.
- 13 • Section XI provides my response to the issues raised by the parties regarding the
14 business and regulatory risks of the Company.
- 15 • Section XII provides my response to certain issues raised by the parties regarding
16 the Company's proposed capital structure.

17 **II. SUMMARY OF ANALYSES AND CONCLUSIONS**

18 **Q. What analyses do witness Parcell, witness Woolridge, witness Kaufman, and**
19 **witness Kronauer conduct, and what ROEs are each recommending for the**
20 **Company in this proceeding?**

21 A. Figure 2 summarizes the respective cost of equity model results and ROE
22 recommendations of these witnesses.

Figure 1: Summary of Cost of Equity Analytical Results

	Mr. Parcell (Staff)	Dr. Woolridge (Public Counsel)	Mr. Kaufman (AWEC)	Mr. Kronauer (Walmart)
Constant Growth DCF	9.60% - 9.90%	9.30% - 9.40%	8.79% - 9.54%	n/a
CAPM	9.70% - 9.80%	9.15% - 9.25%	8.00% - 9.02%	n/a
ECAPM	n/a	n/a	8.77% - 9.53%	n/a
Comparable Earnings	9.00% - 9.50%	n/a	n/a	n/a
Risk Premium	10.00% - 10.50%	n/a	n/a	n/a
Overall Recommendation	9.50%	9.25%	9.00%	n/a

1 Witness Parcell indicates that the range established by their cost of equity
2 analyses is from 9.50 percent to 10.00 percent. The witness recommends an ROE for
3 the Company at the low end of their range at 9.50 percent because they contend this
4 recognizes the risk-reducing attributes of the multi-year rate plan (MYRP) required
5 by SB 5295, as well as the Commission’s long-standing principle of gradualism.⁶
6 Witness Parcell does not indicate how gradualism is achieved by recommending an
7 ROE that is consistent with the Company’s authorized ROE established in a lower
8 overall cost of capital environment than exists in current market conditions.

9 Witness Woolridge suggests that the cost of equity is in the range of 9.15
10 percent to 9.40 percent, and within that range recommends an ROE of 9.25 percent,
11 suggesting that the Company has a lower investment risk level relative to the proxy
12 group companies.⁷

13 Witness Kaufman recognizes that the Company’s currently authorized ROE is
14 9.50 percent; however, the witness recommends a range from 8.50 percent to 9.50

⁶ Parcell, Exh. DCP-1T at 4:19-5:2.

⁷ Woolridge, Exh. JRW-1T at 4:16-4:19.

1 percent and an ROE of 9.00 percent, which is the midpoint of their range. Witness
2 Kaufman suggests that a reduction to the currently authorized ROE is warranted due
3 to investor behavior, which they suggest demonstrates that utilities are accumulating
4 excessive capital and equity.⁸

5 As noted, witness Kronauer does not estimate the cost of equity for the
6 Company using any of the traditional estimation methodologies, but rather evaluates
7 average authorized ROEs for vertically integrated electric utilities nationally from
8 2020 through thus far in 2023.⁹

9 **Q. What factors should be considered in evaluating the results of the cost of equity**
10 **analyses and establishing the authorized ROE?**

11 A. The primary factors that should be considered are: (1) the importance of investors'
12 actual return requirements and the critical role of judgment in selecting the
13 appropriate ROE; (2) the importance of providing a return that is comparable to
14 returns on alternative investments with commensurate risk; (3) the need for a return
15 that supports a utility's ability to attract needed capital at reasonable terms; and (4)
16 the effect of current and expected capital market conditions; and (5) achieving a
17 reasonable balance between the interests of investors and customers.

18 **Q. What are your key conclusions and recommendations regarding the appropriate**
19 **ROE and capital structure for the Company?**

20 A. Nothing in the testimonies of witness Parcell, witness Woolridge, witness Kaufman,
21 or witness Kronauer have caused me to change my recommendations. Based on my

⁸ Kaufman, Exh. LDK-1CT, at 3:2-20.

⁹ Kronauer, Exh. AJK-1T at 11:13-12:7.

1 review of these witnesses' testimonies, my key conclusions regarding the Company's
2 proposed ROE and capital structure are as follows:

- 3 • Updating the cost of equity estimation models that I relied upon in my direct
4 testimony to reflect the most current data demonstrates that the cost of equity has
5 increased since the filing of my direct testimony, while the Company has lowered
6 its requested ROE to 10.00 percent. Accordingly, the results of my analyses
7 demonstrate that the Company's requested ROE in this proceeding is
8 conservative.
- 9 • The Company's existing authorized ROE of 9.50 percent was part of a settlement
10 that was approved by the Commission in 2020.¹⁰ However, over the past 22
11 months, interest rates have increased significantly, increasing the cost of equity
12 for utilities.
- 13 • The increase in the cost of equity has also been reflected in higher authorized
14 ROEs for vertically integrated electric utilities over this period. Witness Parcell,
15 witness Woolridge, and witness Kronauer each acknowledge that authorized
16 ROEs for electric utilities in general, and specifically vertically integrated electric
17 utilities, have increased meaningfully since 2021.
- 18 • While I disagree with various aspects of the cost of equity models conducted by
19 the other witnesses in this proceeding, the fundamental issue is that the ROE
20 recommendations of witness Parcell (9.50 percent), witness Woolridge (9.25
21 percent), and witness Kaufman (9.00 percent) are directionally inconsistent with
22 the ROE authorized in the Company's last rate proceeding given current market
23 conditions demonstrate an increase – not decrease – in the cost of equity.
 - 24 ○ I disagree with witness Parcell that their recommendation reflects
25 gradualism. Their proposed ROE requires that the Commission ignore the
26 changes in capital costs based on current market conditions, which is not
27 consistent with the principle of gradualism.
 - 28 ○ Many of the cost of equity model results that witness Kaufman considers
29 in developing their ROE recommendation are well below or at the low end
30 of any authorized ROE for a vertically integrated electric utility in a
31 jurisdiction with a comparable regulatory framework as Washington over
32 at least the last 40 years.¹¹

¹⁰ See *WUTC v. PacifiCorp, dba Pac. Power & Light Co.*, Docket No. UE-191024, et al., Order 09/07/12 at ¶ 163 (Dec. 14, 2020).

¹¹ As described herein, these approaches include: (1) witness Kaufman's constant growth DCF that relies on their own analysis of historical EPS growth rates using a Monte Carlo simulation; (2) their CAPM analysis that relies on their derivation of unadjusted betas for the proxy group; and (3) their ECAPM analysis that also relies on their derivation of unadjusted betas for the proxy group.

- 1 ○ While witness Woolridge’s recommendation is higher than their
2 recommendation in the Company’s last rate proceeding, it continues to be
3 based solely on their judgment with respect to the growth rate used in the
4 DCF model, and does not directly reflect analysts’ expectations.
- 5 ● Capital market conditions that have led to an increase in the cost of equity are
6 expected to remain during the period in which the Company’s rates will be in
7 effect.
- 8 ○ Interest rates are expected to remain elevated through at least 1Q/2025.
- 9 ○ Given that Treasury bond yields remain well above utility bond yields,
10 analysts expect utility stocks to continue to underperform, which would
11 mean that current DCF results are likely understated.

12 Capital Structure

- 13 ● The Company’s proposed equity ratio is reasonable as compared to both the
14 actual equity ratios of the utility subsidiaries of the proxy group companies and
15 the authorized equity ratios for other vertically integrated electric utilities.
16 Specifically, the Company’s proposed equity ratio is:
- 17 ○ below the average actual equity ratio of the utility subsidiaries of the
18 proxy group companies (*i.e.*, utilities with risk profiles that are similar to
19 the Company’s risk profile); and
- 20 ○ well within the range of equity ratios authorized for vertically integrated
21 electric utilities across the U.S. in the past ten years, and thus are
22 reasonable.
- 23 ● While I disagree with the approach supported by witness Woolridge that
24 compares the Company’s proposed equity ratio to the average equity ratios of the
25 proxy group holding companies, if that analysis is performed correctly, it also
26 demonstrates that the Company’s proposed equity ratio is reasonable.

1 **Q. Witness Kronauer estimates the customer impact associated with moving from**
2 **the Company's existing authorized ROE to its initially proposed ROE (which, as**
3 **noted has been subsequently reduced), and states that the Commission should**
4 **consider the impact of the Company's proposed ROE on its customers.¹² Do you**
5 **agree?**

6 A. As noted, I agree that one of the factors the Commission should consider in
7 establishing the authorized ROE in this proceeding is to achieve a reasonable balance
8 between the interests of investors and customers. However, to the extent witness
9 Kronauer is suggesting the Commission should authorize an ROE that is lower than
10 the level at which the Commission may otherwise do so in order to address customer
11 impact and affordability issues, I do not agree that would be reasonable or
12 appropriate. Any concerns regarding customer impacts and affordability can be
13 addressed through various regulatory mechanisms (*e.g.*, low-income assistance
14 programs), but should not be reflected through the authorization of the ROE.
15 Establishing an authorized ROE that reflects investors' required return requirements,
16 that is comparable to returns on alternative investments with commensurate risk, and
17 supports the continued ability to attract needed capital at reasonable terms, facilitates
18 the financial health and stability of the utility, which is beneficial for both investors
19 and customers. In other words, the ROE should be authorized on the basis of the
20 market-derived investor-required return based on the circumstances prevailing at the
21 time rates are established, while issues concerning affordability can and should be

¹² Kronauer, Exh. AJK-1T at 9:5-13; *id.* at 14:11-13.

1 addressed in other aspects of the rate request. While this is the case, I note that the
2 Company has reduced its requested ROE to 10.00 percent, which does reflect
3 consideration of affordability.

4 **III. CAPITAL MARKET CONDITIONS AND A COMPARABLE RETURN**

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. Since the Company's last rate proceeding in 2020, changes in market conditions
8 have increased the cost of equity. Specifically, as shown in Figure 4 of my direct
9 testimony, interest rates have increased significantly since that time as a result of the
10 Federal Reserve's fight against inflation. In fact, long-term interest rates have
11 increased even further since my direct testimony was filed, with the 30-year Treasury
12 bond yield just reaching a high of 4.81 percent on October 2, 2023, a level at which it
13 had not reached since 2010.¹³ Specifically, as shown in Exhibit No. AEB-7 of my
14 direct testimony, the 30-day average yield on the 30-year Treasury bond was 3.71
15 percent as of January 31, 2023; however, as shown in Exhibit No. AEB-18, that has
16 increased to 4.42 percent as of September 30, 2023.

17 Moreover, according to the Federal Reserve's most recent Summary of
18 Economic Projections, the federal funds rate is expected to remain elevated through at
19 least 2025, and the most recent *Blue Chip Financial Forecasts* report indicates that
20 the consensus estimate of the average yield on the 30-year Treasury bond is at least
21 4.0 percent through 1Q/2025, meaning long-term interest rates are expected to remain

¹³ Elizabeth Stanton. *Bond Rout Lifts US Yields to Multiyear Highs to Open New Quarter*, Bloomberg (Oct. 2, 2023); <https://www.yahoo.com/finance/news/bond-rout-lifts-us-yields-163714204.html>.

1 elevated for at least the next 18 months.¹⁴ Further, while inflation has receded from its
2 recent peak in mid-2022, it continues to be above the Federal Reserve’s target level,
3 and the reduction that has occurred has largely been due to the significant increases in
4 the federal funds rate in 2022 and thus far in 2023, as the Federal Open Market
5 Committee (FOMC) has continued to increase interest rates to reduce inflationary
6 pressure.

7 **Q. What has witness Parcell claimed regarding the cost of capital for utilities in**
8 **recent years?**

9 A. Witness Parcell contends that the cost of capital for utilities has declined in recent
10 years, and thus it is not surprising that average authorized ROEs have also declined.¹⁵

11 **Q. Do you agree with Witness Parcell’s assessment?**

12 A. No. Witness Parcell’s discussion relates broadly to the period after the financial crisis
13 of 2008, and fails to acknowledge that the cost of equity has increased since 2021 as a
14 result of the relatively high inflation and increasing interest rates. In addition, witness
15 Parcell’s own testimony indicates authorized ROEs for electric utilities have
16 increased during this time,¹⁶ which also contradicts their suggestion that the average
17 authorized ROEs have declined.

¹⁴ Blue Chip Financial Forecasts. Vol. 42, No. 10, Oct. 2, 2023, at 2.

¹⁵ Parcell, Exh. DCP-1T at 16:6-10.

¹⁶ *See id.*, at 11.

1 **Q. Do the ROE recommendations of witness Parcell, witness Woolridge, and**
2 **witness Kaufman appropriately reflect the change in market conditions since the**
3 **completion of the Company’s last rate proceeding in 2020?**

4 A. No. In the Company’s last rate proceeding, the Commission approved a settlement
5 agreement authorizing an ROE of 9.50 percent. Given the recent changes in market
6 conditions just discussed that indicate an increase in the cost of equity since that time,
7 it would be reasonable to conclude that the ROE should exceed 9.50 percent in the
8 current proceeding. However, despite an increase in the cost of equity, witness Parcell
9 recommends an ROE that is the same as the Company’s existing authorized ROE,
10 even though the witness acknowledges that “interest rates have increased in recent
11 months,” and shows that authorized ROEs for vertically integrated electric utilities
12 have also increased.¹⁷ Even more contrary to the increase in the cost of equity,
13 witness Woolridge and witness Kaufman recommend 25 basis point and 50 basis
14 point reductions, respectively, to the Company’s existing ROE.

15 **Q. Witness Parcell states that their ROE recommendation, which is at the low end**
16 **of their range of 9.50 percent to 10.00 percent, is consistent with the**
17 **Commission’s practice of employing “gradualism.”¹⁸ Is this reasonable?**

18 A. No. There is no basis for a “gradual” reduction in the Company’s ROE as suggested
19 by witness Parcell’s placement of their recommended ROE at the low end of their
20 range given the current and prospective market conditions, which the witness has
21 acknowledged, clearly indicate an increase in the cost of equity for utilities.

¹⁷ *Id.*, at 16:19-20 and 11:13-21.

¹⁸ *Id.*, at 4:19-5:2.

1 **Q. What are the expectations for inflation and interest rates over the near-term?**

2 A. The Federal Reserve has indicated that it expects inflation will remain elevated above
3 its target level over at least the next year and that monetary policy will remain
4 restrictive to reduce inflation. For example, Federal Reserve Chair Powell at the
5 FOMC meeting in September 2023 observed that while inflation is off of its recent
6 highs, it remains significantly above the Federal Reserve's long-term target and noted
7 that further policy firming is possible including additional increases in the federal
8 funds rate:

9 Inflation remains well above our longer-run goal of 2 percent. Based
10 on the Consumer Price Index, or CPI, and other data, we estimate
11 that total PCE prices rose 3.4 percent over the 12 months ending in
12 August; and that, excluding the volatile food and energy categories,
13 core PCE prices rose 3.9 percent. Inflation has moderated somewhat
14 since the middle of last year, and longer-term inflation expectations
15 appear to remain well anchored, as reflected in a broad range of
16 surveys of households, businesses, and forecasters, as well as
17 measures from financial markets. Nevertheless, the process of
18 getting inflation sustainably down to 2 percent has a long way to go.
19 The median projection in the SEP for total PCE inflation is 3.3
20 percent this year, falls to 2.5 percent next year, and reaches 2 percent
21 in 2026.¹⁹

22 At the September 2023 FOMC meeting, Chair Powell also noted that the
23 current estimates of FOMC participants suggest that monetary policy will be more
24 restrictive for longer as compared to those same estimates as of the June 2023 FOMC
25 meeting.²⁰ The Federal Reserve is currently forecasting an additional 25 basis point
26 increase in the federal funds rate in 2023. Given the expectation that the Federal
27 Reserve is expecting monetary policy remain restrictive over the next few years,

¹⁹ Transcript of Chair Powell's Press Conference at 2, Federal Reserve (Sept. 20, 2023),
<https://www.federalreserve.gov/mediacenter/files/FOMCpresconf20230920.pdf>

²⁰*Id.*, at 3.

1 yields on long-term government bonds are also expected to remain elevated over the
2 near-term.

3 **Q. What has witness Woolridge stated regarding interest rate expectations and the**
4 **threat of recession?**

5 A. Witness Woolridge states that the yield curve is currently inverted and that “the
6 prospect of a recession is likely, which would lead to lower interest rates.”²¹

7 **Q. Is there significant evidence indicating that witness Woolridge’s contention of an**
8 **impending recession and a decline in interest rates is inaccurate?**

9 A. Yes. One of the primary indicators of a recession is two consecutive quarters of
10 negative GDP growth; however, there are multiple indicators that suggest Witness
11 Woolridge is incorrect.

- 12 • Witness Woolridge’s contention is contrary to the forecasts of both the Federal
13 Reserve and other market analysts.
 - 14 ○ The Federal Reserve is not forecasting a recession over the near-term, and
15 in fact expectations of future growth in real GDP have increased for 2023
16 and 2024.²²
 - 17 ○ As reported by *Blue Chip Financial Forecasts*, analysts’ consensus
18 estimates of real GDP growth are expected to be positive through
19 4Q/2024.²³
 - 20 ○ Similarly, the Federal Reserve Bank of Philadelphia has also recently
21 stated that, “[t]he U.S. economy for the next three quarters looks stronger
22 now than it did three months ago,” that its panel predicts real GDP will
23 grow at an annual rate of 1.9 percent this quarter, up from the prediction of
24 0.6 percent in the last survey,” and that, “[u]sing the annual-average over
25 annual-average computation, the forecasters expect real GDP to grow at

²¹ Woolridge, Exh. JRW-1T at 16:17-18.

²² FOMC, *Summary of Economic Projections*, Sept. 20, 2023, Table 1 , available at <https://www.federalreserve.gov/monetarypolicy/files/fomcprojtab120230920.pdf>.

²³ Blue Chip Financial Forecasts. Vol. 42, No. 9, Sept. 1, 2023.

1 an annual rate of 2.1 percent in 2023 and 1.3 percent in 2024,” which is
2 higher than the previous quarterly estimate.²⁴

- 3 • As noted, economists are projecting long-term interest rates to remain elevated
4 over the next several years, not decline as would be expected in a recession.
- 5 • A recent Barron’s article has cautioned against relying on recession forecasts
6 based on historical norms given that corporate sector debt has changed
7 significantly since the financial crisis of 2008/09 resulting in a more resilient
8 economy.²⁵
 - 9 ○ According to Barron’s, companies are currently relying less on short-term
10 debt and more on long-term debt, which means they have been less
11 affected by the recent significant increase in short-term interest rates.²⁶
 - 12 ○ Further, a significant portion of the long-term debt matures after 2028;
13 therefore, to a certain extent, companies have also been able to avoid
14 issuing long-term debt at the current higher long-term interest rates.²⁷
15 Therefore, interest expense has not reduced corporate profits as it may
16 have in the past.
- 17 • For the third time in three months, Goldman Sachs has again just recently lowered
18 the probability that the U.S. economy will enter a recession in the next year.
19 Goldman Sachs currently places the probability of a recession at just 15 percent.²⁸

20 **Q. How have utility stocks performed in 2023?**

21 A. Utility stocks underperformed the broader market in the second half of 2022 and in
22 2023, as Treasury bond yields have increased and risen to levels greater than the
23 dividend yields of utility stocks. For example, State Street Global Advisors has an
24 exchange-traded fund for each of the 11 sectors of the S&P 500, and of these sectors,
25 the utilities sector is the worst-performing year-to-date by a wide margin (*e.g.*, 14.00

²⁴ *Third Quarter 2023 Survey of Professional Forecasters*. Philadelphia Federal Reserve (Aug. 11, 2023),
<https://www.philadelphiafed.org/surveys-and-data/real-time-data-research/spf-q3-2023>.

²⁵ Stephen Dover, *The Fed’s Rate Hikes Were Supposed to Kill Corporate Profits. Why They Didn’t*, Barron’s
(Aug. 29, 2023); <https://www.barrons.com/articles/shifts-in-corporate-debt-economic-resilience-eedccf51>.

²⁶ *Id.*

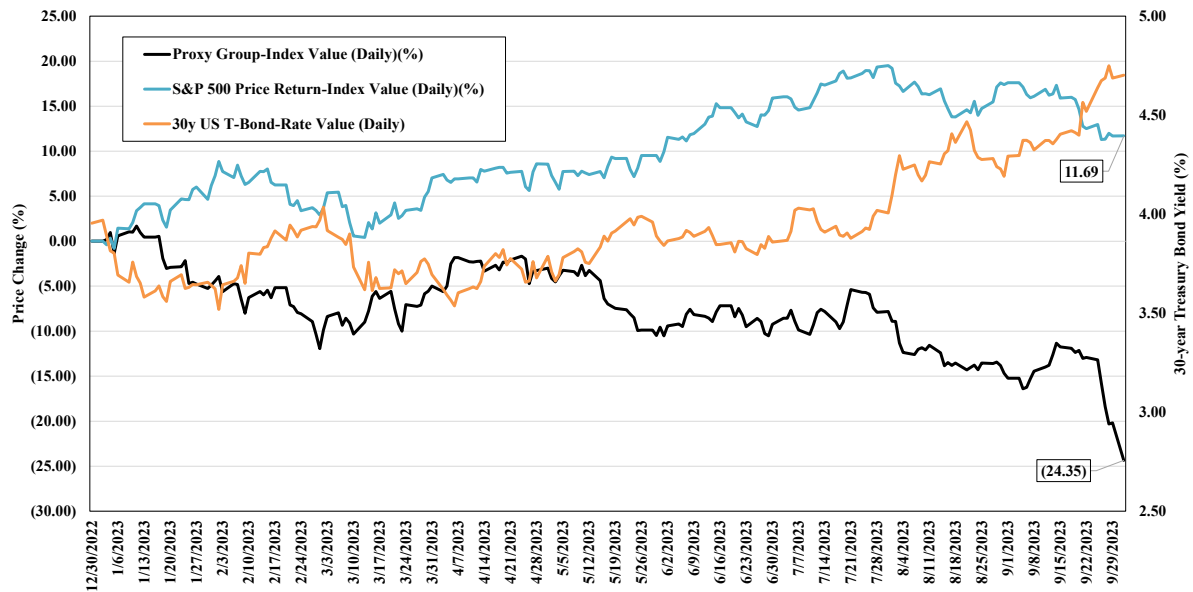
²⁷ *Id.*

²⁸ Josh Schafer, *Goldman Sachs lowers recession chances to 15%*, Reuters (Sept. 5, 2023);
<https://www.reuters.com/markets/us/goldman-sachs-cuts-chances-us-recession-next-one-year-15-2023-09-05/>.

1 percent return for the S&P 500 Index compared to a negative 15.52 percent return for
 2 the Utilities sector).²⁹ In fact, on October 2, 2023, the utilities sector dropped by 4.7
 3 percent, its single highest one-day percentage decline since April 2020.³⁰

4 Similarly, as shown in Figure 2, since January 2023, the share prices for the
 5 companies included in my proxy group declined by over 24 percent while the yield on
 6 the 30-year Treasury bond has increased 77 basis points.

Figure 2: Relative Performance of the Proxy Group and the S&P 500, January 1, 2023 – October 2, 2023³¹



²⁹ Sector Tracker, Select Sectors SPDRs, <https://www.sectorspdrs.com/sectortracker>. (select “YTD” performance comparison) (last accessed Oct. 12, 2023).

³⁰ Caroline Valetkevich, *S&P 500 ends near flat; utilities drop, focus on rate outlook*, Reuters (Oct. 2, 2023), [https://www.reuters.com/markets/us/futures-rise-us-congress-averts-govt-shutdown-2023-10-02/#:~:text=NEW%20YORK%2C%20Oct%20%20\(Reuters.and%20shares%20of%20Nvidia%20\(NVDA](https://www.reuters.com/markets/us/futures-rise-us-congress-averts-govt-shutdown-2023-10-02/#:~:text=NEW%20YORK%2C%20Oct%20%20(Reuters.and%20shares%20of%20Nvidia%20(NVDA).

³¹ S&P Capital IQ Pro, S&P Global.

1 **Q. Witness Kaufman states that there is no fixed relationship between utility stock**
2 **prices and interest rates and that you did not test for their correlation.³² What**
3 **has been the relationship of utility stock prices and interest rates in Figure 2?**

4 A. The correlation between the daily changes in share prices of the companies in my
5 proxy group and the yield on the 30-year Treasury bond since January 2023 is
6 negative 0.84. This indicates that the share prices of the companies in my proxy group
7 and the yield on the 30-year Treasury bond are highly inversely correlated (*i.e.*, as the
8 yield on the 30-year Treasury bond increases, the share prices of my proxy group
9 companies decrease, and vice versa). This finding is consistent with the analysis
10 conducted by Goldman Sachs and Deutsche Bank referenced in my direct testimony
11 that showed utilities have one of the strongest negative relationships with bond yields.

12 **Q. Given that interest rates are expected to remain elevated, what are equity**
13 **analysts' current expectations of the performance of the utilities sector over the**
14 **near term?**

15 A. Equity analysts continue to project that utilities will underperform the broader market
16 given the substantial increases in interest rates. For example, Fidelity continues to
17 classify the utility sector as underweight³³ and Bank of America (BoA) recently noted
18 that they are “not so constructive on [u]tilities” given that the dividend yields for
19 utilities are below both the yields available on long- and short-term treasury bonds.³⁴

³² Kaufman, Exh. LDK-1CT at 26:9-11.

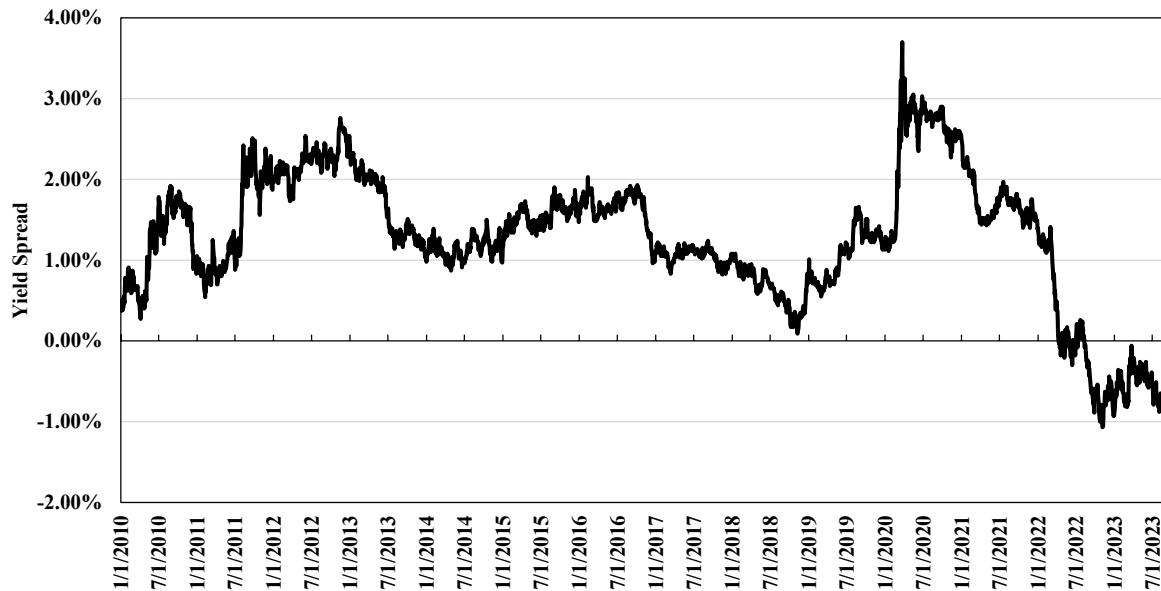
³³ *Investment Research Update: Third Quarter 2023*, Fidelity (July 24, 2023); (available at https://institutional.fidelity.com/app/item/RD_9906885/investment-research-update-third-quarter-2023.html).

³⁴ Julien Dumoulin-Smith, et. al., US Electric Utilities & IPPs: As the leaves fall, preparing for Autumn utility outlook. Macro still has potholes, BofA Securities (Sept. 6, 2023).

1 **Q. Does the spread between the dividend yields of utility stocks and the yield on**
2 **long-term government bonds indicate that utility stocks will continue to**
3 **underperform the overall market?**

4 A. Yes. As noted in my direct testimony, the yield on government bonds exceeded the
5 dividend yield on utility stocks, and that not only continues to be the case, but the
6 spread has increased since the filing of my direct testimony. Specifically, the yield
7 spread cited in my direct testimony as of January 31, 2023, was negative 0.49 percent,
8 meaning that the yield on the 10-year Treasury bond exceeded the dividend yield for
9 the S&P Utilities Index by that amount. However, as of September 30, 2023, the yield
10 spread has only further widened to negative 0.92 percent, and remains even further
11 below the long-term average. Given that yields on government bonds are more
12 attractive than utility stocks and interest rates are expected to remain relatively high
13 for at least the next year, it is reasonable to expect that the utility sector will continue
14 to underperform the market over the near term.

Figure 3: Spread between the S&P Utilities Index Dividend Yield and the 10-year Treasury Bond Yield, January 2010 to September 2023³⁵

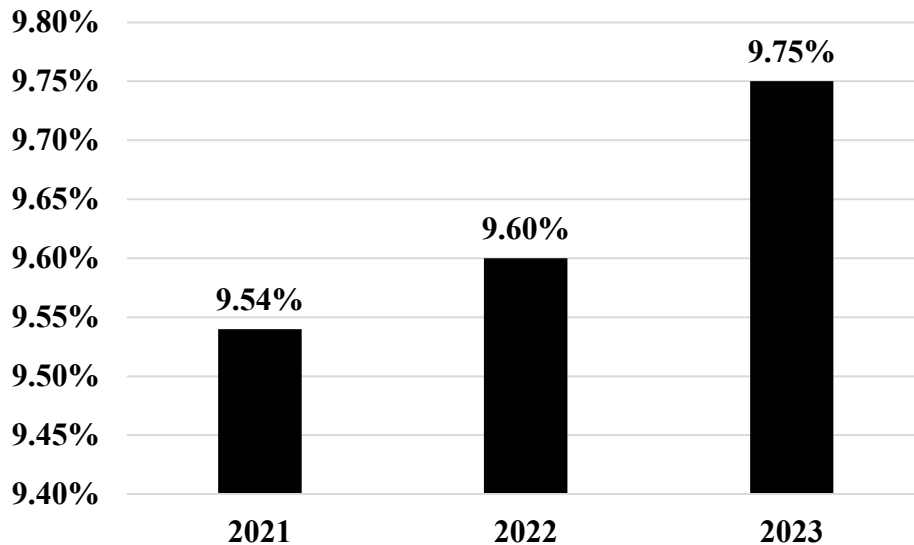


- 1 **Q. Have average authorized ROEs for vertically integrated electric utilities**
 2 **nationally been increasing consistent with the increase in interest rates since the**
 3 **beginning of 2021?**
- 4 **A. Yes. As shown in Figure 4, which reflects data provided in witness Kronauer’s**
 5 **testimony, the average authorized ROE for vertically integrated utilities has increased**
 6 **from 2021 to 2022 and thus far in 2023 consistent with the increase in interest rates.³⁶**

³⁵ S&P Capital IQ Pro and Bloomberg Professional.

³⁶ See Kronauer, Exh. AJK-1T at 12:15-16.

Figure 4: Average Authorized ROEs for Vertically Integrated Electric Utilities³⁷



1 **Q. Why do you rely on the average authorized ROEs for vertically integrated**
2 **electric utilities instead of all electric utilities?**

3 A. The most appropriate comparable group to the company is the vertically integrated
4 electric utilities because the Company is a vertically integrated electric utility.
5 Therefore, the operations of these companies most closely matches the risk profile of
6 the Company. Witness Parcell, witness Woolridge, and witness Kronauer also each
7 acknowledge that there has been an increase in the authorized ROEs for electric
8 utilities generally (*i.e.*, both vertically integrated electric utilities as well as
9 transmission and distribution-only utilities that do not own generation) since 2021 as
10 well.³⁸

³⁷ *Id.*

³⁸ Parcell, Exh. DCP-1T at 11:13-21; Woolridge, Exh. JRW-1T at 17, table 3; Kronauer, Exh. AJK-1T at 12:15-16. Note, Dr. Woolridge and Mr. Kronauer consider authorized ROEs thus far in 2023, while Mr. Parcell fails to include any authorized ROEs in 2023.

1 **Q. Are the ROE recommendations of witness Parcell, witness Woolridge, and**
2 **witness Kaufman consistent with the trend in capital market conditions,**
3 **increasing utility cost of equity, and increased authorized ROEs for vertically**
4 **integrated electric utilities?**

5 A. No. The ROE recommendations of witness Parcell (9.50 percent), witness Woolridge
6 (9.25 percent), and witness Kaufman (9.00 percent) are all directionally inconsistent
7 with the trend of increasing interest rates and increasing authorized ROEs. Given that
8 the ROE recommendations specifically of witness Woolridge and witness Kaufman
9 would be at the low-end of returns that have been authorized even in a much lower
10 interest rate environment such as in 2020 and 2021, it is apparent that their
11 recommendations in this proceeding are unreasonable and inconsistent with the
12 comparable return standard.

13 **Q. Witness Parcell compares their proposed ROE and equity ratio in this**
14 **proceeding to the ROEs and equity ratios approved by the Commission in the**
15 **last rate proceedings for Avista Corp. (Avista) and Puget Sound Energy (PSE).³⁹**
16 **Do those prior Commission decisions support witness Parcell's**
17 **recommendations in this proceeding as they have implied?**

18 A. No. While witness Parcell states that their proposed ROE of 9.50 percent and
19 proposed equity ratio of 49.10 percent are consistent with what was approved by the
20 Commission in the settlements in Avista's and PSEs most recent rate proceedings,
21 witness Parcell fails to acknowledge a critical differentiating factor. Specifically, the

³⁹ Parcell, Exh. DCP-1T at 58:1-10.

1 ROEs and equity ratios established in those proceedings were based on market
2 conditions and cost of equity estimates that are substantially different than the
3 circumstances in the current proceeding.

4 In the Avista proceeding, the cost of equity estimates filed by the Company
5 were based on data as of the end of November 2021 and the procedural schedule was
6 suspended in June 2022 prior to any additional testimony being filed based on the
7 settlement reached by the parties.⁴⁰ As a result, the cost of equity estimates in that
8 proceeding were based on data prior to the substantial increase in interest rates that
9 began in March 2022 and has continued to increase since that time. Likewise, in the
10 PSE rate proceeding, the data used to estimate the cost of equity reflected in the
11 Company's application was also as of the end of November 2021 and was
12 subsequently updated as of the end of July 2022.⁴¹ Public Counsel, which opposed the
13 settlement in that proceeding, based its ROE recommendation on data as of June
14 2022.⁴² As discussed, market conditions have changed substantially since early and
15 mid-2022 and that has increased the cost of equity. Therefore, witness Parcell's
16 suggestion that it is reasonable that the ROE and equity ratio approved in this rate
17 proceeding should be similar to what was approved by the Commission in Avista's
18 and PSE's prior rate proceedings means that the Commission should ignore the
19 changes in market conditions since that time, which is unreasonable.

⁴⁰ *WUTC v. Avista Corp.*, Docket No. UE-220053 et al., Exh. AMM-3 at 20:11 (Jan. 25, 2022); *see also id.*, Notice Adopting Agreed Procedural Schedule and Notice of Hearing (Jun. 22, 2022).

⁴¹ *WUTC v. Puget Sound Energy, Inc.*, Docket No. UE-220066 et al., Exh. CGP-AEB-TAS-1T at 17:2-8 (Aug. 26, 2022).

⁴² *See WUTC v. Puget Sound Energy, Inc.*, Docket No. UE-220066 et al., Exh. JRW-1T at 13:19-14:4 (July 28, 2022).

1 **IV. UPDATED COST OF EQUITY ANALYSES**

2 **Q. Have you updated your cost of equity analyses?**

3 A. Yes. I have updated the results of the cost of equity analyses based on market data
4 through September 30, 2023, using the same analyses as in my direct testimony.

5 **Q. Have you adjusted the proxy group that was relied upon in your direct**
6 **testimony?**

7 A. Yes. I have now excluded Otter Tail Corporation (OTTR) since it derives less than 60
8 percent of its total operating income from regulated electric operations when the
9 period of 2020 through 2022 is considered, and I have included Pinnacle West Capital
10 Corporation (PNW) since the company currently has positive growth rates from at
11 least two equity analysts and thus meets all of my screening criteria.

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

13 A. Figure 5 summarizes the results of my updated cost of equity analyses as of
14 September 30, 2023 (see also Exhibit No. AEB-16 through Exhibit No. AEB-22).

Figure 5: Updated Model Results

<i>Constant Growth DCF</i>			
	Mean Low	Mean	Mean High
30-Day Average	9.02%	10.17%	11.15%
90-Day Average	8.86%	10.01%	10.98%
180-Day Average	8.76%	9.91%	10.88%
Average	8.88%	10.03%	11.00%
	Median Low	Median	Median High
30-Day Average	9.45%	10.12%	11.22%
90-Day Average	9.27%	9.95%	11.14%
180-Day Average	9.18%	9.83%	11.00%
Average	9.30%	9.97%	11.12%
<i>CAPM, ECAPM, Risk Premium</i>			
	Current 30-day Average Treasury Bond Yield	Near-Term Projected Treasury Bond Yield	Longer-Term Projected Treasury Bond Yield
CAPM:			
Value Line Beta	11.23%	11.20%	11.16%
Bloomberg Beta	10.50%	10.45%	10.37%
Long-Term Avg. Beta	10.15%	10.08%	9.99%
ECAPM:			
Value Line Beta	11.44%	11.42%	11.39%
Bloomberg Beta	10.90%	10.86%	10.80%
Long-Term Avg. Beta	10.63%	10.58%	10.51%
Risk Premium:	10.53%	10.42%	10.26%
<i>Expected Earnings</i>			
	Mean	Median	
Expected Earnings	10.76%	10.14%	

1 **Q. Do the updated results support the Company’s requested ROE of 10.00 percent**
2 **in this proceeding?**

3 A. Yes. The range of updated results demonstrates that the Company’s requested ROE of
4 10.00 percent is conservative. The results of the DCF and Risk Premium analyses
5 have increased since the filing of my direct testimony, while the results of the CAPM,

1 ECAPM, and Expected Earnings models have decreased. Further, as discussed in
2 more detail previously, yields on long-term government bonds are expected to remain
3 elevated and equity analysts continue to expect the utility sector to underperform the
4 broader market over the near-term. Therefore, it is more reasonable to consider the
5 range of DCF results that rely on the average to maximum growth rates, as well as the
6 results of the other cost of equity estimation models, in authorizing a just and
7 reasonable ROE for the Company.

8 V. PROXY GROUP

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

11 A. Yes. Witness Kaufman utilizes the same proxy group that I relied upon in my direct
12 testimony, and witness Woolridge has also relied on my proxy group for one version
13 of their cost of equity analyses. Witness Woolridge also conducts an additional
14 analysis using a different proxy group. Witness Parcell also utilizes a different proxy
15 group than I have used.

16 **Q. Are the screening criteria applied by witness Parcell and witness Woolridge for**
17 **their respective proxy groups appropriate for establishing a proxy group of**
18 **companies that are most comparable to the Company?**

19 A. No. I disagree with various aspects of the screening criteria and resulting companies
20 in witness Parcell's and witness Woolridge's proxy groups. For example, despite the
21 fact that the Company owns generation, witness Parcell⁴³ and witness Woolridge⁴⁴

⁴³ See Parcell, Exh. DCP-8.

⁴⁴ See Woolridge, Exh. JRW-5.

1 both include electric utilities in their respective proxy groups that are transmission
2 and distribution-only utilities that do not own generation, even though utilities
3 owning generation are considered to have a relatively greater level of risk.⁴⁵
4 Similarly, despite the fact that the Company does not own any natural gas distribution
5 utility operations, witness Parcell and witness Woolridge also include utilities with
6 significant natural gas operations in their proxy groups, with witness Parcell and
7 witness Woolridge including WEC Energy Group, and witness Parcell also including
8 Black Hills Corp. Further, while witness Woolridge filed their testimony on
9 September 14, 2023, and states that one of their screening criteria is that a company
10 must have an investment-grade credit rating, the witness nonetheless includes
11 Hawaiian Electric Industries in their proxy group, which was downgraded to a non-
12 investment or junk grade rating of BB- by Standard & Poor's (S&P) on August 15,
13 2023 after the catastrophic Maui wildfires, and has also been subsequently
14 downgraded even further.⁴⁶

15 While witness Parcell's and witness Woolridge's proxy groups have various
16 issues rendering them less comparable to the Company than my proxy group, the
17 differences in the results of our respective cost of equity models are largely not a
18 function of proxy group differences, but rather methodological differences in the
19 inputs to the cost of equity models. As a result, while I note my disagreements with
20 their proxy groups, I will not further discuss those issues.

⁴⁵ *Rating Methodology: Regulated Electric and Gas Utilities*, Moody's Investor Services at 21 (Jun. 23, 2017), <https://ratings.moodys.com/api/rmc-documents/68547>; Moody's concludes that generation ownership causes vertically integrated electric utilities to have higher business risk than electric T&D companies.

⁴⁶ *Key Performance Measures: Financial*, Hawaiian Electric, <https://www.hawaiianelectric.com/about-us/performance-scorecards-and-metrics/financial>.

1 VI. CONSTANT GROWTH DCF

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

4 A. Yes. Witness Parcell, witness Woolridge, and witness Kaufman have each conducted
5 a constant growth DCF analysis. Specifically:

- 6 • Witness Parcell calculates the dividend yields for the companies in their proxy
7 group as an average of the high and low stock prices for the three-month period
8 ending July 2023, and adjusts the dividend yield by one-half of the growth rate.
9 For the growth rate, witness Parcell takes an average of five different indicators:
10 (i) an average of the five-year average historical earnings retention growth rates
11 per *Value Line*; (ii) an average of the five-year historical earnings per share (EPS),
12 dividend per share (DPS) and book value per share (BVPS) growth rates per
13 *Value Line*; (iii) an average of the projected earnings retention growth rates per
14 *Value Line*; (iv) an average of the projected EPS, DPS and BVPS growth rates per
15 *Value Line*; and (v) an average of the projected consensus EPS growth rates from
16 First Call and Zacks. Witness Parcell's DCF model results in a cost of equity of
17 8.4 percent (mean and median), but recommends a range of 9.6 percent to 9.9
18 percent as the current cost of equity derived for the proxy group, which reflects
19 only the DCF results from using the projected consensus EPS growth rates from
20 First Call and Zacks.⁴⁷
- 21 • Witness Woolridge calculates dividend yields for both their proxy group and my
22 proxy group using average stock prices over three periods – 30 days, 90 days and
23 180 days – for the period ending August 7, 2023. While witness Woolridge
24 reviews various growth rates, including historical and projected DPS, BVPS, and
25 EPS growth rates, as well as an estimate of a sustainable growth rate calculated
26 using *Value Line* projections, the growth rate that the witness selects for their
27 DCF models is primarily based on the projected EPS growth rates. Witness
28 Woolridge's DCF models produce a result of 9.30 percent using their proxy group
29 and 9.40 percent using my proxy group.⁴⁸
- 30 • Witness Kaufman's constant growth DCF analysis is based on current dividend
31 yields using 30-, 90-, and 180-day stock prices through August 26, 2023. For the
32 growth rate, witness Kaufman relies on an average of: (i) projected EPS growth
33 rates per *Value Line*; and (ii) their own analysis of historical EPS growth rates
34 using a Monte Carlo simulation. Witness Kaufman's mean and median DCF
35 results, 9.21 percent and 8.59 percent, respectively, are the average of their DCF

⁴⁷ Parcell, Exh. DCP-9 at 5.

⁴⁸ Woolridge, Exh. JRW-7 at 1-6.

1 models using the *Value Line* projected EPS results and their Monte-Carlo derived
2 historical EPS growth rates.⁴⁹

3 **Q. What is your primary area of disagreement with the constant growth DCF**
4 **analyses developed by witness Parcell, witness Woolridge, and witness**
5 **Kaufman?**

6 A. My primary disagreement with these witnesses regarding their DCF models is the
7 growth rates to be used in the constant growth DCF model, and the certain aspects of
8 my DCF analysis with which these witnesses disagree.

9 **A. Growth Rate**

10 **Q. Please clarify the growth rates that have actually been relied upon by the**
11 **witnesses in this proceeding.**

12 A. While witness Parcell has considered historical growth rates and projected DPS and
13 BVPS growth rates, they ultimately rely on analysts' consensus projected EPS growth
14 rates for purposes of their cost of equity estimate from the DCF model, which is
15 consistent with the approach used in my analyses.⁵⁰

16 **Q. What are the growth rates that witness Woolridge has relied upon in their DCF**
17 **analysis?**

18 A. Figure 6 summarizes the growth rate ranges considered by witness Woolridge and the
19 growth rate that the witness ultimately relies on for their constant growth DCF model.

⁴⁹ Kaufman, Exh. LDK-1CT at 7:12-12:4.

⁵⁰ Parcell, Exh. DCP-1T at 38:12-39:7.

Figure 6: Summary of the Growth Rates Considered by witness Woolridge for the Constant Growth DCF Analysis⁵¹

Growth Rate Indicator	Woolridge Proxy Group	Bulkley Proxy Group
Historical average <i>Value Line</i> Growth in EPS, DPS and BVPS	4.3%	4.3%
Projected average <i>Value Line</i> Growth in EPS, DPS and BVPS	5.1%	5.4%
Sustainable Growth Rate	4.0%	3.9%
Projected EPS (Yahoo!, Zacks, and S&P Cap IQ) (mean/median)	5.6% / 6.0%	5.8% / 6.1%
Witness Woolridge Growth Rate Range	5.00% - 5.80%	5.10% - 6.00%
Witness Woolridge Growth Rate for DCF	5.40%	5.50%

1 **Q. Based on this summary, does witness Woolridge rely on historical growth rates**
 2 **or sustainable growth rates?**

3 A. No. Witness Woolridge indicates that the analysis ignores the historical growth rates
 4 in developing the growth rate range for their DCF analysis.⁵² In addition, the witness
 5 does not rely on the sustainable growth rates when discussing the development of
 6 their recommended growth rate, which is understandable given that, as shown in
 7 Figure 6, the witness's sustainable growth rates are so far below the growth rate range
 8 that they establish. Also, the use of a sustainable growth rate in the DCF suggests
 9 there is a positive relationship between future earnings and the retention ratio;
 10 however, research has found the opposite to be true (*i.e.*, there is a negative
 11 relationship between earnings growth rates and payout ratios).⁵³

⁵¹ Woolridge, Exh. JRW-7 at 1, 6.

⁵² Woolridge, Exh. JRW-1T at 49:18-50:1.

⁵³ See generally Ping Zhou & William Ruland, *Dividend Payout and Future Earnings Growth*, Financial Analysts Journal, Vol. 62, No. 3, May- Jun. 2006; Owain ap Gwilym, James Seaton, Karina Suddason, & Stephen Thomas, *International Evidence on the Payout Ratio, Earnings, Dividends and Returns*, 62 Financial Analysts Journal, Vol. 62, No. 1, Jan.-Feb. 2006; Robert Arnott & Clifford Asness, *Surprise! Higher Dividends = Higher Earnings Growth*, 59 Financial Analysts Journal, Vol. 59, No. 1, Jan.-Feb. 2003 (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).

1 **Q. Do you agree with witness Woolridge’s consideration of projected DPS and**
2 **BVPS growth rates?**

3 A. No, I do not. There are multiple reasons why reliance on *Value Line* projections of
4 DPS growth and BVPS growth are not appropriate:

- 5 • Earnings are the fundamental determinant of a company’s ability to pay
6 dividends, and over the long-term dividend growth can only be sustained by
7 earnings growth.⁵⁴
- 8 • Management decisions to conserve cash for capital investments, to manage the
9 dividend payout for the purpose of minimizing future dividend reductions, or to
10 signal future earnings prospects can influence dividend growth rates in near-term
11 periods. These decisions affect the dividends and the payout ratio in the short term
12 but are not necessarily indicative of a firm’s long-term earnings growth. For
13 example, forty S&P 500 companies suspended dividend payments in 2020 as a
14 result of the increased uncertainty due to COVID-19.⁵⁵ These dividend
15 suspensions occurred because companies believed earnings over the short term
16 would decline and, therefore, elected to conserve cash to offset the financial
17 effects of COVID-19.
- 18 • Given that BVPS is the inverse of DPS, estimates of BVPS growth are also highly
19 influenced by dividend policy. All else equal, investing earnings in assets
20 increases BVPS, while paying dividends and not investing in assets decreases
21 BVPS.

⁵⁴ Eugene F. Brigham & Joel F. Houston, *Fundamentals of Financial Management* at 317 (Thomas South-Western, 4th ed. 2004) (“Growth in dividends occurs primarily as a result of growth in earnings per share (EPS). Earnings growth, in turn, results from a number of factors, including (1) inflation, (2) the amount of earnings the company retains and invests, and (3) the rate of return the company earns on its equity (ROE).”).

⁵⁵ 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>.

- 1 • There is significant academic research demonstrating that EPS growth rates are
2 most relevant in stock price valuation.⁵⁶ For example, Liu, *et. al.* (2002) examined
3 “the valuation performance of a comprehensive list of value drivers” and found
4 that “forward earnings explain stock prices remarkably well” and were generally
5 superior to other value drivers analyzed. Gleason, *et. al.* (2012) found that the
6 sell-side analysts with the most accurate stock price targets were those whom the
7 researchers found to have more accurate earnings forecasts. The use of DPS
8 growth rates ignores the academic research demonstrating that EPS growth rates
9 are most relevant in stock price valuation.
- 10 • Investment analysts report predominant reliance on EPS growth projections. In a
11 survey completed by 297 members of the Association for Investment
12 Management and Research, the majority of respondents ranked earnings as the
13 most important variable in valuing a security (more important than cash flow,
14 dividends, or book value).⁵⁷
- 15 • Witness Woolridge considers projected DPS growth rates from *Value Line*,⁵⁸
16 which are the views of an individual analyst. In contrast, projected EPS growth
17 rates from Yahoo! Finance and Zacks are based on consensus estimates available
18 from multiple sources. In other words, projected EPS growth rates include the
19 contributions of more than one analyst and thus the results are less likely to be
20 biased in one direction or another. Moreover, the fact that projected EPS growth
21 estimates are available from multiple sources on a consensus basis attests to the
22 importance of projected EPS growth rates to investors when developing long-term
23 growth expectations.

24 Therefore, projections of EPS growth provide a more robust estimate of total
25 company growth since it is earnings growth that will influence both DPS and BVPS

⁵⁶ See, e.g., Robert S. Harris, Using Analysts’ Growth Forecasts to Estimate Shareholder Required Rates of Return, *Financial Management*, Spring 1986, at 66; James H. Vander Weide & Willard T. Carleton, Investor growth expectations: Analysts vs. history, *The Journal of Portfolio Management*, Spring, 1988; Robert S. Harris & Felicia C. Marston, Estimating Shareholder Risk Premia Using Analysts’ Growth Forecasts, *Financial Management*, Summer 1992; Advanced Research Center, Investor Growth Expectations, Summer 2004; Eugene F. Brigham, Dilip K. Shome, & Steve R. Vinson, The Risk Premium Approach to Measuring a Utility’s Cost of Equity, *Financial Management*, Vol. 14, No. 1, Spring 1985; Roger A. Morin, New Regulatory Finance, *Public Utilities Reports, Inc.*, 2006, at 299-303; Jing Liu, Doron Nissim, & Jacob Thomas, Equity Valuation Using Multiples, *Journal of Accounting Research*, Vol. 40, No. 1, March 2002; C.A. Gleason, W. Bruce Johnson, & Haidan Li, Valuation Model Use and the Price Target Performance of Sell-Side Equity Analysts, *Contemporary Accounting Research*, Sept. 2011; Boochun 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, Feb.-Apr. 2012.

⁵⁷ Stanley B. Block, *A Study of Financial Analysts: Practice and Theory*, *Financial Analysts Journal*, Vol. 55, No. 4, July-Aug. 1999.

⁵⁸ Woolridge, Exh. JRW-1T at 49:12-15.

1 growth. All of these reasons are why I relied on projected EPS growth rates for
2 purposes of my constant growth DCF analysis.

3 **Q. Based on the growth rates considered by witness Woolridge, do you have any**
4 **concerns with the manner in which the witness establishes their growth rate**
5 **range and their estimated growth rate for their DCF analysis?**

6 A. Yes. While witness Woolridge reviews many growth rate estimates, the growth rate
7 that the witness uses for their constant growth DCF analysis is simply based on their
8 own judgment. Specifically, witness Woolridge states that they are “[g]iving primary
9 weight to the projected growth rates of Wall Street analysts and *Value Line*,” and that
10 the range of growth rates for their proxy group ignores the historical growth rates.⁵⁹
11 However, witness Woolridge contends that analysts’ EPS growth rate projections are
12 “overly optimistic and upwardly biased” and need to be adjusted downward.⁶⁰ As
13 shown in Figure 7, the growth rate that witness Woolridge selects for both their proxy
14 group and my proxy group is below the range of the EPS growth rates for the proxy
15 group.

⁵⁹ Woolridge, Exh. JRW-1T at 49:20-50:1.

⁶⁰ *Id.*, at 46:8-9.

Figure 7: Witness Woolridge Growth Rate Selections

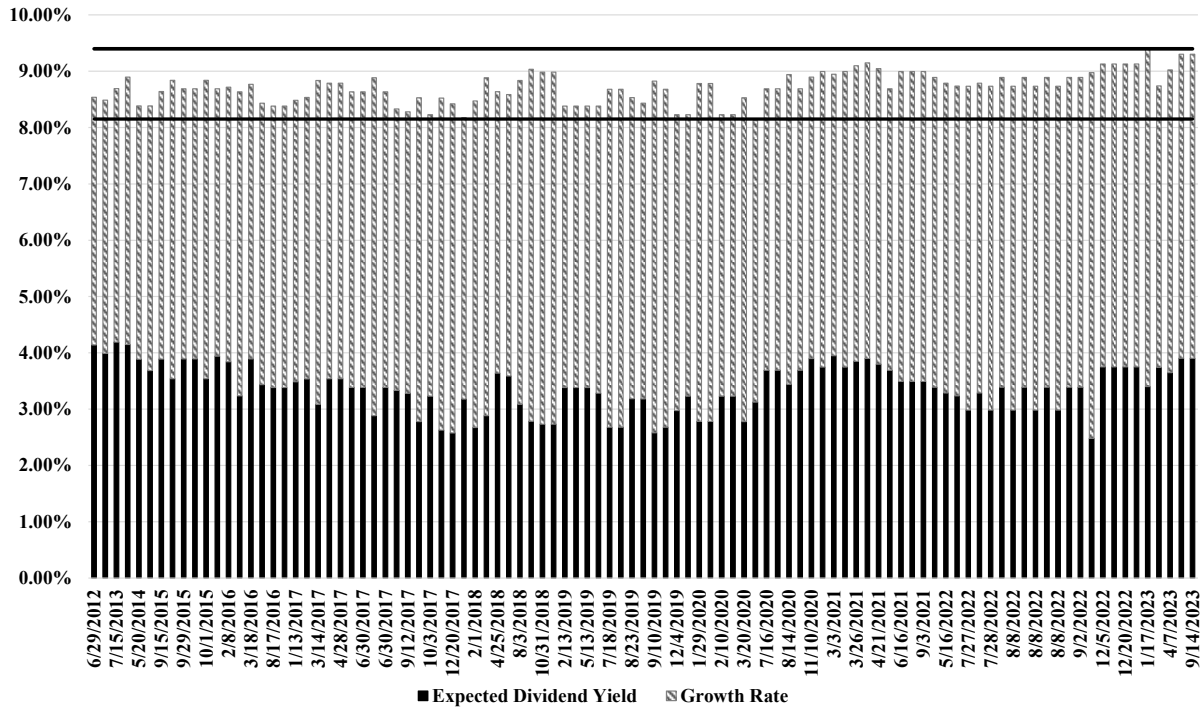
	Mean	Median	Range	Midpoint of Range
Woolridge Proxy Group				
EPS Growth Rates (Analysts)	5.60%	6.00%	5.50% - 6.00%	5.75%
EPS Growth Rates (Value Line)	5.50%	6.00%		
Dr. Woolridge Selection	5.00%	5.80%		5.40%
Bulkley Proxy Group				
EPS Growth Rates (Analysts)	5.80%	6.10%	5.50% - 6.00%	5.90%
EPS Growth Rates (Value Line)	5.70%	6.00%		
Dr. Woolridge Selection	5.10%	6.00%		5.50%

1 **Q. Can you illustrate the subjectivity of witness Woolridge’s approach?**

2 A. Yes. Figure 8 summarizes the dividend yields and growth rates that Witness
3 Woolridge has relied on in the development of their constant growth DCF models in
4 nearly 100 proceedings since June 2012. As can be seen in the figure, as the
5 calculated dividend yield changes, it is offset by witness Woolridge’s use of “judgment”
6 to select the growth rate such that their DCF result remains primarily within a very
7 narrow band over the past decade. Specifically, while the dividend yields for their
8 proxy groups have declined in response to capital market conditions, witness
9 Woolridge simply selects a higher projected growth rate in the constant growth DCF
10 model. Conversely, when the dividend yields for their proxy group increase, witness
11 Woolridge selects a lower projected growth rate. In the fact, there is a negative
12 correlation of 0.80 between the expected dividend yield and the growth rate selected
13 by witness Woolridge over this period, meaning that witness Woolridge’s DCF

1 results have reflected a very strong relationship where when the dividend yield
2 increases, their selected growth rate decreases, and vice versa.

**Figure 8: Comparison of Witness Woolridge
Historical Dividend Yields and Growth Rates**



3 **Q. Do you have specific examples that demonstrate how witness Woolridge’s**
4 **judgment can be interpreted as being results-oriented?**

5 **A.** Yes. As shown in Figure 9, I reviewed proceedings in which witness Woolridge has
6 filed testimony over the last year. In each of these prior proceedings, just as the
7 witness has done in the current proceeding, the witness selected a growth rate for
8 their constant growth DCF analysis by giving primary weight to the projected EPS
9 growth rates by Wall Street analysts and excluding historical growth rates. As shown
10 in this figure, in mid- to late-2022, witness Woolridge selected a growth rate for their
11 DCF analysis that was within the range set by the mean and median of the projected

1 EPS growth rates by Wall Street analysts. However, as the dividend yields have
2 increased as a result of the utility stock price declines over this period, witness
3 Woolridge has changed their growth rate assumption. As shown in Figure 9, in 2022,
4 the growth rates selected by witness Woolridge were in the range of the EPS growth
5 rates of the Wall Street analysts that the witness cited; however, as the dividend
6 yields increased, witness Woolridge selected growth rates that were well below the
7 range of EPS growth rates of the Wall Street analysts (denoted in bold/italics).
8 Therefore, rather than relying on the actual growth rates reported by analysts, it
9 appears that witness Woolridge’s judgment in the selection of the growth rate used in
10 their DCF analysis has a tendency to bias the results of their analyses downward.

Figure 9: Comparison of EPS Growth Rates of Wall Street Analysts and Growth Rate Selected in Witness Woolridge for the Constant Growth DCF Model⁶¹

Date	State	Company / Docket	Docket	Proxy Group	Dividend Yield	Growth Rate Assumed	Range of EPS Growth Rates - Wall Street Analysts
8/26/2022	Texas	Oncor Electric Deliver	53601	Woolridge Applicant	3.30%	5.50%	5.50% - 5.70%
					3.30%	5.38%	5.10% - 5.60%
44806	Ohio	Duke Energy Ohio	21-887-EL-AIR	Woolridge Applicant	3.30%	5.50%	5.50% - 5.70%
					3.30%	5.38%	5.10% - 5.60%
				Staff	3.10%	5.75%	6.00% - 6.10%
10/26/2022	Connecticut	Aquarion Water- CT	22-07-01	Applicant	2.40%	6.50%	6.40% - 6.60%
12/2/2022	Maine	Central Maine Power	2022-152	Woolridge Applicant	3.65%	5.38%	5.30% - 5.60%
					3.50%	5.50%	5.60% - 5.70%
12/13/2022	Connecticut	United Illuminating	22-08-08	Woolridge Applicant	3.65%	5.38%	5.30% - 5.60%
					3.70%	5.50%	5.70% - 5.80%
12/22/2022	California	PacifiCorp	A.22-05-006	Woolridge Applicant	3.65%	5.38%	5.30% - 5.60%
					3.70%	5.75%	5.80% - 6.00%
4/7/2023	Montana	Montana-Dakota	2022.11.099	Woolridge Applicant	3.71%	5.38%	5.60% - 5.80%
					3.71%	5.50%	5.60% - 5.90%
8/29/2023	Kansas	Evergy Kansas	23-EKCE-775-RTS	Woolridge Applicant	3.80%	5.40%	5.60% - 6.00%
					3.75%	5.60%	5.90% - 6.20%
9/14/2023	Washington	PacifiCorp	UE-230172	Woolridge Applicant	3.80%	5.40%	5.60% - 6.00%
					3.80%	5.50%	5.80% - 6.10%

⁶¹ The dividend yields for the two proxy groups for Dr. Woolridge’s direct testimony in Docket No. 2022.11.099 in Montana were corrected to reflect annualized dividends as of March 17, 2023 (i.e., the time period that Dr. Woolridge referenced in their direct testimony) as opposed to March 27, 2022.

1 **Q. Do you agree with witness Kaufman’s use of projected EPS growth rates that the**
2 **witness has derived using a Monte Carlo simulation of historical EPS growth**
3 **rates?**

4 A. No, there are several reasons that I disagree with witness Kaufman’s reliance on
5 Monte Carlo-simulated growth rates. First, Witness Kaufman’s attempt to predict the
6 future expected growth rates using a Monte Carlo simulation of historical growth
7 rates is non-traditional and inconsistent with the approach of all the other witnesses in
8 this proceeding, as witness Parcell, witness Woolridge, and I rely on, either solely or
9 primarily, the use of analysts’ projected EPS growth rates. Witness Kaufman has
10 provided no support for using such a methodology, nor any instances where such
11 methodology has been relied on by any regulatory commission in the United States.

12 Second, witness Kaufman’s approach of using historical EPS growth rates is
13 greatly affected by the analytical period of the data that they rely on and the market
14 events that occurred within that period. For example, during the 28-year period that
15 witness Kaufman relies on for their historical EPS growth rates, market events,
16 including the Global Financial Crisis of 2007/2008 and the global COVID-19
17 pandemic, significantly affected the earnings of various companies. This is
18 demonstrated by witness Kaufman’s summary of their Monte Carlo simulation results
19 of expected growth rates where the growth rate projections vary substantially
20 depending on the historical selection period used (*i.e.*, 10 years, 20 years, or 28
21 years).⁶² For example, American Electric Power (labeled as AEP in Table LK-3 of

⁶² Kaufman, Exh. LDK-1CT at 11, Table LK-3.

1 witness Kaufman’s testimony) has a growth rate of 1.7 percent for witness Kaufman’s
2 historical “10-Year” period, but 16.8 percent for their historical “20-Year” period.
3 Similarly, Avista Corp. (labeled as AVA in Table LK-3 of Witness Kaufman’s
4 testimony) has a growth rate of 12.4 percent for their historical “20-Year” period, but
5 negative 6.6 percent for their “All Years” historical period. There are also additional
6 examples of these types of substantial differences in witness Kaufman’s analysis.
7 Accordingly, it is more appropriate to utilize projected EPS growth rates from well-
8 known analysts for the determination of future expected growth rates such as witness
9 Parcell, witness Woolridge, and I have done.

10 Lastly, the results of witness Kaufman’s constant growth DCF that rely on
11 their Monte Carlo-derived growth rates are inconsistent with currently authorized
12 ROEs for vertically integrated electric utilities, and their median results are
13 substantially lower than any authorized ROE for a vertically integrated electric utility
14 in the past 40 years in a jurisdiction with a comparable regulatory framework to
15 Washington. Specifically, the mean result of witness Kaufman’s DCF that relies on
16 their Monte Carlo-derived growth rates is 8.79 percent,⁶³ or nearly 100 basis points
17 below the average authorized ROE for vertically integrated electric utilities thus far in
18 2023, and which would be at the very low end of any authorized ROE for vertically
19 integrated utility in decades in a jurisdiction with a comparable regulatory framework
20 to Washington. Witness Kaufman’s median result is even lower at 7.90 percent,

⁶³ Kaufman, Exh. LDK-4 at 1-3 (mean of 30-day, 90-day, and 180-day results in column [8]).

1 which would be well below any authorized ROE for a vertically integrated electric
2 utility in decades.

3 **Q. If witness Woolridge and witness Kaufman had appropriately relied solely on**
4 **projected EPS growth rates in the constant growth DCF model such as witness**
5 **Parcell and I have done, what cost of equity range would their respective**
6 **constant growth DCF analyses produce?**

7 A. As shown in Exhibit No. AEB-23, adjusting witness Woolridge's constant growth
8 DCF analysis to rely on the midpoint of their mean and median projected EPS growth
9 rates from Wall Street analysts and *Value Line* results in a cost of equity range of 9.66
10 percent (Woolridge proxy group) to 9.76 percent (Bulkley proxy group). Likewise, as
11 shown in Exhibit No. LDK-4, pages 1-3, if witness Kaufman had relied solely on
12 their *Value Line* projected EPS growth rates instead of their Monte Carlo-derived
13 expected growth rates for their constant growth DCF, their results would range from
14 9.39 percent to 9.77 percent. However, I note that unlike witness Parcell, witness
15 Woolridge, and I have done, witness Kaufman only relies on projected EPS growth
16 rates from *Value Line*, which is not a consensus estimate of multiple analysts but
17 rather the estimate of only a single analyst.

18 Moreover, it is important to recognize that even though these DCF analyses
19 have been adjusted, they also are understated given the significant declines in utility
20 stock prices, and thus the increases in the dividend yields, that I discussed previously
21 that have occurred since the filing of witness Woolridge's and witness Kaufman's
22 testimonies.

1 **B. Intervenor Criticisms**

2 **Q. What does witness Parcell state regarding your DCF analysis?**

3 A. Witness Parcell suggests that, by using the highest growth rate for each individual
4 proxy group company, my mean high results assume investors rely on the “rosiest”
5 projected EPS growth rate estimate, which witness Parcell believes is an “unlikely
6 assumption.”⁶⁴

7 **Q. Do you agree?**

8 A. No. It is entirely reasonable to analyze the range based on the average, highest, and
9 lowest projected EPS growth rates such as I have done in my DCF analysis. Analysts
10 have different views as to individual companies, and reviewing the range of projected
11 growth rates for each individual proxy group company provides context as to the
12 expectations for each company.

13 **Q. Witness Woolridge states that you should not have exclusively relied on analysts’
14 projected EPS growth rates because of their contention that they are “upwardly
15 biased.”⁶⁵ Do you agree with witness Woolridge’s position?**

16 A. No. First, it is important to recognize that while witness Woolridge criticizes my use
17 of analysts’ forecasts of EPS growth, as discussed previously, the witness also relies
18 on projections of EPS growth rates as an input into their DCF model.⁶⁶ While witness
19 Woolridge uses their assertion of upward bias as a justification to apply their
20 judgment to the EPS growth rates, the witness provides no analytical framework that
21 lends support to the adjustments that they make to the published consensus EPS

⁶⁴ Parcell, Exh. DCP-1T at 38:21-39:3.

⁶⁵ Woolridge, Exh. JRW-1T at 69:8-70:8.

⁶⁶ *Id.*, at 49:20-50:4 and 50:12-18.

1 estimates. As noted previously, it appears that the use of judgment may have resulted
2 in a downward bias in the growth rates the witness selects as dividend yields have
3 increased.

4 Second, the 2003 Global Analysts Research Settlement (the “Global
5 Settlement”) served to significantly reduce the bias referred to by witness Woolridge.
6 The Global Settlement required financial institutions to insulate investment banking
7 from analysis, prohibited analysts from participating in “road shows,” and required
8 the settling financial institutions to fund independent third-party research. In addition,
9 analysts covering the common stock of the proxy companies certify that their
10 analyses and recommendations are not related, either directly or indirectly, to their
11 compensation. Thus, it is unclear why the EPS growth rates for the proxy companies
12 would be susceptible to an upward bias.

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

19 Introduced in 2002, the Global Settlement and related regulations
20 had an even bigger impact than Reg FD on analyst behavior. After
21 the Global Settlement, the mean forecast bias declined significantly,
22 whereas the median forecast bias essentially disappeared. Although
23 disentangling the impact of the Global Settlement from that of
24 related rules and regulations aimed at mitigating analysts’ conflicts
25 of interest is impossible, forecast bias clearly declined around the
26 time the Global Settlement was announced. These results suggest

1 that the recent efforts of regulators have helped neutralize analysts'
2 conflicts of interest.⁶⁷

3 Other studies such as Hribar and McNnis (2012),⁶⁸ Scherbina (2004),⁶⁹ and
4 Michel and Pandes (2012)⁷⁰ found that analyst earnings forecasts turn out to be too
5 optimistic for stocks that are more difficult to value, for instance, stocks of smaller
6 firms, firms with high volatility or turnover, younger firms, or firms whose prospects
7 are uncertain. These characteristics describe companies that are more volatile and/or
8 less transparent than the average firm – none of which is applicable to the more
9 mature and stable utility companies in our respective proxy groups, where all
10 companies had at least two analysts providing estimates and who, due to their
11 regulated nature, have information transparency. Consequently, optimism bias is not
12 expected to be an issue for utilities. In fact, witness Woolridge acknowledges that the
13 economics of the public utility business is characterized by stability and maturity, and
14 thus that is the reason the witness has relied on the constant growth DCF.⁷¹

15 **Q. Have other regulatory commissions rejected the claim that analysts' earnings**
16 **growth rates are biased?**

17 A. Yes. The Federal Energy Regulatory Commission (FERC) addressed the concern
18 raised by witness Woolridge about analyst growth rate forecasts over five years ago

⁶⁷ Armen Hovakimian & Ekkachai Saenyasiri, *Conflicts of Interest and Analyst Behavior: Evidence from Recent Changes in Regulation*, Financial Analysts Journal, Vol. 66, No. 4, Jul.-Aug. 2010, at 195.

⁶⁸ Paul Hribar & John M. McNnis, *Investor Sentiment and Analysts' Earnings Forecast Errors*, Management Science, Vol. 58, No. 2, Feb. 2012, at 293-307.

⁶⁹ Anna D. Scherbina, *Analyst Disagreement, Forecast Bias and Stock Returns*, Social Science Research Network, June 2004.

⁷⁰ Jean-Sebastien Michel & J. Ari Pandes, *Are Analysts Really Too Optimistic?*, Social Science Research Network (Mar. 15, 2012).

⁷¹ Woolridge, Exh. JRW-1T at 39:5-10.

1 in Opinion No. 531-B.⁷² In that decision, the FERC reaffirmed its rejection of the
2 argument that analyst growth rates should not be used in the DCF analysis because the
3 analysts making those projections allegedly are overly optimistic in their growth rate
4 projections.⁷³ The FERC also noted that the appropriate dividend growth rate to
5 include in a DCF analysis is the growth rate expected by the market. The FERC
6 indicated that while the market may be wrong in its expectations, the cost of
7 common equity to a regulated enterprise depends upon what the market expects, as
8 reflected in the IBES growth projections, not upon precisely what is actually going
9 to happen.⁷⁴ Since that time, the FERC has re-evaluated the appropriate
10 methodologies to establish an ROE in many opinions; however, the use of projected EPS
11 growth rates has been consistently applied in all FERC opinions, including most recently
12 in its Opinion No. 569-A in May 2020.⁷⁵

13 **Q. Have you reviewed the studies cited by Witness Woolridge that examine the**
14 **potential bias in analysts' growth projections?**

15 A. Yes. Witness Woolridge references a number of articles that they assert prove the
16 potential bias in analysts' EPS projections.⁷⁶ However, only one of the studies that
17 Witness Woolridge cites analyzes the period after the Global Settlement on October
18 31, 2003. That April 2010 McKinsey and Company study notes:

19 Exceptions to the long pattern of excessively optimistic forecasts are
20 rare, as a progression of consensus earnings estimates for the S&P
21 500 shows (Exhibit 1). Only in years such as 2003 to 2006, when

⁷² *Coakley Mass. Attorney Gen. v. Bangor Hydro-Elec. Co.*, Opinion No. 531-B, 150 FERC ¶ 61,165 (2015).

⁷³ *Id.*, ¶ 71.

⁷⁴ *Id.*, ¶ 72.

⁷⁵ *Ass'n. of Businesses Advocating Tariff Equity v. Midcontinent Indep. Sys. Operator, Inc.*, Opinion No. 569-A, 171 FERC ¶ 61,154 (2020).

⁷⁶ Woolridge, Exh. JRW-1T at 44:14-45:3.

1 strong economic growth generated actual earnings that caught up
2 with earlier predictions, do forecasts actually hit the mark. This
3 pattern confirms our earlier findings that analysts typically lag
4 behind events in revising their forecasts to reflect new economic
5 conditions. When economic growth accelerates, the size of the
6 forecast error declines; when economic growth slows, it increases.
7 So as economic growth cycles up and down, the actual earnings S&P
8 500 companies report occasionally coincide with the analysts'
9 forecasts, as they did, for example, in 1988, from 1994 to 1997, and
10 from 2003 to 2006.⁷⁷

11 The earnings reported by S&P 500 companies met and exceeded the growth
12 rate projected by analysts between 2003 and 2006.⁷⁸ The period analyzed in the study
13 extends through 2008, and analysts' projections did exceed actual earnings growth in
14 2007 and 2008. However, this time period reflected the start of the Great Recession
15 and does not indicate analyst bias, but rather shows that analysts were unable to
16 predict the severity and magnitude of the financial crisis, which is no different than
17 any other recession or other unanticipated event (*e.g.*, the COVID-19 pandemic).
18 Furthermore, the McKinsey study examines analysts' EPS forecasts for a given year
19 at one, two and three years out. It does not review the 3- to 5-year EPS growth rates
20 that I used in my constant growth DCF analysis, which are meant to represent average
21 growth for a company over a longer period of time.

22 VII. CAPM

23 **Q. Do each of the witnesses conduct a CAPM analysis?**

24 A. Yes. Witness Parcell, witness Woolridge, and witness Kaufman have each conducted
25 a CAPM analysis. Specifically:

⁷⁷ Marc Goedhart, Rishi Raj, & Abhishek Saxena, *Equity analysts: Still too bullish*, McKinsey and Company, (Apr. 1, 2010), <https://www.mckinsey.com/capabilities/strategy-and-corporate-finance/our-insights/equity-analysts-still-too-bullish>.

⁷⁸ *Id.*

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

5 ○ the average risk premium of the historical return of the S&P 500 Index
6 relative to the 20-year Treasury bond yields from 1978 to 2022, which
7 results in a market risk premium of 7.80 percent;

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

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

14 Based on these inputs, witness Parcell’s CAPM analysis results in a mean and
15 median cost of equity of 9.70 percent and 9.80 percent, respectively.⁷⁹

- 16 • Witness Woolridge conducts two CAPM analyses – one using their proxy group
17 and one using my proxy group, and uses the same set of inputs for each.
18 Specifically, witness Woolridge relies on a risk-free rate that is the current 30-
19 year Treasury yield, current betas for the proxy group as reported by *Value Line*,
20 and a market risk premium that considers historical risk premia, projected market
21 risk premium studies (both current and historical studies), surveys of financial
22 professionals, and historical “building block” models of the expected market risk
23 premium, and the witness gives the most weight to the market risk premium
24 estimates of *Kroll*, KPMG, Professor Damodaran, and the Professor Fernandez
25 study.⁸⁰

- 26 • Witness Kaufman relies on the three-month average of the 30-year Treasury bond
27 yield as the risk free rate, unadjusted betas, and a market risk premium that is
28 based on the average of a *Value Line* market risk premium and what the witness
29 refers to as a current implied premium. Witness Kaufman provides no data or
30 description as to how the current implied premium is derived.⁸¹

⁷⁹ Parcell, Exh. DCP-1T at 40:6-42:16.

⁸⁰ Woolridge, Exh. JRW-1T at 53:1-65:14.

⁸¹ Kaufman, Exh. LDK-1CT at 12:6-22:7.

1 **A. Market Risk Premium**

2 **Q. Do you agree with witness Parcell's use of a historical market risk premium for**
3 **estimating the CAPM?**

4 A. No. I have multiple concerns with witness Parcell's use of a historical market risk
5 premium. Fundamentally, the market return and market risk premium should be
6 forward-looking, and witness Parcell's historically derived market return and market
7 risk premium estimates are certainly not forward-looking and nor has the witness
8 provided any evidence that the historical averages on which they rely are reflective of
9 the expected market conditions during the period in which the Company's proposed
10 rates will be in effect. As *Morningstar* has observed, the market risk premium is a
11 forward-looking 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 the
15 discount rate should be reflective of what investors think the risk
16 premium will be going forward.⁸²

17 Likewise, while I also disagree with witness Kaufman's approach to estimating the
18 market risk premium, the witness also agrees that historical market risk premiums are
19 not forward-looking.⁸³

20 While the use of a historically derived average market return and market risk
21 premium are reflective of the returns realized by investors under different market and
22 economic conditions, they are not necessarily reflective of the market return required
23 by investors in the current and expected market environment where interest rates have

⁸² Ibbotson SBBI Valuation Yearbook, *Morningstar, Inc.* at 53 (2010).

⁸³ Kaufman, Exh. LDK-1CT at 20:9-10.

1 increased substantially and are expected to remain elevated over at least the next year
2 and inflation remains well above the Federal Reserve's target level. The effect of
3 these recent changes in market conditions on investor return requirements is not
4 factored into the *average* real return of the S&P 500 that witness Parcell relies on to
5 calculate their market risk premium.

6 In addition to this overarching issue, there are further problems with the
7 historically derived market risk premia relied on by witness Parcell:

- 8 • In one of their three estimates of the historical market risk premium, witness
9 Parcell has incorrectly relied on the geometric mean risk premium.⁸⁴
- 10 • In two of their three estimates of the historical market risk premium, witness
11 Parcell has incorrectly used the *total return* on long-term government bonds to
12 calculate their historical market risk premium instead of the *income-only* return on
13 long-term government bonds.⁸⁵
- 14 • Each of witness Parcell's historical market risk premia also fail to consider the
15 inverse relationship between interest rates and the market risk premium under
16 current market conditions (*i.e.*, as interest rates decrease, the market risk premium
17 increases).

18 **Q. Why is it inappropriate to consider the historical geometric mean risk premium?**

19 A. Geometric and arithmetic means are used for different purposes. The geometric mean
20 is the compound rate that equates a beginning value to its ending value. It is used to
21 determine the exact rate of compounded return between a specific starting and ending
22 point. The arithmetic mean, which is the appropriate calculation to be used for this
23 purpose, is the simple average of single period rates of return and best approximates
24 the uncertainty associated with returns from year to year. The important distinction

⁸⁴ While Dr. Kaufman does not rely on a historical market risk premium, the witness does contend that the historical risk premium, when geometric averaging is used, supports the survey results of the equity risk premium the witness evaluated. *See* Kaufman, Exh. LDK-1CT at 21:6-7.

⁸⁵ *See* Parcell, Exh. DCP-1T at 41:14-17.

1 between the two methods is that the arithmetic mean assumes that each periodic
2 return is an independent observation and, therefore, incorporates uncertainty into the
3 calculation of the long-term average. In contrast, the geometric mean does not
4 incorporate the same degree of uncertainty because it assumes that returns remain
5 constant from year to year. Cooper (2006) reviewed the literature on the topic and
6 noted the following rationale for using the arithmetic mean:

7 Note that the arithmetic mean, not the geometric mean is the relevant
8 value for this purpose. The quantity desired is the rate of return that
9 investors expect over the next year for the random annual rate of
10 return on the market. The arithmetic mean, or simple average, is the
11 unbiased measure of the expected value of repeated observations of a
12 random variable, not the geometric mean....[The] geometric mean
13 underestimates the expected annual rate of return.⁸⁶

14 Furthermore, Pratt and Grabowski note the following in their review of the
15 literature:

16 The choice between which average to use is a matter of
17 disagreement among practitioners. The arithmetic average receives
18 the most support in the literature, though other authors recommend a
19 geometric average. The use of the arithmetic average relies on the
20 assumption that (1) market returns are serially independent (not
21 correlated) and (2) the distribution of market returns is stable (not
22 time-varying). Under these assumptions, an arithmetic average gives
23 an unbiased estimate of expected future returns assuming expected
24 conditions in the future are similar to conditions during the
25 observation period. Moreover, the more observations available, the
26 more accurate will be the estimate.⁸⁷

⁸⁶ Ian Cooper, Arithmetic versus geometric mean estimators: Setting discount rates for capital budgeting, *European Financial Management*, Vol. 2, No. 2, 1996, at 158.

⁸⁷ Shannon P. Pratt & Roger J. Grabowski, *Cost of Capital: Applications and Examples* at 96 (Wiley, 2008).

1 **Q. Is there support that it is appropriate to use the income-only return on long-**
2 **term government bonds to calculate the historical risk premium?**

3 A. Yes. In calculating a historical market risk premium, the long-term average income-
4 only return should be deducted from the long-term average return on large company
5 stocks, not the total return (*i.e.*, income return and inflation) on long-term government
6 bonds. As stated by *Morningstar*, a prior publisher of this historical dataset that is
7 now published by *Kroll* and is relied on by witness Parcell, the historical market risk
8 premium is appropriately calculated by subtracting the *income-only* portion of the
9 government bond return from the total return on large company stocks:

10 Another point to keep in mind when calculating the equity risk
11 premium is that the income return on the appropriate-horizon
12 Treasury security, rather than the total return, is used in the
13 calculation. The total return is comprised of three return
14 components: the income return, the capital appreciation return, and
15 the reinvestment return The income return is thus used in the
16 estimation of the equity risk premium because it represents the truly
17 riskless portion of the return.⁸⁸

18 The market risk premium is the return premium required above the return on
19 the risk-free asset. Witness Parcell's calculation of the historical risk premium is
20 incorrect because the witness is deducting both the return on the bonds, as well as the
21 return of the principle of the bonds, from the overall average return in the market.
22 Because witness Parcell is deducting the total return on government bonds, as
23 opposed to just the *income-only* return on those bonds, means their market risk
24 premium is lower than it should otherwise be, and thus understates their CAPM
25 result.

⁸⁸ Ibbotson SBBI Valuation Yearbook, *Morningstar Inc.* at 55 (2010).

1 **Q. Why does the historical market risk premium relied upon by witness Parcell fail**
2 **to account for the inverse relationship between interest rates and the market risk**
3 **premia?**

4 A. Witness Parcell simply takes an average of historical market risk premia and then
5 utilizes a current risk-free rate in the CAPM equation; however, the current risk-free
6 rate bears no relationship to the average historical interest rate underlying the average
7 historical market risk premia on which witness Parcell relies. As shown in the Bond
8 Yield Plus Risk Premium (Risk Premium) analysis in my direct testimony, as well as
9 acknowledged by witness Parcell in their discussion of their Risk Premium analysis,⁸⁹
10 as interest rates decrease, the market risk premium increases, and vice versa.

11 To illustrate this point, in one of witness Parcell's estimates of the historical
12 market risk premium, the witness has relied on the arithmetic market risk premium
13 for the period of 1926-2022 as reported by *Kroll*. Relying on that historical data,
14 when calculated as the difference between the return on Large Company Stocks and
15 the *income-only* return on long-term government bond, the historical market risk
16 premium for 1926-2022 is 7.17 percent. Further, the historical *income-only* return on
17 government bonds over that same period was 4.85 percent;⁹⁰ however, the three-
18 month average risk-free rate on long-term government bonds as of July 31, 2023, that
19 witness Parcell has relied on in their CAPM is 4.05 percent. Therefore, because
20 current interest rates on long-term government bonds (*i.e.*, 4.05 percent) are below the
21 historical average (*i.e.*, 4.85 percent), the inverse relationship between interest rates

⁸⁹ Parcell, Exh. DCP-1T at 55:13-15.

⁹⁰ Valuation Handbook: Guide to Cost of Capital. Kroll, 2023.

1 and the market risk premium implies that the current market risk premium should be
2 above the long-term historical average of 7.17 percent – not below such as assumed
3 by witness Parcell. Consequently, witness Parcell’s use of a historical market risk
4 premium understates the market risk premium in the current market environment.

5 **Q. Has *Kroll*, the publisher of the data on which witness Parcell relies to estimate
6 their historical market risk premia, highlighted a potential inconsistency with
7 relying on historical data for a forward-looking analysis such as the CAPM?**

8 A. Yes. As *Kroll* observes, “[i]n using a historical measure of the equity risk premium,
9 one assumes that what has happened in the past is representative of what might be
10 expected in the future.”⁹¹ However, because the long-term government bond yields
11 are currently well below those witness Parcell has relied upon in their historical
12 average market risk premium estimate, the market risk premium based on long-term
13 historical average data is certainly not representative of what is expected in the future.

14 **Q. Is there also evidence that the use of a historical market premium can produce
15 counter-intuitive results?**

16 A. Yes. Figure 10 illustrates the problem with relying on the historical market risk
17 premium such as witness Parcell has done. Specifically, the figure shows that from
18 2007-2009, the historical market risk premium decreased even as market volatility
19 (the primary statistical measure of risk) significantly increased. Further, this figure
20 demonstrates the significant swings in the annual equity risk premium that were
21 averaged into the long-term historical average calculations. As shown, in 2008, the

⁹¹ 2022 SBBI Yearbook, Kroll, at 198.

1 annual equity “premium” was negative, which implies a discount. It is
 2 incomprehensible that the perceived risk to equity was negative (implying a lower
 3 required return) in the height of the financial market collapse when the overall market
 4 return was a negative 37 percent. This individual observation, which runs counter to
 5 the theory of the equity risk premium, reduced the average market risk premium for
 6 the prior 80 years by 60 basis points.

Figure 10: Historical Market Risk Premium and Market Volatility

	Market Volatility	Market Return	Annual Equity Premium	Long-term Average Historical Market Risk Premium⁹²
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%

7 The assumption that investors would expect or require a lower risk premium
 8 during periods of increased volatility is counter-intuitive and leads to unreliable
 9 analytical results. As noted earlier, the relevant objective in the application of the
 10 CAPM is to ensure that all three components of the model (*i.e.*, the risk-free rate, the
 11 beta, and the market risk premium) are consistent with market conditions and investor
 12 perceptions. The forecasted market risk premium estimates used in my original and
 13 updated CAPM analyses specifically address that concern.

14 **Q. Have you recalculated witness Parcell’s CAPM analysis to address your**
 15 **concerns with their estimates of the historical market risk premium?**

16 A. Yes. I have adjusted witness Parcell’s CAPM analysis, and while it continues to rely
 17 on a historical market risk premium, it more accurately reflects the return on Large

⁹² Ibbotson SBBI Yearbook, *Morningstar, Inc.* at 28 (2008); Ibbotson SBBI Yearbook, *Morningstar, Inc.* at 23 (2009); Ibbotson SBBI Yearbook, *Morningstar, Inc.* at 23 (2010). The historical market risk premium equals the total return on large company stocks less the income-only return on long-term government securities.

1 Company Stocks from 1926 through 2022 minus the current risk-free rate that witness
2 Parcell has relied on. While I do not agree with the use of the historical return on
3 Large Company Stocks as the estimate of the market return for the reasons previously
4 discussed, this specification of the market risk premium is more appropriate than the
5 estimates relied on by witness Parcell for two reasons.

- 6 • First, by relying on the current three-month average yield on the 20-year Treasury
7 bond as opposed to the long-term historical average yield on long-term
8 governments bonds, the estimated market risk premium more reasonably reflects
9 the inverse relationship between interest rates and the market risk premium (*i.e.*,
10 because current interest rates are lower than the long-term historical average, the
11 market risk premium should be greater than the historical average risk premium).
12 As noted, this is a concept that witness Parcell has acknowledged and applied
13 when developing their Risk Premium analysis.⁹³
- 14 • Second, the CAPM formula identifies *one* estimate of the risk-free rate to be used
15 as the estimate of the risk-free rate and in the calculation of the market risk
16 premium. The formula does not specify the use of two different risk-free rates as
17 witness Parcell has assumed in their CAPM analysis. The use of witness Parcell's
18 risk-free rate of 4.05 percent (*i.e.*, the three-month average yield on the 20-year
19 Treasury bond) as both the risk-free rate in the CAPM formula as well as in the
20 calculation of the market risk premium also used in the CAPM formula is
21 internally consistent.

22 As shown in Exhibit No. AEB-24, by making reasonable adjustments to
23 witness Parcell's estimate of the market risk premium, witness Parcell's mean and
24 median CAPM results increase from 9.7 percent and 9.8 percent to 10.4 percent and
25 10.5 percent.

⁹³ Parcell, Exh. DCP-1T at 55:13-15.

1 **Q. Are the market risk premia specified by witness Woolridge and witness**
 2 **Kaufman in their respective CAPM analyses also inconsistent with the inverse**
 3 **relationship between interest rates and the market risk premium?**

4 A. Yes. As discussed in my response to witness Parcell and as shown in Figure 11,
 5 witness Woolridge’s and witness Kaufman’s market risk premia are inconsistent with
 6 the inverse relationship between interest rates and the market risk premium.
 7 Specifically, their risk-free rates are well below the long-term average risk-free rate,
 8 and yet contrary to the inverse relationship between interest rates and the market risk
 9 premium, their respective market risk premia are also well below the long-term term
 10 average market risk premium.

**Figure 11: Misalignment of Market Risk Premia Relied on
 by Witness Woolridge and Witness Kaufman**

Witness	Source	Market Risk Premium	Amount Below Long-Term Avg.	Risk-Free Rate	Amount Below Long-Term Avg.
	Long-Term Historical Avg.	<u>7.17%</u>		<u>4.85%</u>	
Woolridge	<i>Kroll</i> - Normalized	5.50%	-1.67%	4.30%	-0.55%
Woolridge	Professor Damodaran	4.38%	-2.79%	4.30%	-0.55%
Woolridge	KPMG	5.25%	-1.92%	4.30%	-0.55%
Woolridge	Fernandez Survey	5.70%	-1.47%	4.30%	-0.55%
Kaufman	S&P Implied	5.94%	-1.23%	4.08%	-0.77%

1 **Q. Witness Woolridge’s testimony gives primary weight to the market risk**
2 **premium from the survey conducted by Professor Fernandez.⁹⁴ Are there**
3 **drawbacks to the use of survey data?**

4 A. Yes. The drawbacks include biased responses and biased sampling as noted by
5 Brigham, Shome, and Vinson (1985).⁹⁵ Further, Professor Damodaran, whose market
6 risk premium estimate witness Woolridge has also given primary weight to in their
7 CAPM, noted that survey results were affected by how the questions were asked in
8 the survey and on recent stock price movements.⁹⁶ Additionally, the response rates to
9 surveys can be limited, as Graham and Harvey (2018) noted in their CFO survey
10 where the response rate was only 5 percent to 8 percent.⁹⁷ Finally, and most
11 importantly, even Professor Fernandez, the author of the study relied on by Witness
12 Woolridge, specifically states that the average of the distribution of the required
13 equity premium from the survey cannot be interpreted as the required equity
14 premium of the market nor of a representative investor.⁹⁸

⁹⁴ Woolridge, Exh. JRW-1T at 59:7-9.

⁹⁵ Eugene F. Brigham, Dilip K. Shome, & Steve R. Vinson, *The Risk Premium Approach to Measuring Utility’s Cost of Equity*, Financial Management, Vol. 14, No. 1, 1985, at 33.

⁹⁶ Aswath Damodaran, Equity Risk Premiums (ERP): Determinants, Estimation, and Implications at 28 (Mar. 23, 2023).

⁹⁷ John R. Graham & Campbell R Harvey, *The Equity Risk Premium in 2018*, Social Science Research Network (Mar. 27, 2018).

⁹⁸ Pablo Fernandez, Diego Garcia de la Garza, & Javier Fernandez Acin. *Survey: Market Risk Premium and Risk-Free Rate used for 80 countries in 2023*, IESE Business School at 10 (Apr. 3, 2023) (emphasis added).

1 **B. Unadjusted Betas**

2 **Q. What reasoning does witness Kaufman provide for using unadjusted betas in**
3 **their CAPM analysis?**

4 A. Witness Kaufman claims it is inappropriate to adjust individual betas for utility stocks
5 towards the market average since it is well known that utility stocks are less risky
6 than the market on average. Witness Kaufman contends that adjusting betas to the
7 market average overstates the risk of the utility industry, and if any adjustments
8 should be made to the betas, then it should be to adjust to the industry average not the
9 market average. Further, witness Kaufman states when using a proxy group analysis
10 that the proxy group acts as the “industry” and adjusting betas towards the average of
11 the proxy group would not materially change the results of the CAPM.⁹⁹

12 **Q. Have any of the other witnesses in this proceeding relied on unadjusted betas in**
13 **their CAPM analyses such as witness Kaufman has done?**

14 A. No. Witness Parcell, witness Woolridge, and I have all relied on the current betas for
15 our respective proxy groups as reported by *Value Line*, which have been adjusted to
16 account for the tendency of beta to regress towards the market average beta of 1.0
17 over time.

18 **Q. Has witness Kaufman provided prior regulatory commission precedent to**
19 **support their use of unadjusted betas in the CAPM?**

20 A. Witness Kaufman references an order issued by the Public Utility Commission of
21 Oregon (OPUC) from April 2000 as support for their position.¹⁰⁰

⁹⁹ Kaufman, Exh. LDK-1CT at 14:2-15:7.

¹⁰⁰ Kaufman, Exh. LDK-1CT at 15, n. 8.

1 **Q. Does witness Kaufman’s cited reference support their position in this**
2 **proceeding?**

3 A. No. The OPUC order cited by witness Kaufman related to a rate proceeding for a
4 telecommunications company more than 20 years ago. Witness Kaufman has
5 provided no prior precedent related to the electric utility industry, or for that matter,
6 any recent regulatory support where a utility regulatory commission supports the use
7 of unadjusted betas in the CAPM.

8 **Q. Are the results of witness Kaufman’s CAPM analyses, which rely on unadjusted**
9 **betas, reasonable?**

10 A. No. The results of witness Kaufman’s CAPM that rely on either their own calculation
11 of beta or Bloomberg’s unadjusted betas are both inconsistent with current market
12 conditions and average authorized ROEs for vertically integrated electric utilities. In
13 particular, the mean result of witness Kaufman’s CAPM that relies on the unadjusted
14 betas they have calculated is 8.00 percent,¹⁰¹ which is well below the average
15 authorized ROE for vertically integrated electric utilities, as well as any authorized
16 ROE in decades for a vertically integrated electric utility in a jurisdiction with a
17 comparable regulatory framework to Washington.

18 **C. Intervenor Criticisms**

19 **Q. What are the primary disagreements that witness Parcell, witness Woolridge,**
20 **and witness Kaufman have regarding your CAPM analyses?**

21 A. While witness Kaufman relies on my market risk premium for one of their CAPM
22 scenarios, witness Parcell and witness Woolridge contend that the forward-looking

¹⁰¹ Kaufman, Exh. LDK-1CT at 12:8-13.

1 market return, and thus market risk premium, in my CAPM analyses are
2 overstated.¹⁰² In addition, witness Parcell states that the use of Treasury bond yields
3 as the baseline for the market risk premium is improper during the time period
4 utilized due to “the Federal Reserve’s policies and related impact on the Treasury
5 yields.”¹⁰³ While witness Kaufman also disputes my use of adjusted betas in the
6 CAPM, as noted, both witness Parcell and witness Woolridge also rely on adjusted
7 betas published by *Value Line*, and I have already addressed the problem with witness
8 Kaufman’s position.

9 **Q. Is the market return, and thus market risk premium, you have relied on**
10 **overstated as claimed by witness Parcell and witness Woolridge?**

11 A. No. First, as I previously discussed, witness Parcell’s and witness Woolridge’s market
12 risk premia are understated because of the failure to account for the inverse
13 relationship between interest rates and the market risk premium. Therefore, this error
14 invalidates any comparison that these witnesses attempt to make using that data to
15 suggest that the market risk premium in my CAPM analysis is overstated.

16 Second, as stated in my direct testimony, the expected market return is
17 reasonable and consistent with the range of annual equity returns that have been
18 observed over the past century, whereby the realized equity return over this period
19 was at least as high as my market return or greater.¹⁰⁴ The market return in my
20 updated CAPM analysis is 11.83 percent, or lower than in my direct testimony, and

¹⁰² Parcell, Exh. DCP-1T at 44:3-4; Woolridge, Exh. JRW-1T at 72:11-89:16; Kaufman, Exh. LDK-1CT at 22:3-5.

¹⁰³ Parcell, Exh. DCP-1T at 44:4-7.

¹⁰⁴ Bulkley, Exh. AEB-1Tr at 39:1-40:1.

1 thus continues to be consistent with the frequency of historical market returns at or
2 above my estimate, which demonstrates it is a reasonable expectation for the market.

3 Third, the U.S. State Court of Appeals for the District of Columbia has
4 addressed the concern regarding the use of projected EPS growth rates in a constant
5 growth DCF model to estimate the market return in its review of FERC Opinion No.
6 569-B. In the Court’s decision, it acknowledged that the FERC has relied on the use
7 of EPS growth rates in the calculation of the forward-looking market return on the
8 S&P 500 because the S&P 500 is regularly updated to include companies with high
9 market capitalization and it includes companies at all stages of growth, including
10 lower and higher growth potential. The Court determined that FERC’s rationale for
11 using projected EPS growth rates was sufficient and did not accept the challenge to
12 this assumption.¹⁰⁵

13 Lastly, in a recent cost of capital proceeding for the electric utilities, the
14 California Public Utilities Commission noted that all parties recognized that historical
15 market returns and economically logical projections fall within the range of 12
16 percent.¹⁰⁶ This recognition is consistent with the market return utilized in my initial
17 CAPM analysis in my direct testimony and herein in my updated CAPM analysis in
18 my rebuttal testimony.

¹⁰⁵ *MISO Transmission Owners v. FERC*, 45 F.4th 248, 259 (D.C. Cir. 2022).

¹⁰⁶ Application of Pacific Gas and Electric for Authority to Establish Its Authorized Cost of Capital for Utility Operations in 2023 and to Reset the Cost of Capital Adjustment Mechanism, California Public Utilities Commission Application No. 22-04-008, Decision No. 22-12-031 at 23 (Dec. 15, 2023).

1 **Q. Have other regulatory commissions supported the use of a constant growth DCF**
2 **model to estimate the market return in the CAPM such as you have done?**

3 A. Yes. For example, the FERC, the Illinois Commerce Commission (ICC), the
4 Pennsylvania Public Utilities Commission (PA PUC) and the Maine Public Utilities
5 Commission (Maine PUC) have also relied on the constant growth DCF model to
6 estimate the market return in the CAPM analysis. In Opinion No. 569-A, the FERC
7 continued to support the use of the constant growth DCF model to calculate the
8 market return for the CAPM noting:

9 We also continue to find that the CAPM should use a one-step DCF
10 for its risk premium. This is because the rationale for using a two-
11 step DCF methodology for a specific group of utilities does not
12 apply when conducting a DCF study of the dividend-paying
13 companies in the S&P 500, as the Commission found in Opinion
14 Nos. 531-B and 569.172 A long-term component is unnecessary
15 because of the regular updates to the S&P 500, which allows it to
16 continue to grow at a short-term growth rate and because S&P 500
17 companies include stocks that are both new and mature, the latter of
18 which have a moderating effect on the short-term growth rates.¹⁰⁷

19 Furthermore, as shown in Figure 12, the ICC, the PA PUC, and Maine PUC
20 have also relied on the constant growth DCF model to estimate the market return. In
21 each case, the market return was estimated using the constant growth DCF model and
22 analysts' projected EPS growth rates, which resulted in a range of market return
23 estimates from 11.33 percent to 13.94 percent. As also shown, the ICC, the PA PUC
24 and the Maine PUC relied on the estimated CAPM results by the Staff of the ICC, the
25 I&E of the PA PUC, and the Staff of the Maine PUC, respectively, to determine the

¹⁰⁷ *Ass'n. of Businesses Advocating Tariff Equity v. Midcontinent Indep. Sys. Operator, Inc.*, 171 FERC ¶ 61,154 at ¶ 85 (2020).

1 authorized ROE in each of the proceedings and did not dispute the use of the constant
 2 growth DCF model to calculate the market return.

Figure 12: Regulatory Commissions Relying on Market Return Estimated Using the Constant Growth DCF Model

Intervening Party	Company	Docket No.	Market Return	Date of Order	Did the Commission Rely on the Party's CAPM?
Staff of the ICC	North Shore Gas Company	Docket 20-0810	CGDCF of the dividend-paying companies in the S&P 500 (11.95%) ¹⁰⁸	9/8/21	Yes ¹⁰⁹
I&E	Aqua Pennsylvania, Inc.	Docket No. R-2021-3027385	CGDCF of the Value Line Universe and S&P 500 (12.14%) ¹¹⁰	5/12/22	Yes, the PPUC placed primary weight on I&E's CAPM ¹¹¹
Staff of the MPUC	Northern Utilities, Inc.	Docket No. 2019-00092	CGDCF of the dividend-paying companies in the S&P 500 (11.33%-13.49%) ¹¹²	4/1/20	Yes ¹¹³

3 **Q. Is witness Woolridge's claim that your forward-looking market return is inflated**
 4 **internally consistent with their own analysis?**

5 A. No. While witness Woolridge criticizes my market return, their testimony as to the
 6 appropriate long-term earnings growth rate of the market contradicts the implied
 7 market return that is used in their own CAPM analyses. Specifically, witness

¹⁰⁸ *North Shore Gas Company, Proposed Increase in Rates for Gas Distribution Service*, Illinois Commerce Commission, Docket No. 20-0810, Order at 71 (Sept. 8, 2021) (available at <https://www.icc.illinois.gov/docket/P2020-0810/documents/315570>).

¹⁰⁹ *Id.*, at 86-87.

¹¹⁰ *Aqua Pennsylvania, Inc.*, Pennsylvania Public Utility Commission, Docket No. R-2021-3027385, Opinion and Order at 147 (May 16, 2022) (available at <https://www.puc.pa.gov/pdocs/1744354.pdf>).

¹¹¹ *Id.*, at 178.

¹¹² *Northern Utilities, Inc. d/b/a UNITIL, Request for Approval of Rate Change*, Maine Public Utilities Commission, Docket No. 2019-00092, Bench Analysis at 21 (Oct. 29, 2019).

¹¹³ *Id.*, Order Part II at 58 (Apr. 1, 2020).

1 Woolridge contends that the long-term market earnings growth rate is 4.00 percent to
 2 4.50 percent, and thus demonstrates that my market return is too high. However, as
 3 shown in Figure 13, witness Woolridge’s implied long-term average market growth
 4 rate in their CAPM analyses range from 6.59 percent to 8.12 percent, which are all
 5 substantially higher than the long-term growth rate of the market that the witness
 6 claims demonstrates my market return is too high. Therefore, while witness
 7 Woolridge supports long-term earnings growth rates for the market to allege that my
 8 market return is too high, ironically, that same data also invalidates their own CAPM
 9 analyses.

Figure 13: Inconsistency between Witness Woolridge’s Long-Term Market Growth Rates in Their CAPM Relative to Their Claimed Long-Term Market Growth Rates¹¹⁴

		Dr. Woolridge's Source of Market Risk Premium		
		Kroll Normalized	Prof. Damodaran	KPMG
Market Risk Premium		5.50%	4.38%	5.25%
<u>Plus:</u> Risk-Free Rate		4.38%	3.97%	4.20%
	Implied Market Return	9.88%	8.35%	9.45%
<u>Less:</u> Avg. Dividend Yield of Market		1.76%	1.76%	1.76%
	Dr. Woolridge's Implied Long-Term Market EPS Growth Rate in CAPM	8.12%	6.59%	7.69%
	Dr. Woolridge Claimed Long-Term Market EPS Growth Rate	4.00% - 4.50%		

¹¹⁴ Woolridge, Exh. JRW-1T at 62:3-63:14 & 84:3-4. Note, Dr. Woolridge does not specify a market return for their market risk premia; however, the implied market return for each of the market risk premia sources on which the witness relies for their CAPM analysis can be estimated based on the risk-free rate forecasts specified by each of those same sources. Specifically, in the data on which Dr. Woolridge has relied from Professor Damodaran, Professor Damodaran also indicates the risk-free rate. Dr. Woolridge’s *Kroll* market risk premium reflects the 30-day average of the 20-year Treasury bond as of August 30, 2023 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 MRP. Therefore, the 30-day average of the 30-year Treasury bond yield as of August 30, 2023 is used as the estimate of the risk-free rate to calculate the implied market return.

1 **Q. To support their position that your market return is too high, witness Woolridge**
2 **references a compounded annual return on the U.S. stock market of**
3 **approximately 10 percent from 1928-2022.¹¹⁵ Is this data point instructive for the**
4 **Commission in this proceeding?**

5 A. No. The compound annual return (or average geometric return) is useful under the
6 circumstances where the analyst may be interested in the holding period return;
7 however, that is not the relevant return when estimating the market risk premium. As
8 just discussed regarding witness Parcell's use of a geometric market return, witness
9 Woolridge's suggested use of the compound annual return fails to consider that
10 annual returns are independent observations, unrelated to the prior year return.
11 Therefore, the compound annual return over the historical time period does not
12 recognize the wide range of returns over that period. In order to recognize the
13 independent nature of the market returns from year to year, the appropriate measure is
14 the arithmetic average. Had witness Woolridge relied on the arithmetic average, they
15 would have calculated an average market return from 1926 through 2022 of 12.02
16 percent, which is consistent with the market return that I relied on in my direct
17 testimony and as updated herein in my rebuttal testimony.

18 **Q. Is there support for the use of the arithmetic average annual market return in**
19 **the calculation of the market risk premium?**

20 A. Yes. *Kroll*, one of the sources that witness Woolridge relies on for their CAPM
21 analysis, states the following on the use of the arithmetic versus geometric mean:

¹¹⁵ Woolridge, Exh. JRW-1T at 73:8-10.

1 The equity risk premium data presented in this book are arithmetic
2 average risk premiums as opposed to geometric average risk. The
3 arithmetic average equity risk premium can be demonstrated to be
4 most appropriate when discounting future cash flows. For use as the
5 expected equity risk premium in either the CAPM or the building-
6 block approach, the arithmetic mean or the simple difference of the
7 arithmetic means of stock market returns and riskless rates is the
8 relevant number.

9 This is because both the CAPM and building block approach are
10 additive models, in which the cost of capital is the sum of its parts.
11 The geometric average is more appropriate for reporting past
12 performance because it represents the compound average return.¹¹⁶

13 **Q. Is there any validity to witness Parcell's claim that your use of Treasury bond**
14 **yields as the baseline for the market risk premium is improper due to the**
15 **Federal Reserve's monetary policies?**¹¹⁷

16 A. No. It is not clear as to what Federal Reserve monetary policies witness Parcell is
17 referring, but it appears that they are referring to the Federal's Reserve's
18 accommodative monetary policies after the COVID-19 pandemic in which interest
19 rates were held very low to stimulate the economy. However, as previously discussed,
20 the Federal Reserve has discontinued its accommodative monetary policies in order to
21 combat inflation, meaning that, in addition to witness Parcell's criticism being
22 unclear, it also is no longer relevant. Moreover, if witness Parcell is suggesting that
23 one interest rate should be utilized for the risk-free rate in the CAPM model, but then
24 another interest rate should be used for purposes of calculating the market risk
25 premium that is not based on current risk-free rates of the Federal Reserve's monetary
26 policies, there is no basis for such an approach. The CAPM equation, which is

¹¹⁶ 2022 SBBI Yearbook, Kroll, at 201.

¹¹⁷ Parcell, Exh. DCP-1T at 44:3-10.

1 specified in my direct testimony and in witness Parcell's testimony, applies the same
2 risk-free rate in the equation, not separate risk-free rates.

3 **VIII. ECAPM**

4 **Q. Have any of the witnesses conducted an ECAPM analysis?**

5 A. Yes. Witness Kaufman also conducts an ECAPM analysis. Witness Kaufman uses the
6 same inputs in their ECAPM analysis as they use in their CAPM analysis, and reflects
7 the same weighting factors as I have used in my ECAPM analyses. However, witness
8 Kaufman recommends against placing material weight on the ECAPM because the
9 witness contends that the model contains questionable assumptions.¹¹⁸

10 **Q. Do you agree with witness Kaufman's ECAPM analysis?**

11 A. No. Witness Kaufman uses the same unadjusted betas and market risk premium for
12 their ECAPM analysis as the witness uses in their CAPM analysis and, as explained, I
13 do not agree with those assumptions. In addition, just as with this CAPM, the result of
14 their ECAPM in which the witness relies on their derivation of unadjusted betas is
15 inconsistent with currently authorized ROEs for vertically integrated electric utilities
16 nationally, and is also at the low end of any authorized ROE for a vertically integrated
17 electric utility in decades in a jurisdiction with a comparable regulatory framework to
18 Washington.

19 **Q. What are the positions of witness Parcell, witness Woolridge, and witness
20 Kaufman regarding your ECAPM analyses?**

21 A. These witnesses have stated the following regarding my ECAPM analyses:

¹¹⁸ Kaufman, Exh. LDK-1CT at 22:12-13.

- 1 • Witness Parcell claims that it is improper to use the ECAPM because it does not
2 use the actual betas of the proxy group but rather calculates hypothetical betas.
3 Additionally, witness Parcell contends that the ECAPM assumes that investors
4 who subscribe to *Value Line* do not actually rely on the beta published by *Value*
5 *Line* but “rather ‘modify’ the published betas in an arbitrary fashion.”¹¹⁹
- 6 • Witness Woolridge contends that the use of an adjusted beta in the ECAPM is
7 duplicative and thus produces overstated results. In addition, witness Woolridge
8 also asserts that there is no academic support to show that the CAPM model
9 underestimates the cost of equity for regulated utilities and that the ECAPM
10 adjustment is necessary.¹²⁰
- 11 • Witness Kaufman states the ECAPM has questionable assumptions that rely on
12 dated statistical analysis and it is not clear this relationship persists in this market
13 today, and therefore no material weight should be placed on the results.¹²¹

14 **Q. Do you agree with witness Parcell and witness Woolridge that the ECAPM**
15 **inappropriately adjusts the betas and thus produces overstated results?**

16 A. No. The purpose of adjusting beta in the CAPM is to account for the tendency of beta
17 to trend back over time to the market beta of 1.00. The betas published by *Value Line*
18 include this adjustment, which was first proposed by Marshall E. Blume in 1975.¹²²
19 The use of adjusted betas in the CAPM is important because if beta trends towards
20 1.00, as Blume noted, then the adjusted beta will be more reflective of the beta that
21 can be expected over the near-term. This is equally important in the specification of
22 the CAPM in this case since we are estimating the cost of equity for the Company
23 over the near-term.

24 In contrast, the ECAPM does not account for the tendency of beta to trend
25 toward 1.00. The purpose of the ECAPM is to account for the fact that the risk-return

¹¹⁹ Parcell, Exh. DCP-1T at 44:16-45:2.

¹²⁰ Woolridge, Exh. JRW-1T at 71:16-72:10.

¹²¹ Kaufman, Exh. LDK-1CT at 23:1-10.

¹²² Marshall E. Blume, *Betas and Their Regression Tendencies*, The Journal of Finance, Vol. 30, No. 3, 1975, at 785-795.

1 relationship is flatter than what is estimated by the CAPM, even when using adjusted
2 betas. While beta is not observable and must be estimated, the theory behind the
3 ECAPM is that even if the true value of a stock's beta were observable, the CAPM
4 would understate the results for stocks with betas less than 1.00 and overstate the
5 results for stocks with betas greater than 1.00. Therefore, contrary to the assertions of
6 witness Parcell and witness Woolridge, the purpose of each adjustment is different
7 and thus applying both adjustments in the ECAPM is not duplicative.

8 The concept of the ECAPM and the conclusion that the risk-return
9 relationship is flatter than predicted by the CAPM is generally accepted in financial
10 literature. For example, Dr. Roger A. Morin, in *Modern Regulatory Finance*, provides
11 a list of studies each of which concludes that the CAPM understates the returns for
12 companies with betas less than 1.0 and overstates the return for companies with betas
13 greater than 1.0.¹²³ It is the empirical studies referenced by Dr. Morin that formed the
14 basis of the development of alternative models such as the ECAPM that would better
15 predict the risk return-relationship observed when reviewing actual market data.

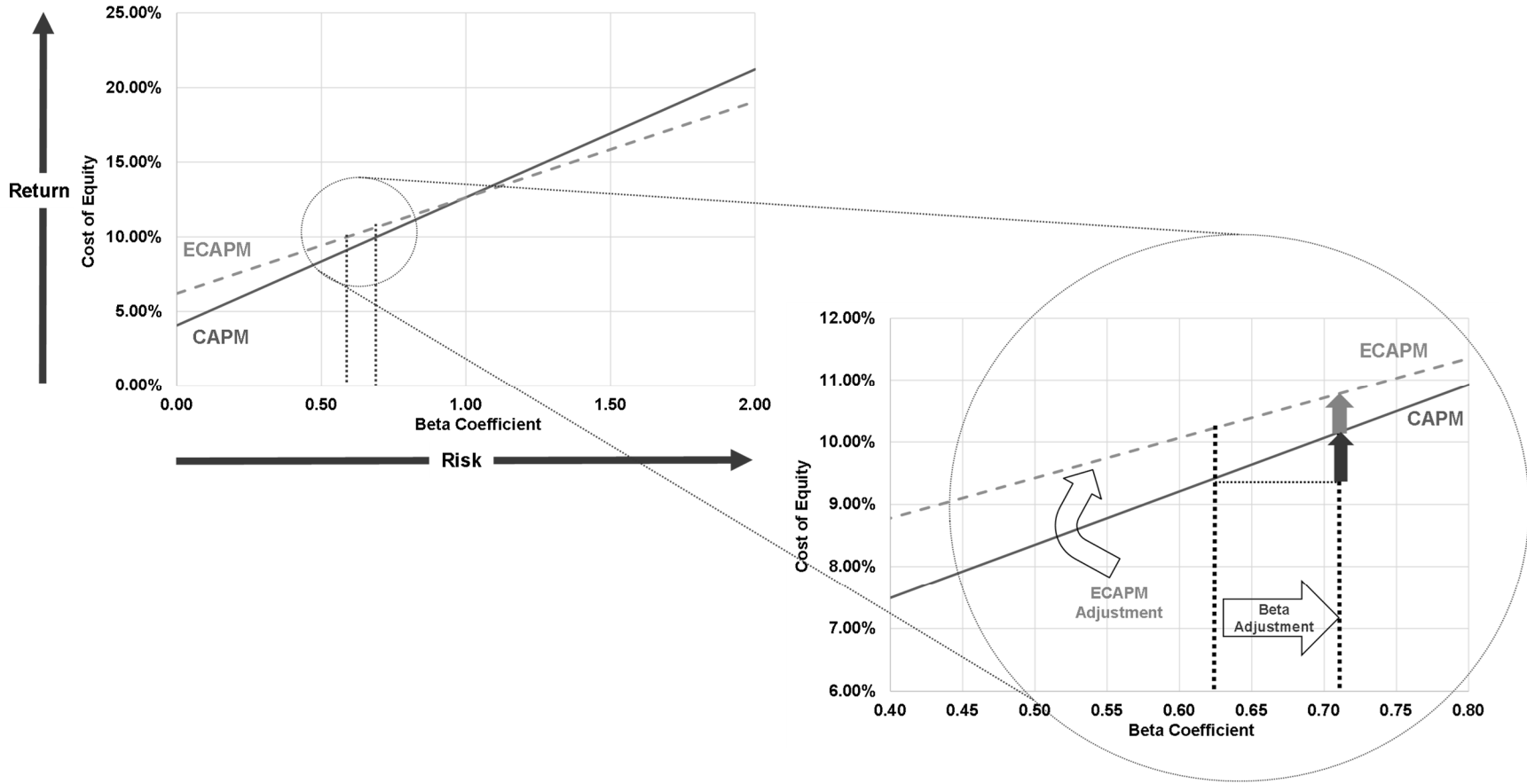
16 **Q. Can you demonstrate that using adjusted betas in the CAPM and relying on the**
17 **ECAPM are two distinct adjustments to the CAPM?**

18 A. Yes. Figure 14 demonstrates the point that adjusting betas and adjusting the slope of
19 the risk/return relationship through the ECAPM are two distinct adjustments and are
20 not duplicative as alleged by witness Parcell and witness Woolridge. As shown in
21 Figure 14, when beta is adjusted to recognize that betas revert to the market mean of

¹²³ Roger A. Morin, *Modern Regulatory Finance*, Public Utilities Reports, Inc. at 206-208 (2021).

1 1.0 over time and used in the CAPM, the resulting adjustment is shown by the darker
2 gray arrow in the lower right-hand corner. Separately, when the ECAPM is employed
3 to recognize that the risk/return relationship is flatter than predicted by the CAPM,
4 the resulting adjustment is shown by the lighter gray arrow (on top of the darker gray
5 arrow) in the lower right-hand corner. To the extent that a company with a beta
6 greater than 1.0 were being evaluated, the same process of two separate adjustments
7 would apply, albeit in the opposite direction from what is shown in Figure 14 and
8 would result in a decrease in the cost of equity otherwise predicted by the CAPM.

Figure 14: Risk/Return Relationship between CAPM and ECAPM



1 **Q. Are you aware of academic studies that have used adjusted betas to estimate the**
2 **ECAPM?**

3 A. Yes. For example, Chrétien and Coggins (2011) studied the CAPM and its ability to
4 estimate the risk premium for the utility industry in particular subgroups of utilities
5 for a data set that included market data through the end of 2006.¹²⁴ Chrétien and
6 Coggins considered the CAPM, the Fama-French three-factor model and a model
7 similar to the ECAPM. The study shows that the ECAPM significantly outperformed
8 the traditional CAPM at predicting the observed risk premium for the various utility
9 subgroups. Therefore, addressing witness Kaufman's concern regarding the
10 performance of the ECAPM.

11 Additionally, witness Parcell's and witness Woolridge's concern with the
12 ECAPM analysis is addressed directly by Dr. Morin in their 2021 text *Modern*
13 *Regulatory Finance* as follows:

14 Because of this adjustment, some critics of the ECAPM argue that
15 the use of Value Line adjusted betas in the traditional CAPM
16 amounts to using an ECAPM. This is incorrect. The use of adjusted
17 betas in a CAPM analysis is not equivalent to the ECAPM. Betas are
18 adjusted because of the regression tendency of betas to converge
19 towards 1.0 over time. We have seen that numerous empirical
20 studies have determined that the SML [Security Market Line]
21 described by the CAPM formula at *any given moment* in time is not
22 as steeply sloped as the predicted SML. The slope of the SML
23 should not be confused with Beta. On the point, Eugene F. Brigham,
24 finance professor and the author of many financial textbooks states:

25 The Slope of the SML (5% in Figure 6-16) reflects the
26 degree of risk aversion in the economy. The greater the
27 average investor's aversion to risk, then (a) the steeper
28 the slope of the line, (b) the greater the risk premium
29 for all stocks, and (c) the higher required rate of return

¹²⁴ Stéphane Chrétien & Frank Coggins, *Cost of Equity For Energy Utilities: Beyond The CAPM*, Energy Studies Review, Vol. 18, no. 2, 2011.

1 on all stocks. Students sometimes confuse beta with the
2 slope of the SML. This is a mistake.

3 The use of an adjusted beta by Value Line is correcting for a
4 different problem than the ECAPM. The adjusted beta captures the
5 fact that betas regress towards one over time. The ECAPM corrects
6 for the fact that the CAPM under-predicts observed returns when
7 beta is less than one and over-predicts observed returns when beta is
8 greater than one.¹²⁵

9 **Q. Are you aware of state regulatory commissions that have accepted the use of the**
10 **ECAPM in the manner as you have conducted?**

11 A. Yes. There are various regulatory commissions that have supported the use of the
12 ECAPM in establishing an authorized ROE, and have done so when adjusted betas
13 are used in the ECAPM analysis. For example, the New York Public Service
14 Commission (NYPSC), the Montana Public Service Commission (Montana PSC),
15 and North Carolina Utilities Commission (NCUC) have accepted the ECAPM
16 analysis with the use of adjusted beta coefficients in establishing the authorized ROE
17 for regulated utilities. Specifically, the NYPSC gives equal weight to the CAPM and
18 ECAPM (which it refers to as the “Zero Beta” CAPM) results,¹²⁶ the Montana PSC
19 has expressed preference for the ECAPM analysis,¹²⁷ and the NCUC has recently

¹²⁵ Roger A. Morin, *Modern Regulatory Finance*, Public Utilities Report, Inc. at 223-224 (2021) (emphasis added).

¹²⁶ Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Corning Natural Gas Corporation for Gas Service, New York Public Service Commission Case No. 20-G-0101, Order at 44-46 (May 19, 2021).

¹²⁷ Joint Application for Approval to Change and Establish Natural Gas Delivery Service Rates for Energy West Montana, Inc. and Cut Bank Gas Company, Montana Public Service Commission Docket No. D2017.9.80, Order No. 7575c at 46 (Sept. 26, 2018).

1 found that both the adjustment to beta in the CAPM and the adjustment in the
2 ECAPM were needed because they correct for different things.¹²⁸

3 IX. RISK PREMIUM

4 **Q. Have any of the witnesses conducted a Risk Premium analysis?**

5 A. Yes. Witness Parcell has also conducted a Risk Premium analysis. Specifically,
6 witness Parcell conducts their analysis using a historical average risk premium based
7 on the difference between authorized ROEs and A-rated utility bond yields over
8 2012-2019 and 2012-2021, but relies on the averages over the 2012-2019 period.
9 Witness Parcell dismisses the utility bond yields for the 2020-2021 period on the
10 basis that the risk premiums are “impacted by the COVID-19 pandemic and are not
11 consistent with the 2012-2019 years.”¹²⁹ Witness Parcell then adjusts the historical
12 average risk premium over the period 2012-2019 using the results of my risk
13 premium regression analysis to reflect the fact that current utility bond yields are
14 greater than the historical average for 2012-2019. Witness Parcell adds their adjusted
15 historical average risk premium for 2012-2019 to the current yields on A-rated utility
16 bonds.

17 **Q. What is your position regarding witness Parcell’s Risk Premium analysis?**

18 A. While I disagree with certain aspects of witness Parcell’s Risk Premium analysis,
19 including, but not limited to, witness Parcell’s exclusion of data from the 2020-2021
20 period, the results of their Risk Premium analysis range from 10.02 percent to 10.49

¹²⁸ Application of Duke Energy Progress, LLC for Adjustment of Rates and Charges Applicable to Electric Service in North Carolina and Performance Based Regulation, 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).

¹²⁹ Parcell, Exh. DCP-1T at 53:16-18.

1 percent is consistent with the range of results of my updated Risk Premium analysis
2 as shown in Exhibit No. AEB-21 (*i.e.*, 10.27 percent to 10.45 percent). Additionally,
3 the midpoint of witness Parcell’s Risk Premium analysis of 10.25 percent supports
4 the Company’s requested ROE of 10.00 percent. Therefore, to limit the contested
5 issues, I will not address witness Parcell’s Risk Premium analysis.

6 **Q. Have any witnesses commented on your Risk Premium analyses?**

7 A. Yes. Witness Parcell and Witness Woolridge have commented on my Risk Premium
8 analyses:

- 9 • Witness Parcell claims that my Risk Premium analysis, which includes data back
10 to 1992, does not recognize or account for other changes in the risk premium
11 other than changes in interest rates, such as the increased use of regulatory cost
12 recovery mechanisms, and thus does not reasonably capture the current
13 relationship between authorized ROEs and interest rates.¹³⁰
- 14 • Witness Woolridge opposes the use of a Risk Premium analysis generally because
15 they claim that authorized ROEs are a reflection of regulator behavior and not
16 market behavior. In addition, the witness claims that my methodology produces
17 an inflated measure of the risk premium because it relies on historical Treasury
18 yields instead of projected Treasury yields, which the witness claims “are always
19 forecasted to increase.” Lastly, Witness Woolridge contends that a problem with
20 the Risk Premium approach is that it is “obvious that the authorized ROEs of state
21 utility commissions are above the returns that investors require.”¹³¹

22 **Q. Is there any validity to witness Parcell’s contention regarding your Risk
23 Premium analysis?**

24 A. No. It is clear from the regression analysis that I have conducted between authorized
25 ROEs and interest rates over the past 30 years that there is a strong inverse
26 relationship between these two variables that can be reasonably used to estimate the
27 cost of equity based on current and projected interest rates. As shown in Exhibit

¹³⁰ Parcell, Exh. DCP-1T at 51:6-52:8.

¹³¹ Woolridge, Exh. JRW-1T at 90:5-91:8.

1 No. AEB-10 of my direct testimony, as well as in Exhibit No. AEB-21 of my rebuttal
2 testimony, the regression equation in my Risk Premium analysis has an R-squared of
3 approximately 0.82, which means that 82 percent of the change in the estimated risk
4 premium can be explained by changes in the level of Treasury bond yields. While
5 other factors may influence the authorized return, the regression equation indicates
6 that Treasury bond yields have been an important variable over this period.

7 Furthermore, although witness Parcell suggests my Risk Premium analysis is
8 deficient, the witness specifically relies on the estimated coefficient of my regression
9 equation in order to reflect the inverse relationship between interest rates and the risk
10 premium in their Risk Premium analysis. In fact, witness Parcell notes that “[i]n my
11 RP analyses, I accept Company Witness Bulkley’s assumption of this relationship
12 between risk premium of interest rate changes.”¹³² Therefore, it is disingenuous of
13 witness Parcell to critique my Risk Premium analysis when the witness relies on my
14 regression to calculate their Risk Premium analysis.

15 **Q. Do you agree with witness Woolridge that the Risk Premium methodology is not**
16 **valid because it does not measure investor behavior?**

17 A. No. It is unquestionable that both credit rating agencies and investors consider the
18 authorized ROE data in their determination of the valuation of utility stocks. As I
19 discussed previously, both credit rating agencies and investors have responded
20 negatively to authorized ROEs deemed to be low. Therefore, the relationship between
21 recently authorized ROEs and the prevailing interest rates at the time that the ROE

¹³² Parcell, Exh. DCP-1T at 55:19-20.

1 was authorized is reasonable to consider when setting the ROE in the context of a rate
2 proceeding.

3 Moreover, it is important to recognize the inconsistency in witness
4 Woolridge's position as to my reliance on authorized ROEs in the Risk Premium
5 analysis. On the one hand, the witness suggests that my Risk Premium analysis
6 cannot be relied upon because the authorized ROEs are commission behavior and not
7 investor behavior. However, on the other hand, witness Woolridge devotes significant
8 discussion in their testimony to evaluating the same data – authorized ROEs and 30-
9 year Treasury bond yields – that I use in the Risk Premium analysis and that the
10 witness also relies on as support for their recommended ROE.¹³³ Therefore, while
11 witness Woolridge suggests that my Risk Premium analysis cannot be considered
12 because it reflects other factors such as capital structure, credit ratings and other risk
13 measures used by commissions to determine appropriate ROEs, the witness
14 disregards these concerns when they rely on this same data to support their ROE
15 recommendation.

16 **Q. Is there a large body of research that supports the inverse relationship between**
17 **equity risk premia and interest rates?**

18 A. Yes. For example, Berry (1998) came to similar conclusions regarding the inverse
19 relationship between interest rates and the risk premia.¹³⁴ Also, as summarized in *New*

20 *Regulatory Finance*:

21 Published studies by Brigham, Shome, and Vinson (1985), Harris
22 (1986), Harris and Marston (1992, 1993), Carleton, Chambers, and

¹³³ Woolridge, Exh. JRW-1T at 9:20-22:19.

¹³⁴ S. Keith Berry, *Interest Rate Risk and Utility Risk Premia during 1982-93*, *Managerial and Decision Economics*, Vol. 19, No. 2, March, 1998.

1 Lakonishok (1983), Morin (2005), and McShane (2005), and others
2 demonstrate that, beginning in 1980, risk premiums varied inversely
3 with the level of interest rates—rising when rates fell and declining
4 when interest rates rose. The reason for this relationship is that when
5 interest rates rise, bondholders suffer a capital loss. This is referred
6 to as interest rate risk Conversely in low interest rate
7 environments, when bondholders’ interest rate fears subside and
8 shareholders’ fears of loss of earning power dominate, the risk
9 differential will widen and hence the risk premium will increase.¹³⁵

10 In their more recent textbook, *Modern Regulatory Finance*, Dr. Morin
11 outlines the issues and academic research and concludes the following with respect to
12 the relationship between interest rates and the equity risk premium:

13 This is particularly true in a high inflation environment. Interest rates
14 rise as a result of accelerating inflation, and the interest rate risk of
15 bonds intensifies more than the earnings of common stocks, which
16 are partially hedged from the ravages of inflation. This phenomenon
17 has been termed as a “lock-in” premium. Conversely, in low interest
18 rate environments, when bondholders’ interest rate fears subside and
19 shareholders’ fears of loss of earnings power dominate, the risk
20 differential will widen and hence the risk premium will increase.

21 Published empirical studies demonstrate that risk premiums vary
22 inversely with the level of interest rates, rising when rates fell and
23 declining when interest rates rose. Studies by Brigham, Shome, and
24 Vinson (1985), Harris (1986), Harris and Marston (1992, 1993),
25 Carleton, Chambers, and Lakonishok (1983), and Morin (2020), and
26 others **demonstrate that, beginning in 1980, risk premiums varied**
27 **inversely with the level of interest rates – rising when rates fell and**
28 **declining when rates rose.**¹³⁶

29 In fact, in discussing the results of the various studies demonstrating the
30 inverse relationship between interest rates and the equity risk premium, Dr. Morin
31 states that “[s]imilar results have been reported by several financial experts who

¹³⁵ Roger A. Morin, *New Regulatory Finance*, Public Utilities Reports, Inc. at 128 (2006).

¹³⁶ Roger A. Morin, *Modern Regulatory Finance*, Public Utilities Reports, Inc. at 146 (2021) (emphasis added) (graphic referenced in cite and shown in text has been omitted).

1 examined the statistical relationship between risk premiums and interest rates using a
2 sample of natural gas utilities.”¹³⁷

3 **Q. Witness Woolridge claims that my Risk Premium analysis cannot be relied upon**
4 **because it relies on projected Treasury bond yields that are “always forecasted**
5 **to increase.”¹³⁸ Do you agree with this position?**

6 A. No. Witness Woolridge’s suggestion is that I have only relied on forecasted Treasury
7 bond yields, which is incorrect. As shown on Exhibit No. AEB-10 of my Direct
8 Testimony and Exhibit No. AEB-21 of my rebuttal testimony, I have relied on both a
9 current Treasury bond yield (*i.e.*, the current 30-day average of the 30-year Treasury
10 bond yield), as well as two projections of the Treasury bond yield from the *Blue Chip*
11 *Financial Forecast* in my Risk Premium analyses.

12 **Q. Do you agree with witness Woolridge’s claim that state utility commissions have**
13 **consistently authorized ROEs that exceed the cost of equity?**¹³⁹

14 A. No. I fundamentally disagree with witness Woolridge’s claim that regulators across
15 the U.S. have consistently incorrectly authorized ROEs substantially higher than the
16 cost of equity for decades. Regulatory commissions are mandated to approve rates
17 that balance the interests of customers and shareholders and that are just and
18 reasonable. Given their legal mandate for just and reasonable rates, it has to be
19 concluded that the ROEs authorized by regulatory commissions have been deemed by
20 those agencies to reflect the investor-required return and produce just and reasonable
21 rates.

¹³⁷ *Id.*, at 145.

¹³⁸ Woolridge, Exh. JRW-1T at 90:9.

¹³⁹ *Id.*, at 91:1-8.

1 **Q. Witness Woolridge cites a Werner and Jarvis (2022) study and contends that the**
2 **study demonstrates that authorized ROEs historically have consistently**
3 **exceeded the cost of equity for utilities.¹⁴⁰ Do you agree?**

4 A. No. First, the Werner and Jarvis (2022) study, which benchmarks authorized returns
5 to corporate bond yields and Treasury bond yields, incorrectly assumes that a 1
6 percentage point change in the yield on Treasury bonds will result in a 1 percentage
7 point change in the authorized returns. However, the authors provide no references to
8 studies or other information to support their assumption. Further, when the authors
9 calculated an alternative scenario that assumed the authorized return would change at
10 only half the rate of change in the Treasury yield (*i.e.*, a 100 basis point increase in
11 the Treasury yield would result in a 50 basis point increase in the authorized ROE),
12 the spread between the estimated benchmark returns and the authorized returns
13 decreased significantly and did not show an increasing trend over the study period.

14 Second, the authors' comparison of authorized returns to the cost of equity
15 estimates of the CAPM relied entirely on their selected data inputs being the correct
16 inputs to estimate the CAPM. This assumption is highly unlikely, particularly since
17 the authors rely on two CAPM analyses that consider different inputs. For example,
18 the first CAPM analysis resulted in a spread between the estimated cost of equity and
19 the authorized return of 5.60 percentage points in 2020, while the second CAPM
20 analysis produced a spread of only 0.786 percentage points.¹⁴¹ In fact, the authors

¹⁴⁰ *Id.*

¹⁴¹ Karl Dunkle Werner & Stephen Jarvis, *Rate of Return Regulation Revisited*, Working Paper, Energy Institute, University of California at Berkeley, 2022, at 26.

1 acknowledged that the results were highly dependent on the assumptions used to
2 calculate the CAPM:

3 Bolstering the financial expertise of regulators is another promising
4 path forward. Seemingly objective methods like the capital asset
5 pricing model cannot provide a definitive answer on the cost of
6 equity. As we have documented, a range of plausible input
7 assumptions can lead to widely divergent estimates of the cost of
8 equity. When incorporating evidence from these methods regulators
9 need to have the expertise to understand their limitations and push
10 back on the assumptions utilities put forward when using them.¹⁴²

11 Finally, it is not reasonable to draw conclusions from a comparison of the
12 authorized returns of electric and natural gas utilities in the United States to the
13 returns authorized for utilities in the United Kingdom without considering the effect
14 that the different regulatory environments have on the business risk of the utilities. As
15 Werner and Jarvis acknowledge: “there are many differences between the utility
16 sector and investor environment in the US and UK.”¹⁴³ Given that the authors
17 acknowledge there are differences in the regulatory environments, yet have not
18 considered the effect of those differences on the cost of equity for the electric and
19 natural gas utilities in either the UK or US, it is not reasonable to conclude that the
20 authorized ROEs in the US are too high based on a comparison to the returns
21 authorized for utilities in the UK. As a result, the limitations of the Werner and Jarvis
22 (2022) study do not support witness Woolridge’s contention that U.S. state regulatory
23 commissions have consistently authorized ROEs in excess of the cost of equity, or
24 that my Risk Premium analysis cannot be reasonably relied on for purposes of
25 estimating the cost of equity in this proceeding.

¹⁴² *Id.*, at 34.

¹⁴³ *Id.*, at 28.

1 **X. COMPARABLE EARNINGS / EXPECTED EARNINGS**

2 **Q. Have any of the witnesses conducted a Comparable Earnings analysis?**

3 A. Yes, Witness Parcell has also conducted a Comparable Earnings analysis.

4 Specifically, as shown on Exhibit No. DCP-12, page 1, witness Parcell conducts a
5 Comparable Earnings analysis by evaluating historical earned returns on equity for
6 their proxy group over the period 2002-2020, current returns on equity for 2021 and
7 2022, and projected returns on equity for the proxy group over the period 2023, 2024,
8 and 2026 through 2028. Witness Parcell concludes that the range of ROEs for their
9 proxy group ranges from no more than 9.0 percent to 9.5 percent, with a midpoint of
10 9.25 percent.¹⁴⁴

11 **Q. Do you have any concerns with witness Parcell’s Comparable Earnings analysis?**

12 A. Yes. One of my concerns with witness Parcell’s Comparable Earnings analysis is that
13 it presents “realized returns” over a historical period that is too long (*i.e.*, 2002-2020)
14 to be relevant in this proceeding, and there is no evidence presented as to whether the
15 selected proxy companies would have met the witness’s screening criteria during that
16 historical period. Witness Parcell’s review of the historical returns of the proxy group
17 companies is a backward-looking measure that does not consider, and is not relevant
18 to, current and prospective market conditions.

19 In addition, while witness Parcell also considers projected ROEs from *Value*
20 *Line* in their analysis, witness Parcell does not adjust those projected ROEs for
21 changes in the shares outstanding for each company over the period of the analysis as

¹⁴⁴ Parcell, Exh. DCP-1T at 45:6-49:21. Note, witness Parcell also evaluates the earned return on equity for the companies in the S&P 500 Index, yet does not rely on this analysis for purposes of their range and midpoint result of their Comparable Earnings analysis.

1 I have done in my analysis. As such, witness Parcell's Comparable Earnings analysis
2 using projected equity returns understates the projected returns expected by investors
3 for their proxy group companies.

4 **Q. What is witness Parcell's criticism of your Expected Earnings analysis?**

5 A. Witness Parcell criticizes my Expected Earnings analysis for not considering the
6 market-to-book ratios for the proxy group companies in conjunction with the
7 projected ROEs.¹⁴⁵

8 **Q. Do you agree with witness Parcell's criticism?**

9 A. No. Although witness Parcell criticizes my Expected Earnings analysis, the witness
10 also does not make any adjustment to their Comparable Earnings analysis for the
11 market-to-book ratios of the proxy group companies.

12 **Q. What does witness Woolridge state regarding your Expected Earnings analysis?**

13 A. According to witness Woolridge, there are a number of issues with the Expected
14 Earnings approach: (1) it does not measure the market cost of equity capital; (2) the
15 expected ROEs are accounting measures and do not measure investor return
16 requirements; (3) changes in ROE ratios do not track capital market conditions; (4)
17 the approach is circular; and (5) the proxy companies' projected ROEs reflect
18 earnings on business activities that are not representative of the Company's rate-
19 regulated utility operations.¹⁴⁶ As support for their position that the approach does not
20 measure the market cost of equity capital and the changes in ROE ratios do not track

¹⁴⁵ *Id.*, at 50:1-51:2.

¹⁴⁶ Woolridge, Exh. JRW-1T at 91:14-94:2.

1 capital market conditions, the witness cites to Dr. Morin's *New Regulatory Finance*
2 text.

3 **Q. Do you agree with witness Woolridge's position regarding the Expected**
4 **Earnings analysis?**

5 A. No. The *Hope* and *Bluefield* standards establish that a utility should be granted the
6 opportunity to earn a return that is commensurate with the return on other investments
7 of similar risk. Therefore, it is reasonable to consider the returns that investors expect
8 to earn on the common equity of utilities in the proxy group as a benchmark for a just
9 and reasonable return because that is the expected earned return on equity that an
10 investor will consider in determining whether to purchase shares in the company or
11 seek alternative investments with a better risk/reward profile. As Dr. Morin notes:

12 The Comparable Earnings standard has a long and rich history in
13 regulatory proceedings, and finds its origins in the fair return
14 doctrine enunciated by the U.S. Supreme Court in the landmark
15 Hope case. The governing principle for setting a fair return decreed
16 in Hope is that the allowable return on equity should be
17 commensurate with returns on investments in other firms having
18 comparable risks, and that the allowed return should be sufficient to
19 assure confidence in the financial integrity of the firm, in order to
20 maintain creditworthiness and ability to attract capital on
21 reasonable terms. Two distinct standards emerge from this basic
22 premise: a standard of Capital Attraction and a standard of
23 Comparable Earnings. The Capital Attraction standard focuses on
24 investors' return requirements, and is applied through market value
25 methods described in prior chapters, such as DCF, CAPM, or Risk
26 Premium. The Comparable Earnings standard uses the return earned
27 on book equity investment by enterprises of comparable risks as the
28 measure of fair return.¹⁴⁷

29 Additionally, while witness Woolridge references certain weaknesses of the
30 Expected Earnings analysis identified by Dr. Morin, witness Woolridge fails to note

¹⁴⁷ Roger A. Morin, *New Regulatory Finance*, Public Utilities Reports, Inc. at 381 (2006).

1 that Dr. Morin discusses both the strengths and weaknesses of each of the
2 methodologies used to compute the cost of equity, including the DCF and CAPM
3 analyses, which are the two approaches that witness Woolridge solely relies on for
4 purposes of their recommendation in this proceeding.

5 **XI. BUSINESS AND REGULATORY RISKS**

6 **Q. What do witness Parcell and witness Woolridge state regarding the risks to**
7 **which the Company is subject in establishing the ROE in this proceeding?**

8 A. Witness Parcell contends that Washington SB 5295, which was passed in May 2021
9 and requires a gas or electric utility to pursue a MYRP and set performance measures
10 to assess a utility under the MYRP, provides a more stable regulatory and financial
11 environment, and thus the Company is less risky on a “post-legislation” basis than it
12 was on a “pre-legislation” basis. Based on this position, witness Parcell recommends
13 that the ROE established in this proceeding be set at a level that is no higher than the
14 lower end of their market-determined ROE, which is 9.50 percent.¹⁴⁸

15 In addition, witness Parcell and witness Woolridge claim that the regulatory
16 and business risk factors that I reviewed in my direct testimony are already
17 encompassed with the credit ratings of PacifiCorp, meaning consideration of these
18 factors is redundant, and regardless, PacifiCorp’s credit rating is already higher than
19 the proxy group companies.¹⁴⁹

¹⁴⁸ Parcell, Exh. DCP-1T at 21:1-25:17.

¹⁴⁹ Parcell, Exh. DCP-1T at 60:7-61:4; Woolridge, Exh. JRW-1T at 94:3-12; Kaufman, Exh. LDK-1CT at 3:22. Note, Dr. Kaufman claims that the Company has a similar risk profile as the proxy group, but the witness provides no further discussion, analysis, or support for their position.

1 **Q. Do you agree with these witnesses' consideration of the Company's business and**
2 **regulatory risks?**

3 A. No. I do not agree with these witnesses' comparison of credit ratings as being
4 dispositive of the Company's relative risk to the proxy group. Credit ratings are
5 assessments of the likelihood a company could default on its debt, whereas the topic
6 of the current proceeding 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. The development
10 of the investor-required ROE is based on a proxy group of risk-comparable
11 companies. In developing the proxy group, it is essential to balance the relative risk of
12 the companies included in the proxy group with the overall size of the group.
13 Therefore, it is always the case that the proxy companies do not have exactly the
14 same risk profile as the subject company. As such, it is reasonable to review the
15 relative risks of the proxy group companies and the subject company to determine
16 how the subject company's risk profile compares with the group to determine the
17 appropriate placement of the ROE within the range of results established using the
18 proxy group companies.

19 **Q. Have witness Parcell or witness Woolridge conducted any analysis of the specific**
20 **risks of the Company relative to the proxy group?**

21 A. No. Neither witness Parcell nor witness Woolridge have independently evaluated the
22 comparative risk of the Company relative to the proxy group.

1 **Q. Is there any basis for witness Parcell’s contention that the ROE for the**
2 **Company should be set at the lower end of their range because the MYRP**
3 **reduces the risk of the Company?**

4 A. No. As witness Parcell quoted from Moody’s, the use of a MYRP can reduce
5 regulatory lag relative to the use of a historical test year: “This would be a material
6 improvement over the historical test year currently used by utilities in rate cases and
7 help reduce regulatory lag, a credit positive.”¹⁵⁰ However, the key point that witness
8 Parcell fails to acknowledge is that, as shown in Exhibit No. AEB-13 of my
9 testimony, approximately half of the operating companies held by the proxy group
10 provide service in jurisdictions that also use a fully or partially forecast test year.
11 Therefore, the appropriate analysis for purposes of establishing the Company’s ROE
12 in this proceeding is not to identify whether it has a MYRP that mitigates regulatory
13 lag, but rather how does the Company’s regulatory risk compare relative to the other
14 companies in the proxy group. Simply because the Company is proposing a MYRP
15 consistent with SB 5295 does not indicate that the Company has less risk relative to
16 the proxy group, which is why my direct testimony evaluated the business and
17 regulatory risks of the Company relative to the proxy group.

¹⁵⁰ Parcell, Exh. DCP-1T at 22:12-24 (*quoting* Moody’s Investors Service. Issuer Comment: “Puget Sound Energy Inc. and Avista Corp. legislation supporting multi-year rate plans has positive credit implications for Washington’s investor-owned utilities.” (May 10, 2021)).

1 **XII. CAPITAL STRUCTURE**

2 **Q. What have witness Parcell, witness Wooldrige, and witness Kaufman proposed**
3 **regarding the Company capital structure?**

4 A. Witness Parcell and witness Woolridge recommend an equity ratio of 49.10 percent,
5 while witness Kaufman recommends an equity ratio of 51.00 percent. Specifically:

- 6 • Witness Parcell states that the Company’s proposed equity ratio of 51.27 percent
7 differs from the capital structures that have been approved in the Company’s last
8 several litigated proceedings, and contends that since the Commission has
9 consistently adopted an equity ratio of 49.10 percent, the witness is
10 recommending that same equity ratio in this proceeding.¹⁵¹
- 11 • Witness Woolridge states that the average common equity ratios of the companies
12 in the proxy group are much lower than the Company’s proposed equity ratio, and
13 thus the Company’s proposed capital structure has less financial risk than the
14 proxy group.¹⁵² In addition, witness Woolridge states that, given the Company has
15 proposed an equity ratio that is higher than the proxy group, the Commission
16 should either impute a more reasonable capital structure or recognize the
17 downward impact that an unusually high equity ratio will have on the financial
18 risk of the Company and authorize a lower common equity ratio than that of the
19 proxy group.¹⁵³
- 20 • Witness Kaufman claims that the Company’s proposal to replace its short-term
21 debt in its proposed 2024 capital structure with an equal amount of long-term debt
22 and equity inflates the weighted average cost of capital to 51.27 percent, when the
23 Company has stated that a 51 percent equity ratio is the optimal amount to retain
24 its A credit rating.¹⁵⁴

25 **Q. Does witness Parcell provide any support for their proposal to maintain the**
26 **Company’s prior authorized equity ratio?**

27 A. No. Witness Parcell has offered no support or analysis for their position other than it
28 is reasonable to maintain the status quo. Simply because the Company has had the

¹⁵¹ Parcell, Exh. DCP-1T at 4:1-8.

¹⁵² Woolridge, Exh. JRW-1T at 25:3-10.

¹⁵³ *Id.*, at 27:20-28:4.

¹⁵⁴ Kaufman, Exh. LDK-1CT at 33:7-34:10.

1 same equity ratio for ratemaking purposes for a number of years does not justify
2 maintaining the same equity ratio in this proceeding. As the Company has discussed
3 in its testimony, and as witness Kaufman has also acknowledged, the Company's
4 proposal reflects that the Company will need to maintain an equity ratio in excess of
5 51 percent to maintain its credit rating, provide credit rating stability over the long
6 run, maintain flexibility on the type and timing of debt financing, and have better
7 access to capital markets and a more competitive cost of debt.¹⁵⁵

8 **Q. Is witness Woolridge's comparison of the Company's capital structure to the**
9 **capital structures of the holding companies in the proxy group reasonable?**

10 A. No. First, it is not appropriate to compare the proposed equity ratio of the Company
11 to the average equity ratio of the proxy group at holding company level. Second, if
12 the capital structures at the holding company level are to be considered such as
13 suggested by witness Woolridge, then the market value of debt and equity must be
14 used to estimate the percentage of debt and equity in the capital structure, not the
15 book value of debt and equity as was used by witness Woolridge.

16 **Q. Why is it inappropriate to rely on the holding company capital structures to set**
17 **the capital structure for the utility subsidiary?**

18 A. The holding company data on which witness Woolridge relies includes corporate-
19 level debt that is not part of the regulated or financial capital structure of the
20 operating utilities. Simply because the parent companies in the proxy group are used
21 to estimate the Company's cost of equity does not mean that the *holding company*

¹⁵⁵ Koblaha, Exh. NLK-1T at 4:14-5:13.

1 capital structures are the relevant comparators for establishing the Company's
2 authorized capital structure. There is no question that the utility subsidiaries of those
3 holding companies are *more* comparable to the Company in terms of risk. Holding
4 companies have multiple regulated utility subsidiaries, including in multiple
5 jurisdictions, as well as unregulated operations or other business activities, which
6 differs from the Company's purely regulated utility operations in a single jurisdiction.
7 In fact, witness Woolridge acknowledges this fact in arguing against the Expected
8 Earnings analysis, where thy state:

9 **The Proxies' ROEs Reflect Earnings on Business Activities that**
10 **are not Representative of the Company's Rate-Regulated Utility**
11 **Activities:** The numerators of the proxy companies' ROEs include
12 earnings from business activities that are riskier and produce more
13 projected earnings per dollar of book investment than does regulated
14 electric utility service. These include earnings from: (1) unregulated
15 businesses including merchant generation; (2) electric generation;
16 and (3) international operations.¹⁵⁶

17 Therefore, consistent with witness Woolridge's own argument, the appropriate
18 comparison for the Company's proposed capital structures is a comparison to the
19 capital structures of the utility subsidiaries of the proxy group companies since they
20 are the most comparable to the Company. As shown in my direct testimony, the
21 Company's proposed equity ratio of 51.27 percent is well within the range of equity
22 ratios for the utility subsidiaries of the proxy group companies, and, in fact, is below
23 the average of 52.88 percent.¹⁵⁷

¹⁵⁶ Woolridge, Exh. JRW-1T at 93:14-19 (emphasis in original).

¹⁵⁷ Bulkley, Exh. AEB-14.

1 **Q. Why is it inappropriate for witness Woolridge to rely on the book value of the**
2 **capital structures of the proxy group companies at the holding company level?**

3 A. The use of the book value of debt and equity for the proxy group companies at the
4 holding company level creates a mismatch between the capital structure data that is
5 being used to determine the reasonableness of the Company's proposed equity ratio
6 and the data that is being used to estimate the DCF and the CAPM analyses to
7 determine the cost of equity for the Company. For example, witness Woolridge
8 considers the constant growth DCF model to determine the cost of equity for the
9 Company, and in their specification of the DCF model, the cost of equity is
10 determined using the expected dividends and the *market value* of equity (*i.e.*, the
11 share price).¹⁵⁸ Similarly, witness Woolridge also relies on the CAPM to estimate the
12 cost of equity for the Company, and in their analysis, the witness relies on beta
13 coefficients using the returns of each proxy group company based on that company's
14 *market value*. Therefore, the cost of equity developed by witness Woolridge
15 represents the percentage return required by investors on the market value of equity
16 not the book value.

¹⁵⁸ Woolridge, Exh. JRW-1T at 40:4-6.

1 **Q. What is the effect of relying on the required return on the market value of equity**
2 **for assessing the cost of equity, but then the book value of debt and equity for**
3 **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.¹⁵⁹ As shown in Equation [2], the value of a company (or asset) is
10 determined as follows:

$$11 \qquad \qquad \qquad V = D + E \qquad [2]$$

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 [2],
17 the total return on V can be estimated as follows:

$$18 \qquad \qquad \qquad r_V = \frac{D}{D + E} \times r_D + \frac{E}{E + D} \times r_E \qquad [3]$$

19 Where:

20 r_V = expected return on assets / weighted-average cost of capital

21 r_D = expected return on debt

22 r_E = expected return on equity

¹⁵⁹ Richard A. Brealey, Stewart Myers, and Franklin Allen, *Principles of Corporate Finance* at 452-462 (13th Ed., 2020).

1 Then, Equation [3] can be rearranged into the following form to solve for the
2 expected return on equity, r_E :

$$3 \qquad r_E = r_V + (r_V - r_D) \frac{D}{E} \quad [4]$$

4 As shown in Equation [4], the expected return on the market value of equity is
5 a function of the market value debt-to-equity ratio. As the percentage of debt
6 increases, the financial risk of the firm increases, and thus investors require a higher
7 return to compensate for the additional financial risk. Therefore, if the book value
8 debt-to-equity ratio for the proxy group is substantially different than market value
9 debt-to-equity ratio, the expected return on equity will also be substantially different.

10 **Q. Is the book value debt-to-equity ratio different from the market value debt-to-**
11 **equity ratio for your proxy group in this proceeding?**

12 A. Yes, quite different. As shown in Exhibit No. AEB-26, the average market value
13 common equity ratio for my proxy group as of December 31, 2022 was 61.63 percent,
14 which means that the cost of equity estimated by Witness Woolridge using my proxy
15 group reflects the financial risk of a market value common equity ratio of 61.63
16 percent. This market value common equity ratio is significantly greater than the
17 average book value equity ratios calculated by witness Woolridge for their proxy
18 group and my proxy group of 41.9 percent and 43.3 percent, respectively. Given the
19 greater financial risk of the book value capital structures relied on by witness
20 Woolridge because of the higher amount of leverage, investors would require a much
21 higher cost of equity than estimated by their DCF and CAPM analyses. In other
22 words, witness Woolridge's reliance on a cost of equity estimate based on market

1 values, but then a capital structure based on book values, is a mismatch that results in
2 the incorrect conclusion that an ROE reflecting the financial risk of the market value
3 equity ratio would be sufficient to compensate investors for a much more highly
4 levered capital structure based on book value.

5 **Q. How does the Company's proposed equity ratio compare to the market value**
6 **equity ratio of the proxy group?**

7 A. As noted, the average market value common equity ratio for the proxy group as of
8 December 31, 2022, was 61.63 percent, or significantly higher than the Company's
9 proposed equity ratio of 51.27 percent. Therefore, while I disagree that evaluating the
10 capital structures of the holding companies of the proxy group relative to the
11 Company is appropriate, when the comparison based on the approach supported by
12 witness Woolridge is done correctly, it demonstrates that the Company's proposed
13 equity ratio is reasonable.

14 **Q. How does the Company's proposed equity ratio compare to the equity ratios that**
15 **have been authorized for vertically integrated electric utilities in the past ten**
16 **years?**

17 A. Figure 15 presents the authorized equity ratios for vertically integrated electric
18 utilities across the U.S. from 2013 through 2023, properly excluding both limited
19 issue rider cases and authorizations in Arkansas, Indiana, Michigan, and Florida due
20 to the inclusion of zero-cost capital in the capital structure. As shown in Figure 15,
21 the Company's proposed equity ratio of 51.27 percent is below both the mean and
22 median equity ratios for vertically integrated electric utilities across the U.S. for 2022

1 and 2023, and is well within the range of the authorized equity ratios for vertically
2 integrated electric utilities over the past ten years.

Figure 15: Authorized Equity Ratios for Vertically Integrated Electric Utilities for 2013-2023

Year	Mean	Median	Range	
			Minimum	Maximum
2013	51.09%	52.30%	43.50%	56.86%
2014	51.24%	51.43%	42.89%	58.96%
2015	50.99%	50.74%	47.16%	56.00%
2016	50.04%	50.00%	40.25%	57.16%
2017	50.99%	50.03%	48.00%	58.18%
2018	51.38%	52.00%	41.68%	57.10%
2019	52.33%	52.00%	49.38%	57.02%
2020	52.04%	52.50%	46.00%	56.83%
2021	51.16%	51.96%	43.25%	55.00%
2022	52.48%	52.00%	48.90%	58.22%
2023	52.91%	52.50%	50.00%	60.70%

3 **Q. Are witness Woolridge’s recommendations in this proceeding consistent with**
4 **their suggestion that, given the Company has proposed an equity ratio that is**
5 **higher than the proxy group, the Commission should either impute a more**
6 **reasonable equity ratio or authorize a lower ROE?¹⁶⁰**

7 **A. No. Witness Woolridge’s recommended ROE and equity ratio in this proceeding are**
8 **inconsistent with their stated position. Witness Woolridge has recommended both an**
9 **ROE that is substantially lower than the average authorized ROEs nationally *and* an**
10 **imputed a lower equity ratio. In other words, witness Woolridge seeks *both* an ROE**

¹⁶⁰ Woolridge, Exh. JRW-1T at 27:20-28:4.

1 and an equity ratio that are substantially lower than what has been authorized
2 elsewhere, even though the witness argues that it should be one or the other.

3 **Q. What is your conclusion regarding the appropriate capital structure for the**
4 **Company?**

5 A. I continue to conclude that that the Company's proposed capital structure is
6 reasonable. The Company's proposed equity ratio of 51.27 percent is both: (1) below
7 the average actual equity ratio of the utility subsidiaries of the proxy group companies
8 (*i.e.*, utilities with risk profiles that are similar to the Company's risk profile); and (2)
9 well within the range of equity ratios authorized for vertically integrated electric
10 utilities across the U.S. over the past ten years. Further, while I disagree with the
11 approach supported by witness Woolridge to compare the Company's proposed
12 equity ratio to the average equity ratios of the proxy group holding companies, if that
13 analysis is done correctly, it also demonstrates that, contrary to witness Woolridge's
14 conclusion, the Company's proposed equity ratio is well below those of the proxy
15 group and thus reasonable.

16 **Q. Does this conclude your rebuttal testimony?**

17 A. Yes.

**BEFORE THE WASHINGTON
UTILITIES AND TRANSPORTATION COMMISSION**

WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION,

Complainant,

v.

PACIFICORP dba
PACIFIC POWER & LIGHT COMPANY

Respondent.

Docket UE-230172
(Consolidated)

In the Matter of

ALLIANCE OF WESTERN ENERGY
CONSUMERS'

Petition for Order Approving Deferral of
Increased Fly Ash Revenues

Docket UE-210852
(Consolidated)

PACIFICORP

EXHIBIT OF ANN E. BULKLEY

Summary of Results

October 2023

SUMMARY OF RESULTS OF THE COST OF EQUITY ANALYSES

<i>Constant Growth DCF</i>			
	Mean Low	Mean	Mean High
30-Day Average	9.02%	10.17%	11.15%
90-Day Average	8.86%	10.01%	10.98%
180-Day Average	8.76%	9.91%	10.88%
Average	8.88%	10.03%	11.00%
	Median Low	Median	Median High
30-Day Average	9.45%	10.12%	11.22%
90-Day Average	9.27%	9.95%	11.14%
180-Day Average	9.18%	9.83%	11.00%
Average	9.30%	9.97%	11.12%
<i>CAPM, ECAPM, Risk Premium</i>			
	Current 30-day Average Treasury Bond Yield	Near-Term Projected Treasury Bond Yield	Longer-Term Projected Treasury Bond Yield
CAPM:			
Value Line Beta	11.23%	11.20%	11.16%
Bloomberg Beta	10.50%	10.45%	10.37%
Long-Term Avg. Beta	10.15%	10.08%	9.99%
ECAPM:			
Value Line Beta	11.44%	11.42%	11.39%
Bloomberg Beta	10.90%	10.86%	10.80%
Long-Term Avg. Beta	10.63%	10.58%	10.51%
Risk Premium:	10.53%	10.42%	10.26%
<i>Expected Earnings</i>			
	Mean	Median	
Expected Earnings	10.76%	10.14%	

Exh. AEB-17
Docket UE-230172
Witness: Ann E. Bulkley

**BEFORE THE WASHINGTON
UTILITIES AND TRANSPORTATION COMMISSION**

WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION,

Complainant,

v.

PACIFICORP dba
PACIFIC POWER & LIGHT COMPANY

Respondent.

Docket UE-230172
(Consolidated)

In the Matter of

ALLIANCE OF WESTERN ENERGY
CONSUMERS'

Petition for Order Approving Deferral of
Increased Fly Ash Revenues

Docket UE-210852
(Consolidated)

PACIFICORP

EXHIBIT OF ANN E. BULKLEY

Constant Growth DCF Model

October 2023

30-DAY CONSTANT GROWTH DCF -- PACIFICORP PROXY GROUF

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line EPS Growth	Yahoo! Finance EPS Growth	Zacks EPS Growth	Average Growth Rate	Low ROE	Mean ROE	High ROE
ALLETE, Inc.	ALE	\$2.71	\$55.23	4.91%	5.09%	6.00%	8.10%	8.10%	7.40%	11.05%	12.49%	13.21%
Alliant Energy Corporation	LNT	\$1.81	\$50.54	3.58%	3.70%	6.50%	6.80%	6.50%	6.60%	10.20%	10.30%	10.50%
Ameren Corporation	AEE	\$2.52	\$78.90	3.19%	3.29%	6.50%	5.90%	6.40%	6.27%	9.19%	9.56%	9.80%
American Electric Power Company, Inc.	AEP	\$3.32	\$78.39	4.24%	4.36%	6.50%	5.20%	5.60%	5.77%	9.55%	10.12%	10.87%
Avista Corporation	AVA	\$1.84	\$33.48	5.50%	5.67%	6.50%	6.30%	6.30%	6.37%	11.97%	12.04%	12.17%
CMS Energy Corporation	CMS	\$1.95	\$56.01	3.48%	3.60%	6.50%	5.87%	7.80%	6.72%	9.45%	10.32%	11.42%
Duke Energy Corporation	DUK	\$4.10	\$91.09	4.50%	4.63%	5.00%	6.45%	6.10%	5.85%	9.61%	10.48%	11.10%
Entergy Corporation	ETR	\$4.28	\$95.60	4.48%	4.57%	0.50%	6.60%	5.70%	4.27%	4.99%	8.84%	11.22%
Evergy, Inc.	EVRG	\$2.45	\$54.17	4.52%	4.64%	7.50%	2.67%	5.20%	5.12%	7.25%	9.76%	12.19%
IDACORP, Inc.	IDA	\$3.16	\$95.82	3.30%	3.37%	5.00%	3.70%	3.70%	4.13%	7.06%	7.50%	8.38%
NextEra Energy, Inc.	NEE	\$1.87	\$66.33	2.82%	2.94%	9.50%	8.80%	8.40%	8.90%	11.34%	11.84%	12.45%
NorthWestern Corporation	NWE	\$2.56	\$50.31	5.09%	5.19%	3.50%	3.66%	5.20%	4.12%	8.68%	9.31%	10.42%
OGE Energy Corporation	OGE	\$1.66	\$34.45	4.81%	4.93%	6.50%	negative	3.70%	5.10%	8.60%	10.03%	11.46%
Pinnacle West Capital Corporation	PNW	\$3.46	\$77.25	4.48%	4.60%	2.50%	7.50%	6.50%	5.50%	7.03%	10.10%	12.15%
Portland General Electric Company	POR	\$1.90	\$43.05	4.41%	4.54%	5.00%	5.90%	6.00%	5.63%	9.52%	10.17%	10.55%
Southern Company	SO	\$2.80	\$68.23	4.10%	4.23%	6.50%	7.30%	4.00%	5.93%	8.19%	10.16%	11.55%
Xcel Energy Inc.	XEL	\$2.08	\$57.44	3.62%	3.73%	6.00%	6.30%	6.10%	6.13%	9.73%	9.87%	10.04%
Mean				4.18%	4.30%	5.65%	6.07%	5.96%	5.87%	9.02%	10.17%	11.15%
Median				4.41%	4.54%	6.50%	6.30%	6.10%	5.85%	9.45%	10.12%	11.22%

Notes:

- [1] Bloomberg Professional
- [2] Bloomberg Professional, equals 30-day average as of September 30, 2023
- [3] Equals [1] / [2]
- [4] Equals [3] x (1 + 0.50 x [8])
- [5] Value Line
- [6] Yahoo! Finance
- [7] Zacks
- [8] Equals Average ([5], [6], [7])
- [9] Equals [3] x (1 + 0.50 x Minimum ([5], [6], [7]) + Minimum ([5], [6], [7])
- [10] Equals [4] + [8]
- [11] Equals [3] x (1 + 0.50 x Maximum ([5], [6], [7]) + Maximum ([5], [6], [7])

90-DAY CONSTANT GROWTH DCF -- PACIFICORP PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line EPS Growth	Yahoo! Finance EPS Growth	Zacks EPS Growth	Average Growth Rate	Low ROE	Mean ROE	High ROE
ALLETE, Inc.	ALE	\$2.71	\$56.96	4.76%	4.93%	6.00%	8.10%	8.10%	7.40%	10.90%	12.33%	13.05%
Alliant Energy Corporation	LNT	\$1.81	\$51.79	3.49%	3.61%	6.50%	6.80%	6.50%	6.60%	10.11%	10.21%	10.41%
Ameren Corporation	AEE	\$2.52	\$81.07	3.11%	3.21%	6.50%	5.90%	6.40%	6.27%	9.10%	9.47%	9.71%
American Electric Power Company, Inc.	AEP	\$3.32	\$81.58	4.07%	4.19%	6.50%	5.20%	5.60%	5.77%	9.38%	9.95%	10.70%
Avista Corporation	AVA	\$1.84	\$36.84	4.99%	5.15%	6.50%	6.30%	6.30%	6.37%	11.45%	11.52%	11.66%
CMS Energy Corporation	CMS	\$1.95	\$58.03	3.36%	3.47%	6.50%	5.87%	7.80%	6.72%	9.33%	10.20%	11.29%
Duke Energy Corporation	DUK	\$4.10	\$90.59	4.53%	4.66%	5.00%	6.45%	6.10%	5.85%	9.64%	10.51%	11.12%
Entergy Corporation	ETR	\$4.28	\$97.39	4.39%	4.49%	0.50%	6.60%	5.70%	4.27%	4.91%	8.75%	11.14%
Evergy, Inc.	EVRG	\$2.45	\$56.86	4.31%	4.42%	7.50%	2.67%	5.20%	5.12%	7.04%	9.54%	11.97%
IDACORP, Inc.	IDA	\$3.16	\$99.95	3.16%	3.23%	5.00%	3.70%	3.70%	4.13%	6.92%	7.36%	8.24%
NextEra Energy, Inc.	NEE	\$1.87	\$70.28	2.66%	2.78%	9.50%	8.80%	8.40%	8.90%	11.17%	11.68%	12.29%
NorthWestern Corporation	NWE	\$2.56	\$53.90	4.75%	4.85%	3.50%	3.66%	5.20%	4.12%	8.33%	8.97%	10.07%
OGE Energy Corporation	OGE	\$1.66	\$35.16	4.71%	4.83%	6.50%	negative	3.70%	5.10%	8.50%	9.93%	11.36%
Pinnacle West Capital Corporation	PNW	\$3.46	\$79.15	4.37%	4.49%	2.50%	7.50%	6.50%	5.50%	6.93%	9.99%	12.04%
Portland General Electric Company	POR	\$1.90	\$45.65	4.16%	4.28%	5.00%	5.90%	6.00%	5.63%	9.27%	9.91%	10.29%
Southern Company	SO	\$2.80	\$69.22	4.04%	4.16%	6.50%	7.30%	4.00%	5.93%	8.13%	10.10%	11.49%
Xcel Energy Inc.	XEL	\$2.08	\$60.54	3.44%	3.54%	6.00%	6.30%	6.10%	6.13%	9.54%	9.67%	9.84%
Mean				4.02%	4.13%	5.65%	6.07%	5.96%	5.87%	8.86%	10.01%	10.98%
Median				4.16%	4.28%	6.50%	6.30%	6.10%	5.85%	9.27%	9.95%	11.14%

Notes:

[1] Bloomberg Professional

[2] Bloomberg Professional, equals 90-day average as of September 30, 2023

[3] Equals [1] / [2]

[4] Equals [3] x (1 + 0.50 x [8])

[5] Value Line

[6] Yahoo! Finance

[7] Zacks

[8] Equals Average ([5], [6], [7])

[9] Equals [3] x (1 + 0.50 x Minimum ([5], [6], [7]) + Minimum ([5], [6], [7])

[10] Equals [4] + [8]

[11] Equals [3] x (1 + 0.50 x Maximum ([5], [6], [7]) + Maximum ([5], [6], [7])

180-DAY CONSTANT GROWTH DCF -- PACIFICORP PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line EPS Growth	Yahoo! Finance EPS Growth	Zacks EPS Growth	Average Growth Rate	Low ROE	Mean ROE	High ROE
ALLETE, Inc.	ALE	\$2.71	\$59.00	4.59%	4.76%	6.00%	8.10%	8.10%	7.40%	10.73%	12.16%	12.88%
Alliant Energy Corporation	LNT	\$1.81	\$52.24	3.47%	3.58%	6.50%	6.80%	6.50%	6.60%	10.08%	10.18%	10.38%
Ameren Corporation	AEE	\$2.52	\$82.94	3.04%	3.13%	6.50%	5.90%	6.40%	6.27%	9.03%	9.40%	9.64%
American Electric Power Company, Inc.	AEP	\$3.32	\$85.49	3.88%	4.00%	6.50%	5.20%	5.60%	5.77%	9.18%	9.76%	10.51%
Avista Corporation	AVA	\$1.84	\$38.93	4.73%	4.88%	6.50%	6.30%	6.30%	6.37%	11.18%	11.24%	11.38%
CMS Energy Corporation	CMS	\$1.95	\$59.07	3.30%	3.41%	6.50%	5.87%	7.80%	6.72%	9.27%	10.14%	11.23%
Duke Energy Corporation	DUK	\$4.10	\$93.09	4.40%	4.53%	5.00%	6.45%	6.10%	5.85%	9.51%	10.38%	11.00%
Energy Corporation	ETR	\$4.28	\$100.72	4.25%	4.34%	0.50%	6.60%	5.70%	4.27%	4.76%	8.61%	10.99%
Eergy, Inc.	EVRG	\$2.45	\$58.17	4.21%	4.32%	7.50%	2.67%	5.20%	5.12%	6.94%	9.44%	11.87%
IDACORP, Inc.	IDA	\$3.16	\$102.57	3.08%	3.14%	5.00%	3.70%	3.70%	4.13%	6.84%	7.28%	8.16%
NextEra Energy, Inc.	NEE	\$1.87	\$72.75	2.57%	2.68%	9.50%	8.80%	8.40%	8.90%	11.08%	11.58%	12.19%
NorthWestern Corporation	NWE	\$2.56	\$55.01	4.65%	4.75%	3.50%	3.66%	5.20%	4.12%	8.24%	8.87%	9.97%
OGE Energy Corporation	OGE	\$1.66	\$35.96	4.61%	4.72%	6.50%	negative	3.70%	5.10%	8.39%	9.82%	11.26%
Pinnacle West Capital Corporation	PNW	\$3.46	\$77.31	4.48%	4.60%	2.50%	7.50%	6.50%	5.50%	7.03%	10.10%	12.14%
Portland General Electric Company	POR	\$1.90	\$46.53	4.08%	4.20%	5.00%	5.90%	6.00%	5.63%	9.19%	9.83%	10.21%
Southern Company	SO	\$2.80	\$68.42	4.09%	4.21%	6.50%	7.30%	4.00%	5.93%	8.17%	10.15%	11.54%
Xcel Energy Inc.	XEL	\$2.08	\$63.53	3.27%	3.37%	6.00%	6.30%	6.10%	6.13%	9.37%	9.51%	9.68%
Mean				3.92%	4.04%	5.65%	6.07%	5.96%	5.87%	8.76%	9.91%	10.88%
Median				4.09%	4.21%	6.50%	6.30%	6.10%	5.85%	9.18%	9.83%	11.00%

Notes:

[1] Bloomberg Professional

[2] Bloomberg Professional, equals 180-day average as of September 30, 2023

[3] Equals [1] / [2]

[4] Equals [3] x (1 + 0.50 x [8])

[5] Value Line

[6] Yahoo! Finance

[7] Zacks

[8] Equals Average ([5], [6], [7])

[9] Equals [3] x (1 + 0.50 x Minimum ([5], [6], [7]) + Minimum ([5], [6], [7])

[10] Equals [4] + [8]

[11] Equals [3] x (1 + 0.50 x Maximum ([5], [6], [7]) + Maximum ([5], [6], [7])

Exh. AEB-18
Docket UE-230172
Witness: Ann E. Bulkley

**BEFORE THE WASHINGTON
UTILITIES AND TRANSPORTATION COMMISSION**

WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION,

Complainant,

v.

PACIFICORP dba
PACIFIC POWER & LIGHT COMPANY

Respondent.

Docket UE-230172
(Consolidated)

In the Matter of

ALLIANCE OF WESTERN ENERGY
CONSUMERS'

Petition for Order Approving Deferral of
Increased Fly Ash Revenues

Docket UE-210852
(Consolidated)

PACIFICORP

EXHIBIT OF ANN E. BULKLEY

Capital Asset Pricing Model

October 2023

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

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

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

	[1]	[2]	[3]	[4]	[5]	[6]	
Company	Ticker	Current 30-day average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	4.42%	0.90	12.08%	7.67%	11.32%	11.51%
Alliant Energy Corporation	LNT	4.42%	0.85	12.08%	7.67%	10.93%	11.22%
Ameren Corporation	AEE	4.42%	0.85	12.08%	7.67%	10.93%	11.22%
American Electric Power Company, Inc.	AEP	4.42%	0.80	12.08%	7.67%	10.55%	10.93%
Avista Corporation	AVA	4.42%	0.90	12.08%	7.67%	11.32%	11.51%
CMS Energy Corporation	CMS	4.42%	0.80	12.08%	7.67%	10.55%	10.93%
Duke Energy Corporation	DUK	4.42%	0.85	12.08%	7.67%	10.93%	11.22%
Entergy Corporation	ETR	4.42%	0.95	12.08%	7.67%	11.70%	11.80%
Evergy, Inc.	EVRG	4.42%	0.90	12.08%	7.67%	11.32%	11.51%
IDACORP, Inc.	IDA	4.42%	0.80	12.08%	7.67%	10.55%	10.93%
NextEra Energy, Inc.	NEE	4.42%	0.95	12.08%	7.67%	11.70%	11.80%
NorthWestern Corporation	NWE	4.42%	0.95	12.08%	7.67%	11.70%	11.80%
OGE Energy Corporation	OGE	4.42%	1.05	12.08%	7.67%	12.47%	12.37%
Pinnacle West Capital Corporation	PNW	4.42%	0.90	12.08%	7.67%	11.32%	11.51%
Portland General Electric Company	POR	4.42%	0.90	12.08%	7.67%	11.32%	11.51%
Southern Company	SO	4.42%	0.90	12.08%	7.67%	11.32%	11.51%
Xcel Energy Inc.	XEL	4.42%	0.85	12.08%	7.67%	10.93%	11.22%
Mean						11.23%	11.44%
Median						11.32%	11.51%

Notes:

[1] Bloomberg Professional, as of September 30, 2023

[2] Value Line

[3] Market Return

[4] Equals [3] - [1]

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

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

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

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
		Near-term projected 30- year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	ROE (K)	ECAPM ROE (K)
Company	Ticker	(Q4 2023 - Q4 2024)					
ALLETE, Inc.	ALE	4.16%	0.90	12.08%	7.92%	11.29%	11.49%
Alliant Energy Corporation	LNT	4.16%	0.85	12.08%	7.92%	10.90%	11.19%
Ameren Corporation	AEE	4.16%	0.85	12.08%	7.92%	10.90%	11.19%
American Electric Power Company, Inc.	AEP	4.16%	0.80	12.08%	7.92%	10.50%	10.90%
Avista Corporation	AVA	4.16%	0.90	12.08%	7.92%	11.29%	11.49%
CMS Energy Corporation	CMS	4.16%	0.80	12.08%	7.92%	10.50%	10.90%
Duke Energy Corporation	DUK	4.16%	0.85	12.08%	7.92%	10.90%	11.19%
Entergy Corporation	ETR	4.16%	0.95	12.08%	7.92%	11.69%	11.79%
Evergy, Inc.	EVRG	4.16%	0.90	12.08%	7.92%	11.29%	11.49%
IDACORP, Inc.	IDA	4.16%	0.80	12.08%	7.92%	10.50%	10.90%
NextEra Energy, Inc.	NEE	4.16%	0.95	12.08%	7.92%	11.69%	11.79%
NorthWestern Corporation	NWE	4.16%	0.95	12.08%	7.92%	11.69%	11.79%
OGE Energy Corporation	OGE	4.16%	1.05	12.08%	7.92%	12.48%	12.38%
Pinnacle West Capital Corporation	PNW	4.16%	0.90	12.08%	7.92%	11.29%	11.49%
Portland General Electric Company	POR	4.16%	0.90	12.08%	7.92%	11.29%	11.49%
Southern Company	SO	4.16%	0.90	12.08%	7.92%	11.29%	11.49%
Xcel Energy Inc.	XEL	4.16%	0.85	12.08%	7.92%	10.90%	11.19%
Mean						11.20%	11.42%
Median						11.29%	11.49%

Notes:

[1] Blue Chip Financial Forecasts, Vol. 42, No. 10, October 1, 2023, at 2

[2] Value Line

[3] Market Return

[4] Equals [3] - [1]

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

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

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

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

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

	[1]	[2]	[3]	[4]	[5]	[6]	
Company	Ticker	Projected 30-year U.S. Treasury bond yield (2025 - 2029)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.80%	0.90	12.08%	8.28%	11.26%	11.46%
Alliant Energy Corporation	LNT	3.80%	0.85	12.08%	8.28%	10.84%	11.15%
Ameren Corporation	AEE	3.80%	0.85	12.08%	8.28%	10.84%	11.15%
American Electric Power Company, Inc.	AEP	3.80%	0.80	12.08%	8.28%	10.43%	10.84%
Avista Corporation	AVA	3.80%	0.90	12.08%	8.28%	11.26%	11.46%
CMS Energy Corporation	CMS	3.80%	0.80	12.08%	8.28%	10.43%	10.84%
Duke Energy Corporation	DUK	3.80%	0.85	12.08%	8.28%	10.84%	11.15%
Entergy Corporation	ETR	3.80%	0.95	12.08%	8.28%	11.67%	11.77%
Evergy, Inc.	EVRG	3.80%	0.90	12.08%	8.28%	11.26%	11.46%
IDACORP, Inc.	IDA	3.80%	0.80	12.08%	8.28%	10.43%	10.84%
NextEra Energy, Inc.	NEE	3.80%	0.95	12.08%	8.28%	11.67%	11.77%
NorthWestern Corporation	NWE	3.80%	0.95	12.08%	8.28%	11.67%	11.77%
OGE Energy Corporation	OGE	3.80%	1.05	12.08%	8.28%	12.50%	12.39%
Pinnacle West Capital Corporation	PNW	3.80%	0.90	12.08%	8.28%	11.26%	11.46%
Portland General Electric Company	POR	3.80%	0.90	12.08%	8.28%	11.26%	11.46%
Southern Company	SO	3.80%	0.90	12.08%	8.28%	11.26%	11.46%
Xcel Energy Inc.	XEL	3.80%	0.85	12.08%	8.28%	10.84%	11.15%
Mean						11.16%	11.39%
Median						11.26%	11.46%

Notes:

[1] Blue Chip Financial Forecasts, Vol. 42, No. 6, June 1, 2023, at 14

[2] Value Line

[3] Market Return

[4] Equals [3] - [1]

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

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

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

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

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

	[1]	[2]	[3]	[4]	[5]	[6]
Company	Current 30-day average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	4.42%	0.82	12.08%	7.67%	10.73%	11.07%
Alliant Energy Corporation	4.42%	0.79	12.08%	7.67%	10.48%	10.88%
Ameren Corporation	4.42%	0.75	12.08%	7.67%	10.18%	10.65%
American Electric Power Company, Inc.	4.42%	0.76	12.08%	7.67%	10.23%	10.69%
Avista Corporation	4.42%	0.75	12.08%	7.67%	10.18%	10.66%
CMS Energy Corporation	4.42%	0.75	12.08%	7.67%	10.16%	10.64%
Duke Energy Corporation	4.42%	0.72	12.08%	7.67%	9.92%	10.46%
Entergy Corporation	4.42%	0.86	12.08%	7.67%	10.98%	11.25%
Evergy, Inc.	4.42%	0.78	12.08%	7.67%	10.39%	10.81%
IDACORP, Inc.	4.42%	0.80	12.08%	7.67%	10.51%	10.91%
NextEra Energy, Inc.	4.42%	0.82	12.08%	7.67%	10.69%	11.04%
NorthWestern Corporation	4.42%	0.86	12.08%	7.67%	10.99%	11.26%
OGE Energy Corporation	4.42%	0.92	12.08%	7.67%	11.47%	11.63%
Pinnacle West Capital Corporation	4.42%	0.82	12.08%	7.67%	10.74%	11.07%
Portland General Electric Company	4.42%	0.79	12.08%	7.67%	10.44%	10.85%
Southern Company	4.42%	0.78	12.08%	7.67%	10.37%	10.80%
Xcel Energy Inc.	4.42%	0.74	12.08%	7.67%	10.07%	10.58%
Mean					10.50%	10.90%
Median					10.44%	10.85%

Notes:

[1] Bloomberg Professional, as of September 30, 2023

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

[3] Market Return

[4] Equals [3] - [1]

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

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

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

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

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

Company	Ticker	[1] Near-term projected 30- year U.S. Treasury bond yield (Q4 2023 - Q4 2024)	[2] Beta (β)	[3] Market Return (Rm)	[4] Market Risk Premium (Rm - Rf)	[5] ROE (K)	[6] ECAPM ROE (K)
ALLETE, Inc.	ALE	4.16%	0.82	12.08%	7.92%	10.68%	11.03%
Alliant Energy Corporation	LNT	4.16%	0.79	12.08%	7.92%	10.43%	10.84%
Ameren Corporation	AEE	4.16%	0.75	12.08%	7.92%	10.11%	10.60%
American Electric Power Company, Inc.	AEP	4.16%	0.76	12.08%	7.92%	10.17%	10.65%
Avista Corporation	AVA	4.16%	0.75	12.08%	7.92%	10.12%	10.61%
CMS Energy Corporation	CMS	4.16%	0.75	12.08%	7.92%	10.09%	10.59%
Duke Energy Corporation	DUK	4.16%	0.72	12.08%	7.92%	9.85%	10.41%
Entergy Corporation	ETR	4.16%	0.86	12.08%	7.92%	10.94%	11.23%
Evergy, Inc.	EVRG	4.16%	0.78	12.08%	7.92%	10.33%	10.77%
IDACORP, Inc.	IDA	4.16%	0.80	12.08%	7.92%	10.46%	10.87%
NextEra Energy, Inc.	NEE	4.16%	0.82	12.08%	7.92%	10.64%	11.00%
NorthWestern Corporation	NWE	4.16%	0.86	12.08%	7.92%	10.95%	11.24%
OGE Energy Corporation	OGE	4.16%	0.92	12.08%	7.92%	11.45%	11.61%
Pinnacle West Capital Corporation	PNW	4.16%	0.82	12.08%	7.92%	10.69%	11.04%
Portland General Electric Company	POR	4.16%	0.79	12.08%	7.92%	10.39%	10.81%
Southern Company	SO	4.16%	0.78	12.08%	7.92%	10.31%	10.75%
Xcel Energy Inc.	XEL	4.16%	0.74	12.08%	7.92%	10.01%	10.53%
Mean						10.45%	10.86%
Median						10.39%	10.81%

Notes:

[1] Blue Chip Financial Forecasts, Vol. 42, No. 10, October 1, 2023, at 2

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

[3] Market Return

[4] Equals [3] - [1]

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

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

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

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

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

	[1]	[2]	[3]	[4]	[5]	[6]	
Company	Ticker	Projected 30-year U.S. Treasury bond yield (2025 - 2029)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.80%	0.82	12.08%	8.28%	10.62%	10.98%
Alliant Energy Corporation	LNT	3.80%	0.79	12.08%	8.28%	10.35%	10.79%
Ameren Corporation	AEE	3.80%	0.75	12.08%	8.28%	10.02%	10.54%
American Electric Power Company, Inc.	AEP	3.80%	0.76	12.08%	8.28%	10.08%	10.58%
Avista Corporation	AVA	3.80%	0.75	12.08%	8.28%	10.03%	10.54%
CMS Energy Corporation	CMS	3.80%	0.75	12.08%	8.28%	10.00%	10.52%
Duke Energy Corporation	DUK	3.80%	0.72	12.08%	8.28%	9.74%	10.33%
Entergy Corporation	ETR	3.80%	0.86	12.08%	8.28%	10.89%	11.19%
Evergy, Inc.	EVRG	3.80%	0.78	12.08%	8.28%	10.25%	10.71%
IDACORP, Inc.	IDA	3.80%	0.80	12.08%	8.28%	10.39%	10.81%
NextEra Energy, Inc.	NEE	3.80%	0.82	12.08%	8.28%	10.58%	10.95%
NorthWestern Corporation	NWE	3.80%	0.86	12.08%	8.28%	10.90%	11.20%
OGE Energy Corporation	OGE	3.80%	0.92	12.08%	8.28%	11.42%	11.59%
Pinnacle West Capital Corporation	PNW	3.80%	0.82	12.08%	8.28%	10.63%	10.99%
Portland General Electric Company	POR	3.80%	0.79	12.08%	8.28%	10.31%	10.75%
Southern Company	SO	3.80%	0.78	12.08%	8.28%	10.23%	10.69%
Xcel Energy Inc.	XEL	3.80%	0.74	12.08%	8.28%	9.91%	10.46%
Mean						10.37%	10.80%
Median						10.31%	10.75%

Notes:

[1] Blue Chip Financial Forecasts, Vol. 42, No. 6, June 1, 2023, at 14

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

[3] Market Return

[4] Equals [3] - [1]

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

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

CAPITAL ASSET PRICING MODEL -- CURRENT RISK-FREE RATE & VALUE LINE LT AVERAGE BETA

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

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

	[1]	[2]	[3]	[4]	[5]	[6]
Company	Current 30-day average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	4.42%	0.79	12.08%	7.67%	10.44%	10.85%
Alliant Energy Corporation	4.42%	0.75	12.08%	7.67%	10.17%	10.65%
Ameren Corporation	4.42%	0.73	12.08%	7.67%	9.98%	10.50%
American Electric Power Company, Inc.	4.42%	0.68	12.08%	7.67%	9.59%	10.22%
Avista Corporation	4.42%	0.79	12.08%	7.67%	10.44%	10.85%
CMS Energy Corporation	4.42%	0.69	12.08%	7.67%	9.71%	10.30%
Duke Energy Corporation	4.42%	0.67	12.08%	7.67%	9.52%	10.16%
Entergy Corporation	4.42%	0.75	12.08%	7.67%	10.13%	10.62%
Evergy, Inc.	4.42%	0.95	12.08%	7.67%	11.70%	11.80%
IDACORP, Inc.	4.42%	0.73	12.08%	7.67%	10.01%	10.53%
NextEra Energy, Inc.	4.42%	0.73	12.08%	7.67%	10.01%	10.53%
NorthWestern Corporation	4.42%	0.75	12.08%	7.67%	10.13%	10.62%
OGE Energy Corporation	4.42%	0.93	12.08%	7.67%	11.55%	11.68%
Pinnacle West Capital Corporation	4.42%	0.74	12.08%	7.67%	10.05%	10.56%
Portland General Electric Company	4.42%	0.75	12.08%	7.67%	10.17%	10.65%
Southern Company	4.42%	0.66	12.08%	7.67%	9.44%	10.10%
Xcel Energy Inc.	4.42%	0.66	12.08%	7.67%	9.44%	10.10%
Mean					10.15%	10.63%
Median					10.05%	10.56%

Notes:

[1] Bloomberg Professional, as of September 30, 2023

[2] LT Beta

[3] Market Return

[4] Equals [3] - [1]

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

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

CAPITAL ASSET PRICING MODEL -- NEAR-TERM PROJECTED RISK-FREE RATE & VALUE LINE LT AVERAGE BETA

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
		Near-term projected 30- year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	ROE (K)	ECAPM ROE (K)
Company	Ticker	(Q4 2023 - Q4 2024)					
ALLETE, Inc.	ALE	4.16%	0.79	12.08%	7.92%	10.38%	10.81%
Alliant Energy Corporation	LNT	4.16%	0.75	12.08%	7.92%	10.10%	10.60%
Ameren Corporation	AEE	4.16%	0.73	12.08%	7.92%	9.91%	10.45%
American Electric Power Company, Inc.	AEP	4.16%	0.68	12.08%	7.92%	9.51%	10.15%
Avista Corporation	AVA	4.16%	0.79	12.08%	7.92%	10.38%	10.81%
CMS Energy Corporation	CMS	4.16%	0.69	12.08%	7.92%	9.63%	10.24%
Duke Energy Corporation	DUK	4.16%	0.67	12.08%	7.92%	9.43%	10.09%
Entergy Corporation	ETR	4.16%	0.75	12.08%	7.92%	10.06%	10.57%
Evergy, Inc.	EVRG	4.16%	0.95	12.08%	7.92%	11.69%	11.79%
IDACORP, Inc.	IDA	4.16%	0.73	12.08%	7.92%	9.94%	10.48%
NextEra Energy, Inc.	NEE	4.16%	0.73	12.08%	7.92%	9.94%	10.48%
NorthWestern Corporation	NWE	4.16%	0.75	12.08%	7.92%	10.06%	10.57%
OGE Energy Corporation	OGE	4.16%	0.93	12.08%	7.92%	11.53%	11.67%
Pinnacle West Capital Corporation	PNW	4.16%	0.74	12.08%	7.92%	9.98%	10.51%
Portland General Electric Company	POR	4.16%	0.75	12.08%	7.92%	10.10%	10.60%
Southern Company	SO	4.16%	0.66	12.08%	7.92%	9.35%	10.03%
Xcel Energy Inc.	XEL	4.16%	0.66	12.08%	7.92%	9.35%	10.03%
Mean						10.08%	10.58%
Median						9.98%	10.51%

Notes:

[1] Blue Chip Financial Forecasts, Vol. 42, No. 10, October 1, 2023, at 2

[2] LT Beta

[3] Market Return

[4] Equals [3] - [1]

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

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

CAPITAL ASSET PRICING MODEL -- LONG-TERM PROJECTED RISK-FREE RATE & VALUE LINE LT BETA

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

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

	[1]	[2]	[3]	[4]	[5]	[6]	
Company	Ticker	Projected 30-year U.S. Treasury bond yield (2025 - 2029)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.80%	0.79	12.08%	8.28%	10.30%	10.75%
Alliant Energy Corporation	LNT	3.80%	0.75	12.08%	8.28%	10.01%	10.53%
Ameren Corporation	AEE	3.80%	0.73	12.08%	8.28%	9.81%	10.38%
American Electric Power Company, Inc.	AEP	3.80%	0.68	12.08%	8.28%	9.39%	10.06%
Avista Corporation	AVA	3.80%	0.79	12.08%	8.28%	10.30%	10.75%
CMS Energy Corporation	CMS	3.80%	0.69	12.08%	8.28%	9.52%	10.16%
Duke Energy Corporation	DUK	3.80%	0.67	12.08%	8.28%	9.31%	10.00%
Entergy Corporation	ETR	3.80%	0.75	12.08%	8.28%	9.97%	10.50%
Evergy, Inc.	EVRG	3.80%	0.95	12.08%	8.28%	11.67%	11.77%
IDACORP, Inc.	IDA	3.80%	0.73	12.08%	8.28%	9.85%	10.41%
NextEra Energy, Inc.	NEE	3.80%	0.73	12.08%	8.28%	9.85%	10.41%
NorthWestern Corporation	NWE	3.80%	0.75	12.08%	8.28%	9.97%	10.50%
OGE Energy Corporation	OGE	3.80%	0.93	12.08%	8.28%	11.50%	11.65%
Pinnacle West Capital Corporation	PNW	3.80%	0.74	12.08%	8.28%	9.89%	10.44%
Portland General Electric Company	POR	3.80%	0.75	12.08%	8.28%	10.01%	10.53%
Southern Company	SO	3.80%	0.66	12.08%	8.28%	9.23%	9.94%
Xcel Energy Inc.	XEL	3.80%	0.66	12.08%	8.28%	9.23%	9.94%
Mean						9.99%	10.51%
Median						9.89%	10.44%

Notes:

[1] Blue Chip Financial Forecasts, Vol. 42, No. 6, June 1, 2023, at 14

[2] LT Beta

[3] Market Return

[4] Equals [3] - [1]

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

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

Exh. AEB-19
Docket UE-230172
Witness: Ann E. Bulkley

**BEFORE THE WASHINGTON
UTILITIES AND TRANSPORTATION COMMISSION**

WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION,

Complainant,

v.

PACIFICORP dba
PACIFIC POWER & LIGHT COMPANY

Respondent.

Docket UE-230172
(Consolidated)

In the Matter of

ALLIANCE OF WESTERN ENERGY
CONSUMERS'

Petition for Order Approving Deferral of
Increased Fly Ash Revenues

Docket UE-210852
(Consolidated)

PACIFICORP

EXHIBIT OF ANN E. BULKLEY

Long-term Beta Analysis

October 2023

HISTORICAL BETA - 2013 - 2022

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
		12/31/2013	12/31/2014	12/31/2015	12/31/2016	12/31/2017	12/31/2018	12/31/2019	12/31/2020	12/31/2021	12/31/2022	Average
ALLETE, Inc.	ALE	0.75	0.80	0.80	0.75	0.80	0.65	0.65	0.85	0.90	0.90	0.79
Alliant Energy Corporation	LNT	0.75	0.80	0.80	0.70	0.70	0.60	0.60	0.85	0.85	0.85	0.75
Ameren Corporation	AEE	0.80	0.75	0.75	0.65	0.70	0.55	0.55	0.85	0.80	0.85	0.73
American Electric Power Company, Inc.	AEP	0.70	0.70	0.70	0.65	0.65	0.55	0.55	0.75	0.75	0.75	0.68
Avista Corporation	AVA	0.75	0.80	0.80	0.70	0.75	0.65	0.60	0.95	0.95	0.90	0.79
CMS Energy Corporation	CMS	0.70	0.70	0.75	0.65	0.65	0.55	0.50	0.80	0.80	0.80	0.69
Duke Energy Corporation	DUK	0.65	0.60	0.65	0.60	0.60	0.50	0.50	0.85	0.85	0.85	0.67
Entergy Corporation	ETR	0.70	0.70	0.70	0.65	0.65	0.60	0.60	0.95	0.95	0.95	0.75
Energy, Inc.	EVRG						NMF	NMF	1.00	0.95	0.90	0.95
IDACORP, Inc.	IDA	0.75	0.80	0.80	0.75	0.70	0.55	0.55	0.80	0.80	0.80	0.73
NextEra Energy, Inc.	NEE	0.70	0.70	0.75	0.65	0.65	0.55	0.55	0.90	0.90	0.95	0.73
NorthWestern Corporation	NWE	0.70	0.70	0.70	0.70	0.70	0.55	0.60	0.95	0.95	0.90	0.75
OGE Energy Corporation	OGE	0.85	0.90	0.95	0.90	0.95	0.85	0.75	1.10	1.05	1.00	0.93
Pinnacle West Capital Corporation	PNW	0.75	0.70	0.75	0.70	0.70	0.55	0.50	0.90	0.90	0.90	0.74
Portland General Electric Company	POR	0.75	0.80	0.80	0.70	0.70	0.60	0.55	0.85	0.90	0.85	0.75
Southern Company	SO	0.55	0.55	0.60	0.55	0.55	0.50	0.50	0.90	0.95	0.90	0.66
Xcel Energy Inc.	XEL	0.65	0.65	0.65	0.60	0.60	0.50	0.50	0.80	0.80	0.80	0.66
Mean		0.72	0.73	0.75	0.68	0.69	0.58	0.57	0.89	0.89	0.87	0.75

Notes:

[1] Value Line, dated December 26, 2013.

[2] Value Line, dated December 31, 2014.

[3] Value Line, dated December 30, 2015.

[4] Value Line, dated December 29, 2016.

[5] Value Line, dated December 28, 2017.

[6] Value Line, dated December 27, 2018.

[7] Value Line, dated December 26, 2019.

[8] Value Line, dated December 30, 2020.

[9] Value Line, dated December 29, 2021.

[10] Value Line, dated December 30, 2022.

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

Exh. AEB-20
Docket UE-230172
Witness: Ann E. Bulkley

**BEFORE THE WASHINGTON
UTILITIES AND TRANSPORTATION COMMISSION**

WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION,

Complainant,

v.

PACIFICORP dba
PACIFIC POWER & LIGHT COMPANY

Respondent.

Docket UE-230172
(Consolidated)

In the Matter of

ALLIANCE OF WESTERN ENERGY
CONSUMERS'

Petition for Order Approving Deferral of
Increased Fly Ash Revenues

Docket UE-210852
(Consolidated)

PACIFICORP

EXHIBIT OF ANN E. BULKLEY

Market Return Calculation

October 2023

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

[1] Estimated Weighted Average Dividend Yield	1.76%
[2] Estimated Weighted Average Long-Term Growth Rate	10.23%
[3] S&P 500 Estimated Required Market Return	12.08%

STANDARD AND POOR'S 500 INDEX

Name	Ticker	[4] Shares Outstg	[5] Price	[6] Market Capitalization	[7] Weight in Index	[8] Estimated Dividend Yield	[9] Cap-Weighted Dividend Yield	[10] Value Line Long-Term Growth Est.	[11] Cap-Weighted Long-Term Growth Est.
LyondellBasell Industries NV	LYB	324.20	94.70	30,701.46	0.10%	5.28%	0.01%	2.00%	0.00%
American Express Co	AXP	736.46	149.19	109,872.32	0.36%	1.61%	0.01%	8.50%	0.03%
Verizon Communications Inc	VZ	4,204.04	32.41	136,252.94	0.44%	8.21%	0.04%	1.50%	0.01%
Broadcom Inc	AVGO	412.74	830.58	342,810.27		2.22%		30.00%	
Boeing Co/The	BA	603.20	191.68	115,622.14					
Caterpillar Inc	CAT	510.14	273.00	139,269.04	0.45%	1.90%	0.01%	13.50%	0.06%
JPMorgan Chase & Co	JPM	2,906.09	145.02	421,440.45	1.37%	2.90%	0.04%	8.50%	0.12%
Chevron Corp	CVX	1,867.25	168.62	314,854.85		3.58%		21.50%	
Coca-Cola Co/The	KO	4,324.35	55.98	242,076.83	0.79%	3.29%	0.03%	7.50%	0.06%
AbbVie Inc	ABBV	1,765.05	149.06	263,097.91	0.86%	3.97%	0.03%	2.00%	0.02%
Walt Disney Co/The	DIS	1,829.78	81.05	148,303.59				65.00%	
FleetCor Technologies Inc	FLT	73.96	255.34	18,884.18	0.06%			13.50%	0.01%
Extra Space Storage Inc	EXR	211.28	121.58	25,687.06	0.08%	2.01%	0.00%	5.00%	0.00%
Exxon Mobil Corp	XOM	4,003.19	117.58	470,695.43	1.54%	3.10%	0.05%	7.00%	0.11%
Phillips 66	PSX	445.29	120.15	53,501.35	0.17%	3.50%	0.01%	15.50%	0.03%
General Electric Co	GE	1,088.38	110.55	120,320.19		0.29%		26.00%	
HP Inc	HPQ	988.27	25.70	25,398.51	0.08%	4.09%	0.00%	12.50%	0.01%
Home Depot Inc/The	HD	1,000.07	302.16	302,179.94	0.99%	2.77%	0.03%	6.50%	0.06%
Monolithic Power Systems Inc	MPWR	47.78	462.00	22,073.44	0.07%	0.87%	0.00%	15.00%	0.01%
International Business Machines Corp	IBM	911.01	140.30	127,814.14	0.42%	4.73%	0.02%	3.00%	0.01%
Johnson & Johnson	JNJ	2,401.49	155.75	374,031.29	1.22%	3.06%	0.04%	5.00%	0.06%
McDonald's Corp	MCD	728.76	263.44	191,985.32	0.63%	2.31%	0.01%	10.50%	0.07%
Merck & Co Inc	MRK	2,537.52	102.95	261,237.79	0.85%	2.84%	0.02%	8.50%	0.07%
3M Co	MMM	551.99	93.62	51,677.49	0.17%	6.41%	0.01%	4.50%	0.01%
American Water Works Co Inc	AWK	194.67	123.83	24,105.86	0.08%	2.29%	0.00%	3.00%	0.00%
Bank of America Corp	BAC	7,946.37	27.38	217,571.67		3.51%		0.00%	
Pfizer Inc	PFE	5,645.96	33.17	187,276.49	0.61%	4.94%	0.03%	2.00%	0.01%
Procter & Gamble Co/The	PG	2,356.89	145.86	343,776.56	1.12%	2.58%	0.03%	5.50%	0.06%
AT&T Inc	T	7,149.00	15.02	107,377.98	0.35%	7.39%	0.03%	1.50%	0.01%
Travelers Cos Inc/The	TRV	228.94	163.31	37,388.52	0.12%	2.45%	0.00%	7.50%	0.01%
RTX Corp	RTX	1,455.52	71.97	104,753.41	0.34%	3.28%	0.01%	15.00%	0.05%
Analog Devices Inc	ADI	498.31	175.09	87,249.80	0.28%	1.96%	0.01%	11.50%	0.03%
Walmart Inc	WMT	2,691.56	159.93	430,461.83	1.40%	1.43%	0.02%	6.50%	0.09%
Cisco Systems Inc	CSCO	4,054.86	53.76	217,989.17	0.71%	2.90%	0.02%	8.50%	0.06%
Intel Corp	INTC	4,188.00	35.55	148,883.40		1.41%			
General Motors Co	GM	1,375.91	32.97	45,363.59	0.15%	1.09%	0.00%	8.50%	0.01%
Microsoft Corp	MSFT	7,429.76	315.75	2,345,947.98	7.65%	0.95%	0.07%	12.50%	0.96%
Dollar General Corp	DG	219.48	105.80	23,220.56	0.08%	2.23%	0.00%	5.50%	0.00%
Cigna Group/The	CI	295.98	286.07	84,671.00	0.28%	1.72%	0.00%	10.00%	0.03%
Kinder Morgan Inc	KMI	2,228.17	16.58	36,942.98	0.12%	6.82%	0.01%	17.50%	0.02%
Citigroup Inc	C	1,925.70	41.13	79,204.12	0.26%	5.15%	0.01%	3.50%	0.01%
American International Group Inc	AIG	711.90	60.60	43,141.14	0.14%	2.38%	0.00%	4.00%	0.01%
Altria Group Inc	MO	1,774.61	42.05	74,622.35	0.24%	9.32%	0.02%	6.00%	0.01%
HCA Healthcare Inc	HCA	271.99	245.98	66,903.61	0.22%	0.98%	0.00%	12.50%	0.03%
International Paper Co	IP	346.00	35.47	12,272.58	0.04%	5.22%	0.00%	6.00%	0.00%
Hewlett Packard Enterprise Co	HPE	1,282.87	17.37	22,283.37	0.07%	2.76%	0.00%	7.50%	0.01%
Abbott Laboratories	ABT	1,735.36	96.85	168,069.42	0.55%	2.11%	0.01%	4.50%	0.02%
Aflac Inc	AFL	594.06	76.75	45,594.26	0.15%	2.19%	0.00%	8.00%	0.01%
Air Products and Chemicals Inc	APD	222.15	283.40	62,957.03	0.21%	2.47%	0.01%	10.50%	0.02%
Royal Caribbean Cruises Ltd	RCL	256.17	92.14	23,603.78					
Hess Corp	HES	307.06	153.00	46,980.33		1.14%		23.50%	
Archer-Daniels-Midland Co	ADM	536.10	75.42	40,432.81	0.13%	2.39%	0.00%	7.50%	0.01%
Automatic Data Processing Inc	ADP	411.99	240.58	99,115.83	0.32%	2.08%	0.01%	11.00%	0.04%
Verisk Analytics Inc	VRSK	145.03	236.24	34,261.18	0.11%	0.58%	0.00%	8.00%	0.01%
AutoZone Inc	AZO	18.16	2,539.99	46,116.06	0.15%			13.00%	0.02%
Avery Dennison Corp	AVY	80.58	182.67	14,720.10	0.05%	1.77%	0.00%	9.50%	0.00%
Enphase Energy Inc	ENPH	136.36	120.15	16,383.05				27.50%	
MSCI Inc	MSCI	79.09	513.08	40,578.98	0.13%	1.08%	0.00%	12.50%	0.02%
Ball Corp	BALL	315.06	49.78	15,683.64	0.05%	1.61%	0.00%	13.00%	0.01%
Axon Enterprise Inc	AXON	74.76	198.99	14,876.49				24.00%	
Ceridian HCM Holding Inc	CDAY	155.61	67.85	10,558.34					
Carrier Global Corp	CARR	837.63	55.20	46,237.07	0.15%	1.34%	0.00%	13.00%	0.02%
Bank of New York Mellon Corp/The	BK	778.78	42.65	33,215.05	0.11%	3.94%	0.00%	7.50%	0.01%
Otis Worldwide Corp	OTIS	411.75	80.31	33,067.24	0.11%	1.69%	0.00%	11.00%	0.01%
Baxter International Inc	BAX	506.41	37.74	19,111.72	0.06%	3.07%	0.00%	6.00%	0.00%
Becton Dickinson & Co	BDX	290.11	258.53	75,001.88	0.24%	1.41%	0.00%	5.00%	0.01%
Berkshire Hathaway Inc	BRK/B	1,308.07	350.30	458,216.92					
Best Buy Co Inc	BBY	217.64	69.47	15,119.31	0.05%	5.30%	0.00%	3.00%	0.00%
Boston Scientific Corp	BSX	1,464.22	52.80	77,310.97	0.25%			13.00%	0.03%
Bristol-Myers Squibb Co	BMY	2,089.10	58.04	121,251.54		3.93%			
Brown-Forman Corp	BF/B	310.14	57.69	17,891.75		1.42%			
Coterra Energy Inc	CTRA	755.05	27.05	20,423.99		2.96%			
Campbell Soup Co	CPB	297.95	41.08	12,239.58	0.04%	3.60%	0.00%	5.00%	0.00%
Hilton Worldwide Holdings Inc	HLT	261.51	150.18	39,274.17		0.40%			
Carnival Corp	CCL	1,119.45	13.72	15,358.79					
Qorvo Inc	QRVO	97.91	95.47	9,347.47	0.03%			14.50%	0.00%
UDR Inc	UDR	329.48	35.67	11,752.55	0.04%	4.71%	0.00%	15.50%	0.01%
Clorox Co/The	CLX	123.83	131.06	16,228.64	0.05%	3.66%	0.00%	11.00%	0.01%
Paycom Software Inc	PAYC	60.47	259.27	15,677.28	0.05%	0.58%	0.00%	19.50%	0.01%
CMS Energy Corp	CMS	291.73	53.11	15,493.62	0.05%	3.67%	0.00%	6.50%	0.00%

STANDARD AND POOR'S 500 INDEX

Name	Ticker	[4] Shares Outstg	[5] Price	[6] Market Capitalization	[7] Weight in Index	[8] Estimated Dividend Yield	[9] Cap-Weighted Dividend Yield	[10] Value Line Long-Term Growth Est.	[11] Cap-Weighted Long-Term Growth Est.
Colgate-Palmolive Co	CL	826.69	71.11	58,786.07	0.19%	2.70%	0.01%	8.50%	0.02%
EPAM Systems Inc	EPAM	57.96	255.69	14,820.05				20.50%	
Comerica Inc	CMA	131.78	41.55	5,475.33	0.02%	6.84%	0.00%	4.00%	0.00%
Conagra Brands Inc	CAG	477.87	27.42	13,103.11	0.04%	5.11%	0.00%	4.50%	0.00%
Airbnb Inc	ABNB	426.36	137.21	58,500.72					
Consolidated Edison Inc	ED	344.92	85.53	29,501.35	0.10%	3.79%	0.00%	6.00%	0.01%
Corning Inc	GLW	852.98	30.47	25,990.36	0.08%	3.68%	0.00%	17.50%	0.01%
Cummins Inc	CMI	141.65	228.46	32,360.67	0.11%	2.94%	0.00%	10.00%	0.01%
Caesars Entertainment Inc	CZR	215.29	46.35	9,978.69					
Danaher Corp	DHR	738.35	219.91	162,373.50	0.53%	0.49%	0.00%	11.00%	0.06%
Target Corp	TGT	461.61	110.57	51,039.66	0.17%	3.98%	0.01%	12.00%	0.02%
Deere & Co	DE	288.00	377.38	108,685.82	0.35%	1.43%	0.01%	13.50%	0.05%
Dominion Energy Inc	D	836.77	44.67	37,378.65	0.12%	5.98%	0.01%	2.50%	0.00%
Dover Corp	DOV	139.87	139.51	19,513.82	0.06%	1.46%	0.00%	6.50%	0.00%
Alliant Energy Corp	LNT	252.72	48.45	12,244.24	0.04%	3.74%	0.00%	6.50%	0.00%
Steel Dynamics Inc	STLD	165.64	107.22	17,760.35	0.06%	1.59%	0.00%	2.00%	0.00%
Duke Energy Corp	DUK	771.00	88.26	68,048.46	0.22%	4.65%	0.01%	5.00%	0.01%
Regency Centers Corp	REG	171.00	59.44	10,164.42	0.03%	4.37%	0.00%	10.50%	0.00%
Eaton Corp PLC	ETN	399.00	213.28	85,098.72	0.28%	1.61%	0.00%	12.00%	0.03%
Ecolab Inc	ECL	285.03	169.40	48,284.76	0.16%	1.25%	0.00%	10.00%	0.02%
Revvity Inc	RVTY	124.14	110.70	13,741.74		0.25%		-1.50%	
Emerson Electric Co	EMR	571.50	96.57	55,189.76	0.18%	2.15%	0.00%	6.50%	0.01%
EOG Resources Inc	EOG	582.26	126.76	73,807.40	0.24%	2.60%	0.01%	15.00%	0.04%
Aon PLC	AON	202.87	324.22	65,773.54	0.21%	0.76%	0.00%	9.50%	0.02%
Entergy Corp	ETR	211.46	92.50	19,559.68	0.06%	4.63%	0.00%	0.50%	0.00%
Equifax Inc	EFX	122.72	183.18	22,479.85	0.07%	0.85%	0.00%	12.00%	0.01%
EQT Corp	EQT	411.26	40.58	16,688.93		1.48%			
IQVIA Holdings Inc	IQV	183.12	196.75	36,029.25	0.12%			14.50%	0.02%
Gartner Inc	IT	78.83	343.61	27,085.06	0.09%			10.50%	0.01%
FedEx Corp	FDX	251.42	264.92	66,606.19	0.22%	1.90%	0.00%	7.00%	0.02%
FMC Corp	FMC	124.73	66.97	8,353.44	0.03%	3.46%	0.00%	10.00%	0.00%
Brown & Brown Inc	BRO	283.61	69.84	19,807.53	0.06%	0.66%	0.00%	6.50%	0.00%
Ford Motor Co	F	3,931.37	12.42	48,827.67		4.83%		45.50%	
NextEra Energy Inc	NEE	2,023.71	57.29	115,938.58	0.38%	3.26%	0.01%	9.50%	0.04%
Franklin Resources Inc	BEN	498.98	24.58	12,264.88	0.04%	4.88%	0.00%	2.00%	0.00%
Garmin Ltd	GRMN	191.45	105.20	20,140.75	0.07%	2.78%	0.00%	5.00%	0.00%
Freepoint-McMoRan Inc	FCX	1,433.64	37.29	53,460.29	0.17%	1.61%	0.00%	12.50%	0.02%
Dexcom Inc	DXCM	387.87	93.30	36,188.46					
General Dynamics Corp	GD	273.04	220.97	60,334.31	0.20%	2.39%	0.00%	9.50%	0.02%
General Mills Inc	GIS	581.28	63.99	37,196.04	0.12%	3.69%	0.00%	4.50%	0.01%
Genuine Parts Co	GPC	104.44	144.38	20,276.44	0.07%	2.63%	0.00%	9.00%	0.01%
Atmos Energy Corp	ATO	148.46	105.93	15,726.58	0.05%	2.79%	0.00%	7.00%	0.00%
WW Grainger Inc	GWW	50.00	691.84	34,592.69	0.11%	1.08%	0.00%	11.00%	0.01%
Halliburton Co	HAL	898.55	40.50	36,391.11		1.58%		30.00%	
L3Harris Technologies Inc	LHX	189.13	174.12	32,931.84	0.11%	2.62%	0.00%	19.50%	0.02%
Healthpeak Properties Inc	PEAK	547.05	18.36	10,043.91	0.03%	6.54%	0.00%	14.50%	0.00%
Insulet Corp	PODD	69.82	159.49	11,135.75					
Catalent Inc	CTLT	180.27	45.53	8,207.78				21.00%	
Fortive Corp	FTV	352.02	74.16	26,106.10	0.09%	0.38%	0.00%	16.00%	0.01%
Hershey Co/The	HSY	149.85	200.08	29,982.79	0.10%	2.38%	0.00%	9.50%	0.01%
Synchrony Financial	SYF	418.18	30.57	12,783.85		3.27%		47.00%	
Hormel Foods Corp	HRL	546.48	38.03	20,782.67	0.07%	2.89%	0.00%	7.50%	0.01%
Arthur J Gallagher & Co	AJG	215.51	227.93	49,120.28		0.97%		22.00%	
Mondelez International Inc	MDLZ	1,360.42	69.40	94,413.01	0.31%	2.45%	0.01%	10.00%	0.03%
CenterPoint Energy Inc	CNP	629.43	26.85	16,900.25	0.06%	2.98%	0.00%	6.50%	0.00%
Humana Inc	HUM	123.91	486.52	60,283.23	0.20%	0.73%	0.00%	12.50%	0.02%
Willis Towers Watson PLC	WTW	104.82	208.96	21,903.81	0.07%	1.61%	0.00%	9.50%	0.01%
Illinois Tool Works Inc	ITW	302.39	230.31	69,643.44	0.23%	2.43%	0.01%	11.00%	0.02%
CDW Corp/DE	CDW	134.05	201.76	27,045.52	0.09%	1.17%	0.00%	7.00%	0.01%
Trane Technologies PLC	TT	228.40	202.91	46,344.24	0.15%	1.48%	0.00%	13.00%	0.02%
Interpublic Group of Cos Inc/The	IPG	384.94	28.66	11,032.24	0.04%	4.33%	0.00%	8.50%	0.00%
International Flavors & Fragrances Inc	IFF	255.25	68.17	17,400.60	0.06%	4.75%	0.00%	8.00%	0.00%
Generac Holdings Inc	GNRC	62.24	108.96	6,782.00	0.02%			19.00%	0.00%
NXP Semiconductors NV	NXPI	257.80	199.92	51,539.78	0.17%	2.03%	0.00%	8.50%	0.01%
Kellanova	K	342.35	55.84	19,116.66	0.06%	4.30%	0.00%	3.00%	0.00%
Broadridge Financial Solutions Inc	BR	117.62	179.05	21,060.04	0.07%	1.79%	0.00%	8.50%	0.01%
Kimberly-Clark Corp	KMB	338.19	120.85	40,869.66	0.13%	3.91%	0.01%	7.00%	0.01%
Kimco Realty Corp	KIM	619.89	17.59	10,903.90	0.04%	5.23%	0.00%	11.00%	0.00%
Oracle Corp	ORCL	2,739.38	105.92	290,154.71	0.95%	1.51%	0.01%	10.00%	0.09%
Kroger Co/The	KR	719.32	44.75	32,189.39	0.11%	2.59%	0.00%	6.00%	0.01%
Lennar Corp	LEN	250.15	112.23	28,074.56	0.09%	1.34%	0.00%	3.50%	0.00%
Eli Lilly & Co	LLY	949.30	537.13	509,894.82	1.66%	0.84%	0.01%	19.00%	0.32%
Bath & Body Works Inc	BBWI	227.38	33.80	7,685.48		2.37%		26.50%	
Charter Communications Inc	CHTR	149.67	439.82	65,828.30	0.21%			12.50%	0.03%
Loews Corp	L	225.51	63.31	14,276.97		0.39%		25.50%	
Lowe's Cos Inc	LOW	577.12	207.84	119,947.58	0.39%	2.12%	0.01%	8.00%	0.03%
IDEX Corp	IEX	75.60	208.02	15,726.73	0.05%	1.23%	0.00%	8.00%	0.00%
Marsh & McLennan Cos Inc	MMC	493.95	190.30	93,999.45	0.31%	1.49%	0.00%	9.00%	0.03%
Masco Corp	MAS	224.93	53.45	12,022.29	0.04%	2.13%	0.00%	6.50%	0.00%
S&P Global Inc	SPGI	318.20	365.41	116,273.46	0.38%	0.99%	0.00%	7.50%	0.03%
Medtronic PLC	MDT	1,330.53	78.36	104,260.64	0.34%	3.52%	0.01%	7.50%	0.03%
Viatis Inc	VTRS	1,199.53	9.86	11,827.39		4.87%			
CVS Health Corp	CVS	1,284.40	69.82	89,676.74	0.29%	3.47%	0.01%	8.50%	0.02%
DuPont de Nemours Inc	DD	459.06	74.59	34,241.36	0.11%	1.93%	0.00%	9.50%	0.01%
Micron Technology Inc	MU	1,095.30	68.03	74,513.40	0.24%	0.68%	0.00%	9.50%	0.02%
Motorola Solutions Inc	MSI	167.02	272.24	45,469.52	0.15%	1.29%	0.00%	11.00%	0.02%
Choe Global Markets Inc	CBOE	105.52	156.21	16,482.81	0.05%	1.41%	0.00%	12.50%	0.01%
Laboratory Corp of America Holdings	LH	88.60	201.05	17,813.03	0.06%	1.43%	0.00%	1.00%	0.00%
Newmont Corp	NEM	794.80	36.95	29,367.71	0.10%	4.33%	0.00%	8.00%	0.01%
NIKE Inc	NKE	1,225.07	95.62	117,141.58	0.38%	1.42%	0.01%	18.00%	0.07%
NiSource Inc	NI	413.26	24.68	10,199.13	0.03%	4.05%	0.00%	9.50%	0.00%

STANDARD AND POOR'S 500 INDEX

Name	Ticker	[4] Shares Outstg	[5] Price	[6] Market Capitalization	[7] Weight in Index	[8] Estimated Dividend Yield	[9] Cap-Weighted Dividend Yield	[10] Value Line Long-Term Growth Est.	[11] Cap-Weighted Long-Term Growth Est.
Norfolk Southern Corp	NSC	227.02	196.93	44,706.06	0.15%	2.74%	0.00%	8.50%	0.01%
Principal Financial Group Inc	PFJ	241.72	72.07	17,420.40	0.06%	3.61%	0.00%	5.50%	0.00%
Eversource Energy	ES	349.09	58.15	20,299.35	0.07%	4.64%	0.00%	6.50%	0.00%
Northrop Grumman Corp	NOC	151.30	440.19	66,600.75	0.22%	1.70%	0.00%	9.50%	0.02%
Wells Fargo & Co	WFC	3,667.70	40.86	149,862.22	0.49%	3.43%	0.02%	12.00%	0.06%
Nucor Corp	NUE	248.72	156.35	38,887.68	0.13%	1.30%	0.00%	2.00%	0.00%
Occidental Petroleum Corp	OXY	884.68	64.88	57,398.17	0.19%	1.11%	0.00%	17.00%	0.03%
Omnicom Group Inc	OMC	197.57	74.48	14,715.09	0.05%	3.76%	0.00%	7.00%	0.00%
ONEOK Inc	OKE	582.47	63.43	36,946.26	0.12%	6.02%	0.01%	12.00%	0.01%
Raymond James Financial Inc	RJF	208.84	100.43	20,974.00	0.07%	1.67%	0.00%	15.00%	0.01%
PG&E Corp	PCG	2,091.24	16.13	33,731.72	0.11%			7.50%	0.01%
Parker-Hannifin Corp	PH	128.51	389.52	50,057.22	0.16%	1.52%	0.00%	14.50%	0.02%
Rollins Inc	ROL	484.10	37.33	18,071.34	0.06%	1.39%	0.00%	10.50%	0.01%
PPL Corp	PPL	737.09	23.56	17,365.82	0.06%	4.07%	0.00%	8.00%	0.00%
ConocoPhillips	COP	1,197.49	119.80	143,459.42	0.47%	0.50%	0.00%	9.00%	0.04%
PulteGroup Inc	PHM	219.45	74.05	16,249.90	0.05%	0.86%	0.00%	8.00%	0.00%
Pinnacle West Capital Corp	PNW	113.31	73.68	8,348.83	0.03%	4.70%	0.00%	2.50%	0.00%
PNC Financial Services Group Inc/The	PNC	398.26	122.77	48,893.77	0.16%	5.05%	0.01%	7.50%	0.01%
PPG Industries Inc	PPG	235.51	129.80	30,569.59	0.10%	2.00%	0.00%	3.00%	0.00%
Progressive Corp/The	PGR	585.10	139.30	81,504.43	0.27%	0.29%	0.00%	12.00%	0.03%
Public Service Enterprise Group Inc	PEG	499.11	56.91	28,404.41	0.09%	4.01%	0.00%	4.00%	0.00%
Robert Half Inc	RHI	107.08	73.28	7,846.97	0.03%	2.62%	0.00%	9.50%	0.00%
Cooper Cos Inc/The	COO	49.52	318.01	15,749.13	0.05%	0.02%	0.00%	12.00%	0.01%
Edison International	EIX	383.29	63.29	24,258.36	0.08%	4.66%	0.00%	4.50%	0.00%
Schlumberger NV	SLB	1,421.19	58.30	82,855.14		1.72%		26.00%	
Charles Schwab Corp/The	SCHW	1,770.22	54.90	97,185.08	0.32%	1.82%	0.01%	9.00%	0.03%
Sherwin-Williams Co/The	SHW	257.15	255.05	65,585.85	0.21%	0.95%	0.00%	7.00%	0.01%
West Pharmaceutical Services Inc	WST	73.86	375.21	27,713.39	0.09%	0.20%	0.00%	17.00%	0.02%
J M Smucker Co/The	SJM	102.14	122.91	12,554.27	0.04%	3.45%	0.00%	6.00%	0.00%
Snap-on Inc	SNA	52.92	255.06	13,497.01	0.04%	2.54%	0.00%	6.00%	0.00%
AMETEK Inc	AME	230.71	147.76	34,090.01	0.11%	0.68%	0.00%	10.00%	0.01%
Southern Co/The	SO	1,091.52	64.72	70,642.85	0.23%	4.33%	0.01%	6.50%	0.01%
Truist Financial Corp	TFC	1,331.98	28.61	38,107.83	0.12%	7.27%	0.01%	6.00%	0.01%
Southwest Airlines Co	LUV	595.63	27.07	16,123.81		2.66%			
W R Berkley Corp	WRB	257.52	63.49	16,350.14	0.05%	0.69%	0.00%	15.00%	0.01%
Stanley Black & Decker Inc	SWK	153.23	83.58	12,806.96	0.04%	3.88%	0.00%	1.00%	0.00%
Public Storage	PSA	175.83	263.52	46,334.46	0.15%	4.55%	0.01%	7.50%	0.01%
Arista Networks Inc	ANET	309.58	183.93	56,941.23	0.19%			13.00%	0.02%
Sysco Corp	SYI	504.93	66.05	33,350.36	0.11%	3.03%	0.00%	18.50%	0.02%
Corteva Inc	CTVA	709.52	51.16	36,298.84	0.12%	1.25%	0.00%	13.50%	0.02%
Texas Instruments Inc	TXN	907.97	159.01	144,375.67	0.47%	3.27%	0.02%	3.00%	0.01%
Textron Inc	TXT	198.07	78.14	15,477.27	0.05%	0.10%	0.00%	16.00%	0.01%
Thermo Fisher Scientific Inc	TMO	385.95	506.17	195,356.31	0.64%	0.28%	0.00%	9.50%	0.06%
TJX Cos Inc/The	TJX	1,144.08	88.88	101,685.92	0.33%	1.50%	0.00%	17.00%	0.06%
Globe Life Inc	GL	94.82	108.73	10,309.78	0.03%	0.83%	0.00%	9.00%	0.00%
Johnson Controls International plc	JCI	680.32	53.21	36,199.83	0.12%	2.78%	0.00%	11.50%	0.01%
Ulta Beauty Inc	ULTA	49.23	399.45	19,664.52	0.06%			13.50%	0.01%
Union Pacific Corp	UNP	609.46	203.63	124,103.53	0.40%	2.55%	0.01%	6.50%	0.03%
Keysight Technologies Inc	KEYS	177.58	132.31	23,494.95	0.08%			13.00%	0.01%
UnitedHealth Group Inc	UNH	926.31	504.19	467,033.72	1.52%	1.49%	0.02%	12.00%	0.18%
Blackstone Inc	BX	709.75	107.14	76,042.62	0.25%	2.95%	0.01%	15.00%	0.04%
Marathon Oil Corp	MRO	605.69	26.75	16,202.13		1.50%		22.50%	
Bio-Rad Laboratories Inc	BIO	24.00	358.45	8,604.23	0.03%			11.50%	0.00%
Ventas Inc	VTR	402.38	42.13	16,952.19		4.27%		23.50%	
VF Corp	VFC	388.87	17.67	6,871.30	0.02%	6.79%	0.00%	9.00%	0.00%
Vulcan Materials Co	VMC	132.87	202.02	26,841.59	0.09%	0.85%	0.00%	9.50%	0.01%
Weyerhaeuser Co	WY	730.75	30.66	22,404.73		2.48%		-2.50%	
Whirlpool Corp	WHR	54.82	133.70	7,329.17		5.24%		-1.50%	
Williams Cos Inc/The	WMB	1,216.42	33.69	40,981.22	0.13%	5.31%	0.01%	10.50%	0.01%
Constellation Energy Corp	CEG	321.59	109.08	35,079.26		1.03%			
WEC Energy Group Inc	WEC	315.44	80.55	25,408.29	0.08%	3.87%	0.00%	6.00%	0.00%
Adobe Inc	ADBE	455.30	509.90	232,157.47	0.76%			11.00%	0.08%
AES Corp/The	AES	669.63	15.20	10,178.36	0.03%	4.37%	0.00%	14.00%	0.00%
Amgen Inc	AMGN	534.90	268.76	143,759.99	0.47%	3.17%	0.01%	6.00%	0.03%
Apple Inc	AAPL	15,634.23	171.21	2,676,736.86	8.73%	0.56%	0.05%	10.50%	0.92%
Autodesk Inc	ADSK	213.76	206.91	44,229.91	0.14%			10.00%	0.01%
Cintas Corp	CTAS	101.93	481.01	49,027.91	0.16%	1.12%	0.00%	14.00%	0.02%
Comcast Corp	CMCSA	4,115.69	44.34	182,489.65	0.60%	2.62%	0.02%	9.00%	0.05%
Molson Coors Beverage Co	TAP	200.96	63.59	12,779.05		2.58%		35.00%	
KLA Corp	KLAC	136.32	458.66	62,525.45	0.20%	1.13%	0.00%	13.50%	0.03%
Marriott International Inc/MD	MAR	298.24	196.56	58,622.05	0.19%	1.06%	0.00%	17.50%	0.03%
Fiserv Inc	FI	609.62	112.96	68,862.11	0.22%			9.50%	0.02%
McCormick & Co Inc/MD	MKC	251.10	75.64	18,993.20	0.06%	2.06%	0.00%	4.50%	0.00%
PACCAR Inc	PCAR	522.81	85.02	44,448.88	0.15%	1.27%	0.00%	5.00%	0.01%
Costco Wholesale Corp	COST	442.79	564.96	250,160.33	0.82%	0.72%	0.01%	10.50%	0.09%
Stryker Corp	SYK	379.78	273.27	103,781.93	0.34%	1.10%	0.00%	7.00%	0.02%
Tyson Foods Inc	TSN	285.55	50.49	14,417.42	0.05%	3.80%	0.00%	6.00%	0.00%
Lamb Weston Holdings Inc	LW	145.67	92.46	13,468.37	0.04%	1.21%	0.00%	15.50%	0.01%
Applied Materials Inc	AMAT	836.53	138.45	115,818.13	0.38%	0.92%	0.00%	5.50%	0.02%
American Airlines Group Inc	AAL	653.36	12.81	8,369.57					
Cardinal Health Inc	CAH	246.35	86.32	21,265.13	0.07%	2.32%	0.00%	6.50%	0.00%
Cincinnati Financial Corp	CINF	156.86	102.29	16,044.80	0.05%	2.93%	0.00%	10.50%	0.01%
Paramount Global	PARA	610.40	12.90	7,874.15	0.03%	1.55%	0.00%	1.50%	0.00%
DR Horton Inc	DHI	338.30	107.47	36,356.78	0.12%	0.93%	0.00%	5.00%	0.01%
Electronic Arts Inc	EA	270.91	120.40	32,617.80	0.11%	0.63%	0.00%	16.00%	0.02%
Fair Isaac Corp	FICO	24.86	868.53	21,589.05	0.07%			16.00%	0.01%
Expeditors International of Washington Inc	EXPD	147.90	114.63	16,953.43	0.06%	1.20%	0.00%	10.00%	0.01%
Fastenal Co	FAST	571.33	54.64	31,217.64	0.10%	2.56%	0.00%	6.50%	0.01%
M&T Bank Corp	MTB	165.95	126.45	20,984.25	0.07%	4.11%	0.00%	6.50%	0.00%
Xcel Energy Inc	XEL	551.53	57.22	31,558.72	0.10%	3.64%	0.00%	6.00%	0.01%
Fifth Third Bancorp	FITB	680.89	25.33	17,246.92	0.06%	5.53%	0.00%	4.50%	0.00%

STANDARD AND POOR'S 500 INDEX

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Gilead Sciences Inc	GILD	1,246.01	74.94	93,376.29	0.30%	4.00%	0.01%	13.50%	0.04%
Hasbro Inc	HAS	138.74	66.14	9,176.33	0.03%	4.23%	0.00%	8.50%	0.00%
Huntington Bancshares Inc/OH	HBAN	1,447.88	10.40	15,057.97	0.05%	5.96%	0.00%	10.50%	0.01%
Welltower Inc	WELL	518.73	81.92	42,494.28	0.14%	2.98%	0.00%	12.00%	0.02%
Biogen Inc	BIIB	144.82	257.01	37,220.96				-1.00%	
Northern Trust Corp	NTRS	207.00	69.48	14,382.64	0.05%	4.32%	0.00%	5.50%	0.00%
Packaging Corp of America	PKG	89.92	153.55	13,806.45	0.05%	3.26%	0.00%	9.00%	0.00%
Paychex Inc	PAYX	361.23	115.33	41,660.89	0.14%	3.09%	0.00%	9.50%	0.01%
QUALCOMM Inc	QCOM	1,116.00	111.06	123,942.96	0.40%	2.88%	0.01%	5.50%	0.02%
Ross Stores Inc	ROST	338.63	112.95	38,248.48	0.12%	1.19%	0.00%	14.00%	0.02%
IDEXX Laboratories Inc	IDXX	83.01	437.27	36,298.66	0.12%			10.50%	0.01%
Starbucks Corp	SBUX	1,145.40	91.27	104,540.66	0.34%	2.50%	0.01%	16.00%	0.05%
KeyCorp	KEY	935.92	10.76	10,070.49	0.03%	7.62%	0.00%	7.50%	0.00%
Fox Corp	FOXA	253.68	31.20	7,914.94	0.03%	1.67%	0.00%	8.50%	0.00%
Fox Corp	FOX	235.58	28.88	6,803.58		1.80%			
State Street Corp	STT	318.64	66.96	21,336.13	0.07%	4.12%	0.00%	9.00%	0.01%
Norwegian Cruise Line Holdings Ltd	NCLH	425.42	16.48	7,010.99					
US Bancorp	USB	1,556.97	33.06	51,473.26	0.17%	5.81%	0.01%	4.00%	0.01%
A O Smith Corp	AOS	124.59	66.13	8,239.14	0.03%	1.81%	0.00%	9.50%	0.00%
Gen Digital Inc	GEN	639.44	17.68	11,305.28	0.04%	2.83%	0.00%	10.50%	0.00%
T Rowe Price Group Inc	TROW	224.30	104.87	23,521.82	0.08%	4.65%	0.00%	2.00%	0.00%
Waste Management Inc	WM	405.06	152.44	61,747.19	0.20%	1.84%	0.00%	6.50%	0.01%
Constellation Brands Inc	STZ	183.30	251.33	46,069.04	0.15%	1.42%	0.00%	5.50%	0.01%
DENTSPLY SIRONA Inc	XRAY	211.72	34.16	7,232.22	0.02%	1.64%	0.00%	12.00%	0.00%
Zions Bancorp NA	ZION	148.15	34.89	5,168.78	0.02%	4.70%	0.00%	6.50%	0.00%
Alaska Air Group Inc	ALK	127.22	37.08	4,717.47					
Invesco Ltd	IVZ	448.62	14.52	6,513.98	0.02%	5.51%	0.00%	6.50%	0.00%
Intuit Inc	INTU	280.26	510.94	143,195.53	0.47%	0.70%	0.00%	14.50%	0.07%
Morgan Stanley	MS	1,656.97	81.67	135,324.49	0.44%	4.16%	0.02%	7.50%	0.03%
Microchip Technology Inc	MCHP	544.33	78.05	42,485.27	0.14%	2.10%	0.00%	10.00%	0.01%
Chubb Ltd	CB	410.74	208.18	85,506.81	0.28%	1.65%	0.00%	15.00%	0.04%
Hologic Inc	HOLX	244.94	69.40	16,998.97				25.00%	
Citizens Financial Group Inc	CFG	472.29	26.80	12,657.48	0.04%	6.27%	0.00%	7.50%	0.00%
O'Reilly Automotive Inc	ORLY	60.26	908.86	54,766.09	0.18%			12.00%	0.02%
Allstate Corp/The	ALL	261.57	111.41	29,141.96	0.10%	3.20%	0.00%	10.50%	0.01%
Equity Residential	EQR	379.03	58.71	22,252.97		4.51%		-5.00%	
BorgWarner Inc	BWA	235.06	40.37	9,489.49	0.03%	1.09%	0.00%	7.00%	0.00%
Keurig Dr Pepper Inc	KDP	1,397.26	31.57	44,111.47	0.14%	2.72%	0.00%	12.50%	0.02%
Organon & Co	OGN	255.57	17.36	4,436.66		6.45%			
Host Hotels & Resorts Inc	HST	711.61	16.07	11,435.49		4.48%		51.00%	
Incyte Corp	INCY	224.09	57.77	12,945.56				32.00%	
Simon Property Group Inc	SPG	327.19	108.03	35,346.44	0.12%	7.04%	0.01%	3.50%	0.00%
Eastman Chemical Co	EMN	118.56	76.72	9,095.62	0.03%	4.12%	0.00%	6.00%	0.00%
AvalonBay Communities Inc	AVB	142.02	171.74	24,389.83	0.08%	3.84%	0.00%	6.00%	0.00%
Prudential Financial Inc	PRU	363.00	94.89	34,445.07	0.11%	5.27%	0.01%	3.00%	0.00%
United Parcel Service Inc	UPS	723.28	155.87	112,737.03	0.37%	4.16%	0.02%	7.50%	0.03%
Walgreens Boots Alliance Inc	WBA	863.26	22.24	19,198.92	0.06%	8.63%	0.01%	1.00%	0.00%
STERIS PLC	STE	98.78	219.42	21,674.53	0.07%	0.95%	0.00%	10.00%	0.01%
McKesson Corp	MCK	134.90	434.85	58,662.13	0.19%	0.57%	0.00%	9.00%	0.02%
Lockheed Martin Corp	LMT	251.83	408.96	102,988.81	0.34%	2.93%	0.01%	7.00%	0.02%
Cencora Inc	COR	202.18	179.97	36,385.43	0.12%	1.08%	0.00%	9.00%	0.01%
Capital One Financial Corp	COF	381.44	97.05	37,018.85	0.12%	2.47%	0.00%	4.00%	0.00%
Waters Corp	WAT	59.10	274.21	16,206.63	0.05%			10.00%	0.01%
Nordson Corp	NDSN	57.01	223.17	12,723.81	0.04%	1.22%	0.00%	9.00%	0.00%
Dollar Tree Inc	DLTR	220.01	106.45	23,419.64	0.08%			9.00%	0.01%
Darden Restaurants Inc	DRI	120.32	143.22	17,231.51	0.06%	3.66%	0.00%	15.00%	0.01%
Evergy Inc	EVRG	229.58	50.70	11,639.86	0.04%	4.83%	0.00%	7.50%	0.00%
Match Group Inc	MTCH	278.09	39.18	10,894.06	0.04%			16.50%	0.01%
Domino's Pizza Inc	DPZ	35.09	378.79	13,293.26	0.04%	1.28%	0.00%	12.00%	0.01%
NVR Inc	NVR	3.26	5,963.30	19,464.21	0.06%			3.50%	0.00%
NetApp Inc	NTAP	208.79	75.88	15,843.06	0.05%	2.64%	0.00%	8.00%	0.00%
DXC Technology Co	DXC	205.17	20.83	4,273.77	0.01%			9.00%	0.00%
Old Dominion Freight Line Inc	ODFL	109.27	409.14	44,705.91	0.15%	0.39%	0.00%	9.00%	0.01%
DaVita Inc	DVA	91.30	94.53	8,630.59	0.03%			7.00%	0.00%
Hartford Financial Services Group Inc/The	HIG	305.82	70.91	21,685.48	0.07%	2.40%	0.00%	8.00%	0.01%
Iron Mountain Inc	IRM	291.85	59.45	17,350.60	0.06%	4.37%	0.00%	4.00%	0.00%
Estee Lauder Cos Inc/The	EL	232.30	144.55	33,578.53	0.11%	1.83%	0.00%	8.00%	0.01%
Cadence Design Systems Inc	CDNS	271.79	234.30	63,680.40	0.21%			12.00%	0.02%
Tyler Technologies Inc	TYL	42.08	386.14	16,248.00	0.05%			10.50%	0.01%
Universal Health Services Inc	UHS	62.14	125.73	7,812.86	0.03%	0.64%	0.00%	6.00%	0.00%
Skyworks Solutions Inc	SWKS	159.39	98.59	15,714.56	0.05%	2.76%	0.00%	3.50%	0.00%
Quest Diagnostics Inc	DGX	112.24	121.86	13,676.96	0.04%	2.33%	0.00%	4.00%	0.00%
Activision Blizzard Inc	ATVI	786.80	93.63	73,667.90	0.24%	1.06%	0.00%	13.50%	0.03%
Rockwell Automation Inc	ROK	114.86	285.87	32,835.03	0.11%	1.65%	0.00%	9.50%	0.01%
Kraft Heinz Co/The	KHC	1,228.30	33.64	41,319.84	0.13%	4.76%	0.01%	6.00%	0.01%
American Tower Corp	AMT	466.16	164.45	76,659.35	0.25%	3.94%	0.01%	5.00%	0.01%
Regeneron Pharmaceuticals Inc	REGN	106.74	822.96	87,843.57	0.29%			1.50%	0.00%
Amazon.com Inc	AMZN	10,317.75	127.12	1,311,592.51	4.28%			19.50%	0.83%
Jack Henry & Associates Inc	JKHY	72.94	151.14	11,023.40	0.04%	1.38%	0.00%	7.00%	0.00%
Ralph Lauren Corp	RL	40.39	116.09	4,688.64	0.02%	2.58%	0.00%	12.50%	0.00%
Boston Properties Inc	BXP	156.87	59.48	9,330.33		6.59%		-1.00%	
Amphenol Corp	APH	596.45	83.99	50,096.17	0.16%	1.00%	0.00%	12.50%	0.02%
Howmet Aerospace Inc	HWM	412.21	46.25	19,064.62	0.06%	0.43%	0.00%	12.00%	0.01%
Pioneer Natural Resources Co	PXD	233.14	229.55	53,517.52	0.17%	3.21%	0.01%	8.50%	0.01%
Valero Energy Corp	VLO	353.13	141.71	50,042.48	0.16%	2.88%	0.00%	1.50%	0.00%
Synopsys Inc	SNPS	152.08	458.97	69,801.99	0.23%			15.00%	0.03%
Etsy Inc	ETSY	123.01	64.58	7,944.24	0.03%			10.00%	0.00%
CH Robinson Worldwide Inc	CHRW	116.44	86.13	10,028.89	0.03%	2.83%	0.00%	6.00%	0.00%
Accenture PLC	ACN	630.80	307.11	193,723.45	0.63%	1.68%	0.01%	12.50%	0.08%
TransDigm Group Inc	TDG	55.18	843.13	46,526.44				26.00%	
Yum! Brands Inc	YUM	280.21	124.94	35,009.56	0.11%	1.94%	0.00%	11.50%	0.01%

STANDARD AND POOR'S 500 INDEX

Name	Ticker	[4] Shares Outstg	[5] Price	[6] Market Capitalization	[7] Weight in Index	[8] Estimated Dividend Yield	[9] Cap-Weighted Dividend Yield	[10] Value Line Long-Term Growth Est.	[11] Cap-Weighted Long-Term Growth Est.
Prologis Inc	PLD	923.86	112.21	103,666.56	0.34%	3.10%	0.01%	2.50%	0.01%
FirstEnergy Corp	FE	573.36	34.18	19,597.51	0.06%	4.80%	0.00%	4.00%	0.00%
VeriSign Inc	VRSN	103.13	202.53	20,887.73	0.07%			13.00%	0.01%
Quanta Services Inc	PWR	145.20	187.07	27,162.38	0.09%	0.17%	0.00%	15.00%	0.01%
Henry Schein Inc	HSIC	130.59	74.25	9,695.94	0.03%			9.00%	0.00%
Ameren Corp	AEE	262.48	74.83	19,641.00	0.06%	3.37%	0.00%	6.50%	0.00%
ANSYS Inc	ANSS	86.79	297.55	25,824.66	0.08%			8.50%	0.01%
FactSet Research Systems Inc	FDS	38.15	437.26	16,679.72	0.05%	0.90%	0.00%	10.50%	0.01%
NVIDIA Corp	NVDA	2,470.00	434.99	1,074,425.30		0.04%		40.00%	
Sealed Air Corp	SEE	144.41	32.86	4,745.31	0.02%	2.43%	0.00%	7.50%	0.00%
Cognizant Technology Solutions Corp	CTSH	505.04	67.74	34,211.48	0.11%	1.71%	0.00%	8.00%	0.01%
Intuitive Surgical Inc	ISRG	351.36	292.29	102,697.55	0.34%			12.50%	0.04%
Take-Two Interactive Software Inc	TTWO	169.83	140.39	23,842.57					
Republic Services Inc	RSG	316.33	142.51	45,079.62	0.15%	1.50%	0.00%	12.50%	0.02%
eBay Inc	EBAY	532.16	44.09	23,462.80	0.08%	2.27%	0.00%	9.50%	0.01%
Goldman Sachs Group Inc/The	GS	329.67	323.57	106,671.65	0.35%	3.40%	0.01%	5.00%	0.02%
SBA Communications Corp	SBAC	108.38	200.17	21,695.03		1.70%		23.50%	
Sempra	SRE	629.31	68.03	42,811.76	0.14%	3.50%	0.00%	7.00%	0.01%
Moody's Corp	MCO	183.50	316.17	58,017.20	0.19%	0.97%	0.00%	16.00%	0.03%
ON Semiconductor Corp	ON	431.53	92.95	40,110.62	0.13%			13.00%	0.02%
Booking Holdings Inc	BKNG	35.69	3,083.95	110,072.34				22.00%	
F5 Inc	FFIV	59.31	161.14	9,556.57	0.03%			10.00%	0.00%
Akamai Technologies Inc	AKAM	151.71	106.54	16,163.50	0.05%			5.00%	0.00%
Charles River Laboratories International Inc	CRL	51.27	195.98	10,048.09	0.03%			8.00%	0.00%
MarketAxess Holdings Inc	MKTX	37.68	213.64	8,049.31	0.03%	1.35%	0.00%	10.50%	0.00%
Devon Energy Corp	DVN	640.70	47.70	30,561.39	0.10%	4.11%	0.00%	10.50%	0.01%
Bio-Techne Corp	TECH	158.24	68.07	10,771.40	0.04%	0.47%	0.00%	13.00%	0.00%
Alphabet Inc	GOOGL	5,933.00	130.86	776,392.38					
Teleflex Inc	TFX	46.99	196.41	9,229.70	0.03%	0.69%	0.00%	10.00%	0.00%
Bunge Ltd	BG	150.64	108.25	16,307.00	0.05%	2.45%	0.00%	1.50%	0.00%
Netflix Inc	NFLX	443.15	377.60	167,332.31	0.55%			13.00%	0.07%
Allegion plc	ALLE	87.78	104.20	9,146.68	0.03%	1.73%	0.00%	10.50%	0.00%
Warner Bros Discovery Inc	WBD	2,437.38	10.86	26,469.99					
Agilent Technologies Inc	A	292.59	111.60	32,651.25	0.11%	0.81%	0.00%	13.50%	0.01%
Trimble Inc	TRMB	248.32	53.86	13,374.62	0.04%			5.50%	0.00%
Elevance Health Inc	ELV	235.65	435.42	102,605.85	0.33%	1.36%	0.00%	12.50%	0.04%
CME Group Inc	CME	359.75	200.22	72,028.34	0.23%	2.20%	0.01%	7.50%	0.02%
Juniper Networks Inc	JNPR	321.36	27.79	8,930.59	0.03%	3.17%	0.00%	10.50%	0.00%
BlackRock Inc	BLK	149.30	646.49	96,522.90	0.31%	3.09%	0.01%	7.50%	0.02%
DTE Energy Co	DTE	206.11	99.28	20,462.50	0.07%	3.84%	0.00%	4.50%	0.00%
Celanese Corp	CE	108.85	125.52	13,663.10	0.04%	2.23%	0.00%	6.50%	0.00%
Nasdaq Inc	NDQA	491.32	48.59	23,873.04	0.08%	1.81%	0.00%	6.00%	0.00%
Philip Morris International Inc	PM	1,552.35	92.58	143,716.10	0.47%	5.62%	0.03%	5.00%	0.02%
Ingersoll Rand Inc	IR	404.40	63.72	25,768.30	0.08%	0.13%	0.00%	12.00%	0.01%
Salesforce Inc	CRM	973.00	202.78	197,304.94	0.64%			18.00%	0.12%
Huntington Ingalls Industries Inc	HII	39.87	204.58	8,156.20	0.03%	2.42%	0.00%	10.00%	0.00%
Roper Technologies Inc	ROP	106.71	484.28	51,678.00	0.17%	0.56%	0.00%	8.00%	0.01%
MetLife Inc	MET	752.02	62.91	47,309.70	0.15%	3.31%	0.01%	7.50%	0.01%
Tapestry Inc	TPR	227.44	28.75	6,538.87	0.02%	4.87%	0.00%	12.00%	0.00%
CSX Corp	CSX	2,006.33	30.75	61,694.65	0.20%	1.43%	0.00%	8.50%	0.02%
Edwards Lifesciences Corp	EW	607.92	69.28	42,116.42	0.14%			10.50%	0.01%
Ameriprise Financial Inc	AMP	102.63	329.68	33,833.74	0.11%	1.64%	0.00%	11.00%	0.01%
Zebra Technologies Corp	ZBRA	51.34	236.53	12,142.98	0.04%			1.50%	0.00%
Zimmer Biomet Holdings Inc	ZBH	208.96	112.22	23,449.94	0.08%	0.86%	0.00%	6.50%	0.00%
Camden Property Trust	CPT	106.77	94.58	10,098.40		4.23%		-3.00%	
CBRE Group Inc	CBRE	309.84	73.86	22,884.63	0.07%			8.50%	0.01%
Mastercard Inc	MA	934.85	395.91	370,115.67	1.21%	0.58%	0.01%	16.00%	0.19%
CarMax Inc	KMX	158.67	70.73	11,222.59				-3.50%	
Intercontinental Exchange Inc	ICE	594.94	110.02	65,454.86	0.21%	1.53%	0.00%	6.00%	0.01%
Fidelity National Information Services Inc	FIS	592.47	55.27	32,745.54		3.76%		23.50%	
Chipotle Mexican Grill Inc	CMG	27.59	1,831.83	50,536.53	0.16%			20.00%	0.03%
Wynn Resorts Ltd	WYNN	113.94	92.41	10,528.83		1.08%		27.00%	
Live Nation Entertainment Inc	LYV	230.15	83.04	19,111.74					
Assurant Inc	AIZ	53.02	143.58	7,613.04	0.02%	1.95%	0.00%	10.50%	0.00%
NRG Energy Inc	NRG	229.12	38.52	8,825.59		3.92%		-2.50%	
Monster Beverage Corp	MNST	1,047.52	52.95	55,466.08	0.18%			11.00%	0.02%
Regions Financial Corp	RF	938.38	17.20	16,140.08	0.05%	5.58%	0.00%	11.50%	0.01%
Baker Hughes Co	BKR	1,009.65	35.32	35,660.98		2.27%			
Mosaic Co/The	MOS	332.28	35.60	11,829.17	0.04%	2.25%	0.00%	1.50%	0.00%
Expedia Group Inc	EXPE	137.84	103.07	14,207.27					
CF Industries Holdings Inc	CF	192.95	85.74	16,543.36	0.05%	1.87%	0.00%	9.00%	0.00%
APA Corp	APA	307.27	41.10	12,628.59		2.43%		21.00%	
Leidos Holdings Inc	LDOS	137.35	92.16	12,658.27	0.04%	1.56%	0.00%	7.00%	0.00%
Alphabet Inc	GOOG	5,801.00	131.85	764,861.85	2.50%			10.50%	0.26%
First Solar Inc	FSLR	106.83	161.59	17,262.82				27.50%	
TE Connectivity Ltd	TEL	313.94	123.53	38,780.88	0.13%	1.91%	0.00%	10.50%	0.01%
Discover Financial Services	DFS	249.95	86.63	21,653.00	0.07%	3.23%	0.00%	4.00%	0.00%
Linde PLC	LIN	487.95	372.35	181,686.69	0.59%	1.37%	0.01%	8.50%	0.05%
Visa Inc	V	1,606.79	230.01	369,577.31	1.21%	0.78%	0.01%	13.50%	0.16%
Mid-America Apartment Communities Inc	MAA	116.68	128.65	15,010.50		4.35%		-12.50%	
Xylem Inc/NY	XYL	240.83	91.03	21,922.66	0.07%	1.45%	0.00%	6.00%	0.00%
Marathon Petroleum Corp	MPC	399.84	151.34	60,512.39	0.20%	1.98%	0.00%	14.50%	0.03%
Advanced Micro Devices Inc	AMD	1,615.67	102.82	166,123.29				25.50%	
Tractor Supply Co	TSCO	108.81	203.05	22,093.46	0.07%	2.03%	0.00%	13.50%	0.01%
ResMed Inc	RMD	147.07	147.87	21,747.39	0.07%	1.30%	0.00%	9.50%	0.01%
Mettler-Toledo International Inc	MTD	21.87	1,108.07	24,227.95	0.08%			11.00%	0.01%
VICI Properties Inc	VICI	1,013.43	29.10	29,490.75	0.10%	5.70%	0.01%	8.00%	0.01%
Copart Inc	CPRT	957.36	43.09	41,252.47	0.13%			7.00%	0.01%
Jacobs Solutions Inc	J	125.92	136.50	17,187.81	0.06%	0.76%	0.00%	11.00%	0.01%
Fortinet Inc	FTNT	785.34	58.68	46,083.58				24.00%	
Albemarle Corp	ALB	117.35	170.04	19,953.68		0.94%		-4.50%	

STANDARD AND POOR'S 500 INDEX

		[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Name	Ticker	Shares Outstg	Price	Market Capitalization	Weight in Index	Estimated Dividend Yield	Cap-Weighted Dividend Yield	Value Line Long-Term Growth Est.	Cap-Weighted Long-Term Growth Est.
Moderna Inc	MRNA	380.59	103.29	39,311.45				-20.00%	
Essex Property Trust Inc	ESS	64.18	212.09	13,612.57	0.04%	4.36%	0.00%	2.00%	0.00%
CoStar Group Inc	CSGP	408.34	76.89	31,397.03	0.10%			14.00%	0.01%
Realty Income Corp	O	708.79	49.94	35,396.87	0.12%	6.15%	0.01%	5.50%	0.01%
Westrock Co	WRK	256.40	35.80	9,179.23	0.03%	3.07%	0.00%	8.50%	0.00%
Westinghouse Air Brake Technologies Corp	WAB	179.13	106.27	19,036.15	0.06%	0.64%	0.00%	10.50%	0.01%
Pool Corp	POOL	39.05	356.10	13,906.42	0.05%	1.24%	0.00%	14.00%	0.01%
Western Digital Corp	WDC	321.90	45.63	14,688.11	0.05%			3.00%	0.00%
PepsiCo Inc	PEP	1,376.58	169.44	233,247.88	0.76%	2.99%	0.02%	5.50%	0.04%
Diamondback Energy Inc	FANG	178.82	154.88	27,695.33		2.17%			
Palo Alto Networks Inc	PANW	308.60	234.44	72,347.01					
ServiceNow Inc	NOW	204.00	558.96	114,027.84				61.00%	
Church & Dwight Co Inc	CHD	246.05	91.63	22,545.29	0.07%	1.19%	0.00%	6.00%	0.00%
Federal Realty Investment Trust	FRT	81.52	90.63	7,388.43	0.02%	4.81%	0.00%	2.50%	0.00%
MGM Resorts International	MGM	350.89	36.76	12,898.68				25.00%	
American Electric Power Co Inc	AEP	515.18	75.22	38,751.54	0.13%	4.41%	0.01%	6.50%	0.01%
SolarEdge Technologies Inc	SEDG	56.56	129.51	7,324.83				27.00%	
Invitation Homes Inc	INVH	611.96	31.69	19,392.89		3.28%			
PTC Inc	PTC	118.83	141.68	16,836.26	0.05%			15.00%	0.01%
JB Hunt Transport Services Inc	JBHT	103.35	188.52	19,482.60	0.06%	0.89%	0.00%	9.00%	0.01%
Lam Research Corp	LRCX	132.51	626.77	83,054.55	0.27%	1.28%	0.00%	8.00%	0.02%
Mohawk Industries Inc	MHK	63.68	85.81	5,464.55	0.02%			2.50%	0.00%
Pentair PLC	PNR	165.11	64.75	10,691.07	0.03%	1.36%	0.00%	12.00%	0.00%
GE HealthCare Technologies Inc	GEHC	454.84	68.04	30,947.18		0.18%			
Vertex Pharmaceuticals Inc	VRTX	258.10	347.74	89,749.96	0.29%			12.00%	0.04%
Ancor PLC	AMCR	1,446.44	9.16	13,249.36	0.04%	5.35%	0.00%	13.00%	0.01%
Meta Platforms Inc	META	2,222.58	300.21	667,241.64	2.18%			9.00%	0.20%
T-Mobile US Inc	TMUS	1,176.46	140.05	164,762.80	0.54%	1.86%	0.01%	20.00%	0.11%
United Rentals Inc	URI	68.28	444.57	30,356.57	0.10%	1.33%	0.00%	17.00%	0.02%
Alexandria Real Estate Equities Inc	ARE	173.03	100.10	17,320.10	0.06%	4.96%	0.00%	11.00%	0.01%
Honeywell International Inc	HON	663.96	184.74	122,660.16	0.40%	2.34%	0.01%	11.00%	0.04%
Delta Air Lines Inc	DAL	643.42	37.00	23,806.47		1.08%			
United Airlines Holdings Inc	UAL	326.73	42.30	13,820.64					
Seagate Technology Holdings PLC	STX	207.39	65.95	13,677.57	0.04%	4.25%	0.00%	7.00%	0.00%
News Corp	NWS	191.84	20.87	4,003.64		0.96%			
Centene Corp	CNC	541.48	68.88	37,297.07	0.12%			10.00%	0.01%
Martin Marietta Materials Inc	MLM	61.80	410.48	25,369.31	0.08%	0.72%	0.00%	12.00%	0.01%
Teradyne Inc	TER	154.01	100.46	15,472.25	0.05%	0.44%	0.00%	12.50%	0.01%
PayPal Holdings Inc	PYPL	1,098.04	58.46	64,191.24	0.21%			12.00%	0.03%
Tesla Inc	TSLA	3,173.99	250.22	794,196.78				26.00%	
Arch Capital Group Ltd	ACGL	372.95	79.71	29,728.16				21.00%	
Dow Inc	DOW	703.08	51.56	36,250.55	0.12%	5.43%	0.01%	7.00%	0.01%
Everest Group Ltd	EG	43.40	371.67	16,131.96	0.05%	1.88%	0.00%	10.00%	0.01%
Teledyne Technologies Inc	TDY	47.08	408.58	19,233.90	0.06%			9.50%	0.01%
News Corp	NWSA	379.59	20.06	7,614.48		1.00%			
Exelon Corp	EXC	994.30	37.79	37,574.56		3.81%			
Global Payments Inc	GPN	259.99	115.39	30,000.71	0.10%	0.87%	0.00%	13.50%	0.01%
Crown Castle Inc	CCI	433.68	92.03	39,911.48	0.13%	6.80%	0.01%	7.00%	0.01%
Aptiv PLC	APTIV	282.82	98.59	27,883.62				33.50%	
Align Technology Inc	ALGN	76.53	305.32	23,367.36	0.08%			17.00%	0.01%
Illumina Inc	ILMN	158.30	137.28	21,731.42	0.07%			6.50%	0.00%
Kenvue Inc	KVUE	1,914.89	20.08	38,451.07		3.98%			
Targa Resources Corp	TRGP	223.71	85.72	19,176.59		2.33%			
LKQ Corp	LKQ	267.56	49.51	13,246.70	0.04%		0.00%	13.00%	0.01%
Zoetis Inc	ZTS	460.32	173.98	80,085.95	0.26%	0.86%	0.00%	9.00%	0.02%
Digital Realty Trust Inc	DLR	302.71	121.02	36,633.84		4.03%		-3.00%	
Equinix Inc	EQIX	93.57	726.26	67,952.52	0.22%	1.88%	0.00%	15.00%	0.03%
Las Vegas Sands Corp	LVS	764.45	45.84	35,042.25		1.75%			
Molina Healthcare Inc	MOH	58.30	327.89	19,115.99	0.06%			11.50%	0.01%

Notes:

- [1] Equals sum of Col. [9]
- [2] Equals sum of Col. [11]
- [3] Equals $([1] \times (1 + (0.5 \times [2]))) + [2]$
- [4] Bloomberg Professional as of September 30, 2023
- [5] Bloomberg Professional as of September 30, 2023
- [6] Equals [4] x [5]
- [7] Equals weight in S&P 500 based on market capitalization [6] if Growth Rate >0% and ≤20%
- [8] Bloomberg Professional, as of September 30, 2023
- [9] Equals [7] x [8]
- [10] Value Line, as of September 30, 2023
- [11] Equals [7] x [10]

Exh. AEB-21
Docket UE-230172
Witness: Ann E. Bulkley

**BEFORE THE WASHINGTON
UTILITIES AND TRANSPORTATION COMMISSION**

WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION,

Complainant,

v.

PACIFICORP dba
PACIFIC POWER & LIGHT COMPANY

Respondent.

Docket UE-230172
(Consolidated)

In the Matter of

ALLIANCE OF WESTERN ENERGY
CONSUMERS'

Petition for Order Approving Deferral of
Increased Fly Ash Revenues

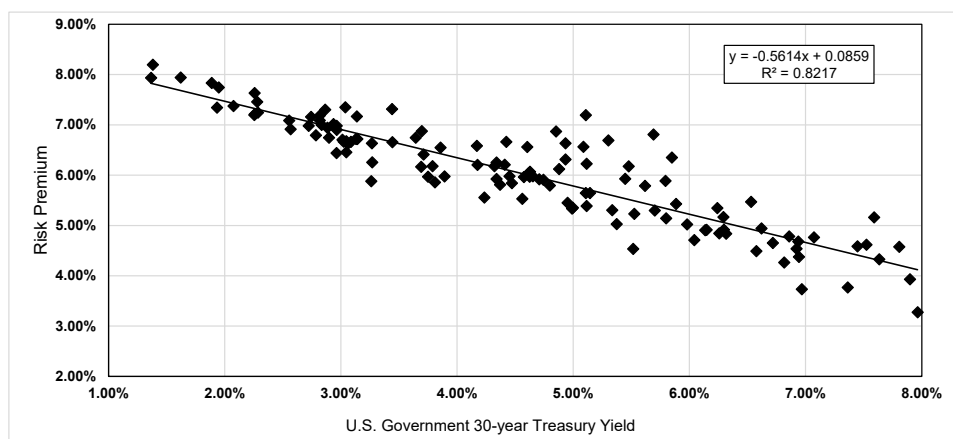
Docket UE-210852
(Consolidated)

PACIFICORP

EXHIBIT OF ANN E. BULKLEY

Risk Premium Approach

October 2023



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.906494
R Square	0.821732
Adjusted R Square	0.820306
Standard Error	0.004309
Observations	127

ANOVA					
	df	SS	MS	F	Significance F
Regression	1	0.010700	0.010700	576.190880	0.000000
Residual	125	0.002321	0.000019		
Total	126	0.013021			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.0859	0.0011	76.13	0.00000	0.08370	0.08817	0.08370	0.08817
U.S. Government 30 Year Treasury	(0.5614)	0.0234	(24.00)	0.00000	(0.60768)	(0.51510)	(0.60768)	(0.51510)

	U.S. Govt. 30-year Treasury	Risk Premium	ROE
Current 30-day average of 30-year U.S. Treasury bond yield [4]	4.42%	6.11%	10.53%
Blue Chip Near-Term Projected Forecast (Q4 2023 - Q4 2024) [5]	4.16%	6.26%	10.42%
Blue Chip Long-Term Projected Forecast (2025-2029) [6]	3.80%	6.46%	10.26%
AVERAGE			10.40%

Notes:

- [1] Regulatory Research Associates, rate cases through September 30, 2023
- [2] S&P Capital IQ Pro, quarterly bond yields are the average of each trading day in the quarter
- [3] Equals Column [1] – Column [2]
- [4] S&P Capital IQ Pro, 30-day average as of September 30, 2023
- [5] Blue Chip Financial Forecasts, Vol. 42, No. 10, October 1, 2023, at 2
- [6] Blue Chip Financial Forecasts, Vol. 42, No. 6, June 1, 2023, at 14
- [7] See notes [4], [5] & [6]
- [8] Equals $0.085934 + (-0.561390 \times \text{Column [7]})$
- [9] Equals Column [7] + Column [8]

BOND YIELD PLUS RISK PREMIUM

Quarter	[1]	[2]	[3]
	Average Authorized VI Electric ROE	U.S. Govt. 30-year Treasury	Risk Premium
1992.1	12.38%	7.81%	4.58%
1992.2	11.83%	7.90%	3.93%
1992.3	12.03%	7.45%	4.59%
1992.4	12.14%	7.52%	4.62%
1993.1	11.84%	7.07%	4.76%
1993.2	11.64%	6.86%	4.78%
1993.3	11.15%	6.32%	4.84%
1993.4	11.04%	6.14%	4.91%
1994.1	11.07%	6.58%	4.49%
1994.2	11.13%	7.36%	3.77%
1994.3	12.75%	7.59%	5.16%
1994.4	11.24%	7.96%	3.28%
1995.1	11.96%	7.63%	4.33%
1995.2	11.32%	6.94%	4.37%
1995.3	11.37%	6.72%	4.65%
1995.4	11.58%	6.24%	5.35%
1996.1	11.46%	6.29%	5.17%
1996.2	11.46%	6.92%	4.54%
1996.3	10.70%	6.97%	3.73%
1996.4	11.56%	6.62%	4.94%
1997.1	11.08%	6.82%	4.26%
1997.2	11.62%	6.94%	4.68%
1997.3	12.00%	6.53%	5.47%
1997.4	11.06%	6.15%	4.91%
1998.1	11.31%	5.88%	5.43%
1998.2	12.20%	5.85%	6.35%
1998.3	11.65%	5.48%	6.17%
1998.4	12.30%	5.11%	7.19%
1999.1	10.40%	5.37%	5.03%
1999.2	10.94%	5.80%	5.14%
1999.3	10.75%	6.04%	4.71%
1999.4	11.10%	6.26%	4.84%
2000.1	11.21%	6.30%	4.92%
2000.2	11.00%	5.98%	5.02%
2000.3	11.68%	5.79%	5.89%
2000.4	12.50%	5.69%	6.81%
2001.1	11.38%	5.45%	5.93%
2001.2	11.00%	5.70%	5.30%
2001.3	10.76%	5.53%	5.23%
2001.4	11.99%	5.30%	6.69%
2002.1	10.05%	5.52%	4.53%
2002.2	11.41%	5.62%	5.79%
2002.3	11.65%	5.09%	6.56%
2002.4	11.57%	4.93%	6.63%
2003.1	11.72%	4.85%	6.87%
2003.2	11.16%	4.60%	6.56%
2003.3	10.50%	5.11%	5.39%
2003.4	11.34%	5.11%	6.23%
2004.1	11.00%	4.88%	6.12%
2004.2	10.64%	5.34%	5.30%
2004.3	10.75%	5.11%	5.64%
2004.4	11.24%	4.93%	6.31%
2005.1	10.63%	4.71%	5.92%
2005.2	10.31%	4.47%	5.84%
2005.3	11.08%	4.42%	6.66%
2005.4	10.63%	4.65%	5.98%
2006.1	10.70%	4.63%	6.07%
2006.2	10.79%	5.14%	5.64%
2006.3	10.35%	5.00%	5.35%
2006.4	10.65%	4.74%	5.91%
2007.1	10.59%	4.80%	5.79%
2007.2	10.33%	4.99%	5.34%
2007.3	10.40%	4.95%	5.45%
2007.4	10.65%	4.61%	6.04%
2008.1	10.62%	4.41%	6.21%
2008.2	10.54%	4.57%	5.96%
2008.3	10.43%	4.45%	5.98%
2008.4	10.39%	3.64%	6.74%
2009.1	10.75%	3.44%	7.31%
2009.2	10.75%	4.17%	6.58%
2009.3	10.50%	4.32%	6.18%
2009.4	10.59%	4.34%	6.25%
2010.1	10.59%	4.62%	5.97%

2010.2	10.18%	4.37%	5.81%
2010.3	10.40%	3.86%	6.55%
2010.4	10.38%	4.17%	6.20%
2011.1	10.09%	4.56%	5.53%
2011.2	10.26%	4.34%	5.92%
2011.3	10.57%	3.70%	6.88%
2011.4	10.39%	3.04%	7.35%
2012.1	10.30%	3.14%	7.17%
2012.2	9.95%	2.94%	7.01%
2012.3	9.90%	2.74%	7.16%
2012.4	10.16%	2.86%	7.30%
2013.1	9.85%	3.13%	6.72%
2013.2	9.86%	3.14%	6.72%
2013.3	10.12%	3.71%	6.41%
2013.4	9.97%	3.79%	6.18%
2014.1	9.86%	3.69%	6.16%
2014.2	10.10%	3.44%	6.66%
2014.3	9.90%	3.27%	6.63%
2014.4	9.94%	2.96%	6.98%
2015.1	9.64%	2.55%	7.08%
2015.2	9.83%	2.88%	6.94%
2015.3	9.40%	2.96%	6.44%
2015.4	9.86%	2.96%	6.90%
2016.1	9.70%	2.72%	6.98%
2016.2	9.48%	2.57%	6.91%
2016.3	9.74%	2.28%	7.46%
2016.4	9.83%	2.83%	7.00%
2017.1	9.72%	3.05%	6.67%
2017.2	9.64%	2.90%	6.75%
2017.3	10.00%	2.82%	7.18%
2017.4	9.91%	2.82%	7.09%
2018.1	9.69%	3.02%	6.66%
2018.2	9.75%	3.09%	6.66%
2018.3	9.69%	3.06%	6.63%
2018.4	9.52%	3.27%	6.25%
2019.1	9.72%	3.01%	6.70%
2019.2	9.58%	2.78%	6.79%
2019.3	9.53%	2.29%	7.25%
2019.4	9.89%	2.26%	7.63%
2020.1	9.72%	1.89%	7.83%
2020.2	9.58%	1.38%	8.19%
2020.3	9.30%	1.37%	7.93%
2020.4	9.56%	1.62%	7.94%
2021.1	9.45%	2.07%	7.38%
2021.2	9.47%	2.26%	7.21%
2021.3	9.27%	1.93%	7.34%
2021.4	9.69%	1.95%	7.74%
2022.1	9.45%	2.25%	7.20%
2022.2	9.50%	3.05%	6.45%
2022.3	9.14%	3.26%	5.88%
2022.4	9.87%	3.89%	5.98%
2023.1	9.72%	3.75%	5.97%
2023.2	9.67%	3.81%	5.86%
2023.3	9.79%	4.23%	5.55%
AVERAGE	10.59%	4.54%	6.04%
MEDIAN	10.54%	4.57%	6.16%

Exh. AEB-22
Docket UE-230172
Witness: Ann E. Bulkley

**BEFORE THE WASHINGTON
UTILITIES AND TRANSPORTATION COMMISSION**

WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION,

Complainant,

v.

PACIFICORP dba
PACIFIC POWER & LIGHT COMPANY

Respondent.

Docket UE-230172
(Consolidated)

In the Matter of

ALLIANCE OF WESTERN ENERGY
CONSUMERS'

Petition for Order Approving Deferral of
Increased Fly Ash Revenues

Docket UE-210852
(Consolidated)

PACIFICORP

EXHIBIT OF ANN E. BULKLEY

Expected Earnings Analysis

October 2023

EXPECTED EARNINGS ANALYSIS

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
		Value Line ROE 2026-2028	Value Line Total Capital 2022	Value Line Common Equity Ratio 2022	Total Equity 2022	Value Line Total Capital 2026-2028	Value Line Common Equity Ratio 2026-2028	Total Equity 2026-2028	Compound Annual Growth Rate	Adjustment Factor	Adjusted Return on Common Equity
ALLETE, Inc.	ALE	9.00%	4,458	59.60%	2,657	5,550	59.50%	3,302	4.45%	1.022	9.20%
Alliant Energy Corporation	LNT	12.00%	13,944	45.00%	6,275	17,070	48.00%	8,194	5.48%	1.027	12.32%
Ameren Corporation	AEE	10.00%	24,193	43.40%	10,500	29,500	48.50%	14,308	6.38%	1.031	10.31%
American Electric Power Company, Inc.	AEP	11.00%	57,520	42.00%	24,158	75,900	42.50%	32,258	5.95%	1.029	11.32%
Avista Corporation	AVA	7.50%	4,710	49.60%	2,336	6,000	50.50%	3,030	5.34%	1.026	7.70%
CMS Energy Corporation	CMS	12.00%	20,205	33.60%	6,789	24,300	39.00%	9,477	6.90%	1.033	12.40%
Duke Energy Corporation	DUK	9.00%	115,150	42.00%	48,363	144,100	37.50%	54,038	2.24%	1.011	9.10%
Energy Corporation	ETR	8.50%	36,810	35.20%	12,957	48,910	35.50%	17,363	6.03%	1.029	8.75%
Eergy, Inc.	EVRG	10.00%	19,668	48.00%	9,441	23,400	46.50%	10,881	2.88%	1.014	10.14%
IDACORP, Inc.	IDA	9.50%	5,001	56.10%	2,806	7,000	50.00%	3,500	4.52%	1.022	9.71%
NextEra Energy, Inc.	NEE	14.50%	94,485	41.50%	39,211	153,100	40.00%	61,240	9.33%	1.045	15.15%
NorthWestern Corporation	NWE	8.00%	5,148	51.80%	2,667	6,200	52.00%	3,224	3.87%	1.019	8.15%
OGE Energy Corporation	OGE	13.00%	8,962	52.40%	4,696	10,400	50.00%	5,200	2.06%	1.010	13.13%
Pinnacle West Capital Corporation	PNW	9.50%	13,790	43.90%	6,054	16,900	44.00%	7,436	4.20%	1.021	9.70%
Portland General Electric Company	POR	9.50%	6,459	43.00%	2,777	8,550	45.00%	3,848	6.74%	1.033	9.81%
Southern Company	SO	14.50%	80,550	36.00%	28,998	93,500	37.00%	34,595	3.59%	1.018	14.76%
Xcel Energy Inc.	XEL	11.00%	39,488	42.20%	16,664	50,900	42.00%	21,378	5.11%	1.025	11.27%
Mean											10.76%
Median											10.14%

Notes:

[1] Value Line

[2] Value Line

[3] Value Line

[4] Equals [2] x [3]

[5] Value Line

[6] Value Line

[7] Equals [5] x [6]

[8] Equals ([7] / [4]) ^ (1/5) - 1

[9] Equals 2 x (1 + [8]) / (2 + [8])

[10] Equals [1] x [9]

Exh. AEB-23
Docket UE-230172
Witness: Ann E. Bulkley

**BEFORE THE WASHINGTON
UTILITIES AND TRANSPORTATION COMMISSION**

WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION,

Complainant,

v.

PACIFICORP dba
PACIFIC POWER & LIGHT COMPANY

Respondent.

Docket UE-230172
(Consolidated)

In the Matter of

ALLIANCE OF WESTERN ENERGY
CONSUMERS'

Petition for Order Approving Deferral of
Increased Fly Ash Revenues

Docket UE-210852
(Consolidated)

PACIFICORP

EXHIBIT OF ANN E. BULKLEY

Adjusted Witness Woolridge DCF Analysis Reflecting Projected EPS Growth Rates

October 2023

Comparison of Dr. Woolridge DCF Analysis

As-Filed v. As-Updated

	Notes	Dr. Woolridge As-Filed	Dr. Woolridge As-Updated for Proj. EPS Gwth Rate
Panel A - Dr. Woolridge Proxy Group			
Dividend Yield	[1]	3.80%	3.80%
Adjustment Factor	[2]	<u>1.0270</u>	<u>1.0279</u>
Adjusted Dividend Yield	[3]	3.90%	3.91%
Growth Rate	[4]	<u>5.40%</u>	<u>5.58%</u>
Cost of Equity	[5]	9.30%	9.48%
Cost of Equity Increase from As-Filed:			0.18%
Panel B - Ms. Bulkley Proxy Group			
Dividend Yield	[1]	3.80%	3.80%
Adjustment Factor	[2]	<u>1.0275</u>	<u>1.028625</u>
Adjusted Dividend Yield	[3]	3.90%	3.91%
Growth Rate	[4]	<u>5.50%</u>	<u>5.73%</u>
Cost of Equity	[5]	9.40%	9.63%
Cost of Equity Increase from As-Filed:			0.23%

Notes:

[1] Exh. JRW-7, p. 1

[2] Equals $1+(0.5 \times [4])$

[3] $[1] \times [2]$

[4] *As-Filed*: Exh. JRW-7, p. 1; *As-Updated*: Midpoint of projected EPS growth rates from (Wall Street analysts and Value Line) from Exh. JRW-7, pp. 4-5

[5] Equals $[3] + [4]$

Exh. AEB-24
Docket UE-230172
Witness: Ann E. Bulkley

**BEFORE THE WASHINGTON
UTILITIES AND TRANSPORTATION COMMISSION**

WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION,

Complainant,

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PACIFICORP dba
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Petition for Order Approving Deferral of
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PACIFICORP

EXHIBIT OF ANN E. BULKLEY

Adjusted Witness Parcell CAPM Analysis

October 2023

**WITNESS PARCELL CAPM
USE OF ADJUSTED HISTORICAL MARKET RISK PREMIUM**

COMPANY	RISK-FREE RATE	BETA	HISTORICAL RETURN ON LARGE CO. STOCKS (1926-2022)	HISTORICAL INCOME-ONLY RETURN ON LT GOV'T BONDS (1926-2022)	MARKET RISK PREMIUM	CAPM RATES
Parcell Proxy Group						
ALLETE	4.05%	0.90	12.02%	4.85%	7.17%	10.5%
Alliant Energy Corp	4.05%	0.85	12.02%	4.85%	7.17%	10.1%
Ameren Corp	4.05%	0.85	12.02%	4.85%	7.17%	10.1%
Avista Corp	4.05%	0.90	12.02%	4.85%	7.17%	10.5%
Black Hills Corp	4.05%	1.00	12.02%	4.85%	7.17%	11.2%
Evergy, Inc.	4.05%	0.90	12.02%	4.85%	7.17%	10.5%
Eversource Energy	4.05%	0.90	12.02%	4.85%	7.17%	10.5%
Fortis, Inc.	4.05%	0.70	12.02%	4.85%	7.17%	9.1%
IDACORP	4.05%	0.80	12.02%	4.85%	7.17%	9.8%
Northwestern Corp	4.05%	0.95	12.02%	4.85%	7.17%	10.9%
OGE Energy	4.05%	1.00	12.02%	4.85%	7.17%	11.2%
Otter Tail Corp	4.05%	0.85	12.02%	4.85%	7.17%	10.1%
Pinnacle West Capital Corp	4.05%	0.90	12.02%	4.85%	7.17%	10.5%
Portland General Electric	4.05%	0.90	12.02%	4.85%	7.17%	10.5%
WEC Energy Group	4.05%	0.80	12.02%	4.85%	7.17%	9.8%
Mean						10.4%
Median						10.5%

Source: Value Line Investment Survey, June 9, 2023, July 21, 2023, August 11, 2023.
Standard & Poor's, and Federal Reserve.

20-year Treasury Bonds	
Month	Rate
May-23	3.96%
Jun-23	4.04%
Jul-23	4.15%
Average	4.05%

Exh. AEB-25
Docket UE-230172
Witness: Ann E. Bulkley

**BEFORE THE WASHINGTON
UTILITIES AND TRANSPORTATION COMMISSION**

WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION,

Complainant,

v.

PACIFICORP dba
PACIFIC POWER & LIGHT COMPANY

Respondent.

Docket UE-230172
(Consolidated)

In the Matter of

ALLIANCE OF WESTERN ENERGY
CONSUMERS'

Petition for Order Approving Deferral of
Increased Fly Ash Revenues

Docket UE-210852
(Consolidated)

PACIFICORP

EXHIBIT OF ANN E. BULKLEY

Market Value Debt and Equity Ratios of the Proxy Group

October 2023

CAPITAL STRUCTURE - MARKET VALUE

Company		[1]	[2]	[3]	[4]	[5]	[6]			[7]	[8]
		Current Assets	Current Liabilities	Current Long-Term Debt and Leases	Net Working Capital	Short-term Debt	Adj. Short-Debt	Market Value of Debt (\$000)		Long-term Debt	Debt - Book Value
ALLETE, Inc.	ALE	\$718,000	\$716,200	\$275,800	\$277,600	\$0	\$0	\$	1,657,500	\$	\$1,933,300
Alliant Energy Corporation	LNT	\$1,250,000	\$2,363,000	\$416,000	(\$697,000)	\$642,000	\$642,000	\$	7,812,000	\$	\$8,870,000
Ameren Corporation	AEE	\$2,668,000	\$3,366,000	\$340,000	(\$358,000)	\$1,070,000	\$358,000	\$	13,685,000	\$	\$14,383,000
American Electric Power Company, Inc.	AEP	\$9,418,700	\$14,567,400	\$2,167,000	(\$2,981,700)	\$4,112,200	\$2,981,700	\$	34,346,500	\$	\$39,495,200
Avista Corporation	AVA	\$721,802	\$964,534	\$21,136	(\$221,596)	\$463,000	\$221,596	\$	2,463,543	\$	\$2,706,275
CMS Energy Corporation	CMS	\$3,433,000	\$2,985,000	\$1,103,000	\$1,551,000	\$20,000	\$0	\$	13,217,000	\$	\$14,320,000
Duke Energy Corporation	DUK	\$13,222,000	\$18,873,000	\$4,333,000	(\$1,318,000)	\$3,952,000	\$1,318,000	\$	67,937,000	\$	\$73,588,000
Energy Corporation	ETR	\$4,095,026	\$6,369,447	\$2,379,427	\$105,006	\$827,621	\$0	\$	23,813,273	\$	\$26,192,700
Evergy, Inc.	EVRG	\$1,842,000	\$3,493,800	\$460,900	(\$1,190,900)	\$1,691,300	\$1,190,900	\$	10,006,500	\$	\$11,658,300
IDACORP, Inc.	IDA	\$693,653	\$548,565	\$0	\$145,088	\$0	\$0	\$	2,194,145	\$	\$2,194,145
NextEra Energy, Inc.	NEE	\$13,490,000	\$26,695,000	\$6,633,000	(\$6,572,000)	\$3,077,000	\$3,077,000	\$	55,631,000	\$	\$65,341,000
NorthWestern Corporation	NWE	\$538,824	\$620,845	\$147,623	\$65,602	\$0	\$0	\$	2,483,156	\$	\$2,630,779
OGE Energy Corporation	OGE	\$1,340,800	\$1,802,200	\$1,005,600	\$544,200	\$0	\$0	\$	3,577,800	\$	\$4,583,400
Pinnacle West Capital Corporation	PNW	\$1,750,554	\$1,762,141	\$155,895	\$144,308	\$340,720	\$0	\$	8,380,533	\$	\$8,536,428
Portland General Electric Company	POR	\$1,210,000	\$1,496,000	\$280,000	(\$6,000)	\$0	\$0	\$	3,723,000	\$	\$4,003,000
Southern Company	SO	\$10,416,000	\$15,724,000	\$4,544,000	(\$764,000)	\$2,609,000	\$764,000	\$	52,284,000	\$	\$57,592,000
Xcel Energy Inc.	XEL	\$5,144,000	\$6,078,000	\$1,370,000	\$436,000	\$813,000	\$0	\$	23,915,000	\$	\$25,285,000
MEAN											

Notes:

- [1] S&P Capital IQ Pro.
- [2] S&P Capital IQ Pro.
- [3] S&P Capital IQ Pro.
- [4] Equals [1] - ([2] - [3])
- [5] S&P Capital IQ Pro.
- [6] Equals:
 - [A] 0 if [4] > 0
 - [B] ABS of [4] if [4] < 0 and ABS of [4] < [5]
 - [C] [5] if [4] < 0 and ABS of [4] > [5]
- [7] S&P Capital IQ Pro.
- [8] Equals [3] + [6] + [7]
- [9] Company 10-Ks
- [10] Company 10-Ks
- [11] Equals [9] - [10]
- [12] Equals [8] + [11]
- [13] S&P Capital IQ Pro.
- [14] Equals [13]
- [15] S&P Capital IQ Pro.
- [16] S&P Capital IQ Pro.
- [17] Equals [12] + [14] + [16]
- [18] Equals [12] / [17]
- [19] Equals [14] / [17]
- [20] Equals [16] / [17]

CAPITAL STRUCTURE - MARKET VALUE

Company		[9]	[10]	[11]	[12]	[13]		[14]	[15]		[16]
		Unadjusted Market Value of Debt	Carrying Amount	Adjustment to Book Value of Long-term Debt	Debt - Market Value	Preferred Equity - Book Value	Preferred Equity - Market Value	Market Value of Preferred Equity (\$000)	Common Equity - Book Value	Common Equity - Market Value	
ALLETE, Inc.	ALE	\$1,782,700	\$1,929,100	-\$146,400	\$1,786,900	\$0	\$0	\$	2,691,900	\$	3,687,513
Alliant Energy Corporation	LNT	\$7,339,000	\$8,076,000	-\$737,000	\$8,133,000	\$0	\$0	\$	6,276,000	\$	13,858,915
Ameren Corporation	AEE	\$12,453,000	\$14,025,000	-\$1,572,000	\$12,811,000	\$0	\$0	\$	10,508,000	\$	22,987,791
American Electric Power Company, Inc.	AEP	\$31,767,100	\$35,622,600	-\$3,855,500	\$35,639,700	\$0	\$0	\$	23,893,400	\$	48,791,356
Avista Corporation	AVA	\$1,932,897	\$2,410,777	-\$477,880	\$2,228,395	\$0	\$0	\$	2,334,668	\$	3,271,217
CMS Energy Corporation	CMS	\$12,391,000	\$14,221,000	-\$1,830,000	\$12,490,000	\$224,000	\$224,000	\$	6,791,000	\$	18,381,634
Duke Energy Corporation	DUK	\$63,454,000	\$71,215,000	-\$7,761,000	\$65,827,000	\$1,962,000	\$1,962,000	\$	47,360,000	\$	79,308,765
Entergy Corporation	ETR	\$22,573,837	\$25,932,549	-\$3,358,712	\$22,833,988	\$0	\$0	\$	12,966,985	\$	22,891,912
Evergy, Inc.	EVRG	\$9,160,000	\$10,344,800	-\$1,184,800	\$10,473,500	\$0	\$0	\$	9,483,700	\$	22,891,912
IDACORP, Inc.	IDA	\$1,953,470	\$2,194,145	-\$240,675	\$1,953,470	\$0	\$0	\$	2,807,239	\$	5,453,100
NextEra Energy, Inc.	NEE	\$57,892,000	\$61,889,000	-\$3,997,000	\$61,344,000	\$0	\$0	\$	39,229,000	\$	166,126,881
NorthWestern Corporation	NWE	\$2,316,700	\$2,618,882	-\$302,182	\$2,328,597	\$0	\$0	\$	2,665,183	\$	3,428,591
OGE Energy Corporation	OGE	\$4,161,000	\$4,548,600	-\$387,600	\$4,195,800	\$0	\$0	\$	4,413,400	\$	7,918,016
Pinnacle West Capital Corporation	PNW	\$6,927,000	\$8,185,000	-\$1,258,000	\$7,278,428	\$0	\$0	\$	6,048,647	\$	8,603,181
Portland General Electric Company	POR	\$3,245,000	\$3,659,000	-\$414,000	\$3,589,000	\$0	\$0	\$	2,779,000	\$	4,374,372
Southern Company	SO	\$48,600,000	\$54,600,000	-\$6,000,000	\$51,592,000	\$0	\$0	\$	30,408,000	\$	77,670,717
Xcel Energy Inc.	XEL	\$20,897,000	\$23,964,000	-\$3,067,000	\$22,218,000	\$0	\$0	\$	16,675,000	\$	38,367,592
MEAN											

Notes:

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- [15] S&P Capital IQ Pro.
- [16] S&P Capital IQ Pro.
- [17] Equals [12] + [14] + [16]
- [18] Equals [12] / [17]
- [19] Equals [14] / [17]
- [20] Equals [16] / [17]

CAPITAL STRUCTURE - MARKET VALUE

Company		[17] Market Value of Firm	[18] [19] [20] Market Value Ratio		
			Debt	Preferred	Common
ALLETE, Inc.	ALE	\$5,474,413	32.64%	0.00%	67.36%
Alliant Energy Corporation	LNT	\$21,991,915	36.98%	0.00%	63.02%
Ameren Corporation	AEE	\$35,798,791	35.79%	0.00%	64.21%
American Electric Power Company, Inc.	AEP	\$84,431,056	42.21%	0.00%	57.79%
Avista Corporation	AVA	\$5,499,612	40.52%	0.00%	59.48%
CMS Energy Corporation	CMS	\$31,095,634	40.17%	0.72%	59.11%
Duke Energy Corporation	DUK	\$147,097,765	44.75%	1.33%	53.92%
Energy Corporation	ETR	\$45,725,900	49.94%	0.00%	50.06%
Evergy, Inc.	EVRG	\$33,365,412	31.39%	0.00%	68.61%
IDACORP, Inc.	IDA	\$7,406,570	26.37%	0.00%	73.63%
NextEra Energy, Inc.	NEE	\$227,470,881	26.97%	0.00%	73.03%
NorthWestern Corporation	NWE	\$5,757,188	40.45%	0.00%	59.55%
OGE Energy Corporation	OGE	\$12,113,816	34.64%	0.00%	65.36%
Pinnacle West Capital Corporation	PNW	\$15,881,609	45.83%	0.00%	54.17%
Portland General Electric Company	POR	\$7,963,372	45.07%	0.00%	54.93%
Southern Company	SO	\$129,262,717	39.91%	0.00%	60.09%
Xcel Energy Inc.	XEL	\$60,585,592	36.67%	0.00%	63.33%
MEAN			38.25%	0.12%	61.63%

Notes:

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