Application No. 22-05-006
Exhibit PAC/1400
Witness: Ann E. Bulkley

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

PACIFICORP

Rebuttal Testimony of Ann E. Bulkley

Return on Equity

February 2023

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I. INTRODUCTION

Q. Are you the same Ann E. Bulkley who submitted direct testimony on May 5, 2022, on behalf of PacifiCorp d/b/a Pacific Power (PacifiCorp or the Company) in this proceeding?

A. Yes. On May 5, 2022, I filed my direct testimony, Exhibit PAC/200, and eleven supporting exhibits (*i.e.*, Exhibits PAC/201 through PAC 211) regarding the appropriate return on equity (ROE) for the Company and the reasonableness of the Company's proposed ratemaking capital structure.

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

A. I am submitting this rebuttal testimony on behalf of the Company.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to respond to the direct testimony of Dr. J. Randall Woolridge on behalf of the California Public Utilities Commission's Public Advocates Office (Cal Advocates),[1] and the direct testimony of witness Lloyd C. Reed on behalf of the California Farm Bureau Federation (CFBF).[2] My analyses and recommendations are supported by the data presented in Exhibit PAC/1401 through Exhibit PAC/1410, which were prepared by me or under my direction.

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

A. The primary factors that should be considered are: (1) the importance of investors' actual return requirements and the critical role of judgment in selecting the

[1] Cal Advocates-05.
[2] CFBF/100.

appropriate ROE; (2) the importance of providing a return that is comparable to returns on alternative investments with commensurate risk; (3) the need for a return that supports a utility's ability to attract needed capital at reasonable terms; and (4) the effect of current and expected capital market conditions.

Q. What are Cal Advocates witness Dr. Woolridge's recommendations in this proceeding?

A. Dr. Woolridge proposes to accept the Company's capital structure composed of 52.25 percent common equity and 47.74 percent long-term debt, and 0.01 percent preferred stock. Dr. Woolridge prepares a Constant Growth Discounted Cash Flow (DCF) analysis and a Capital Asset Pricing Model (CAPM) analysis to set his range of cost of equity results, then relies primarily on the results of his DCF analysis for his recommended ROE. Based on his analyses, Dr. Woolridge recommends a ROE of 9.00 percent, and suggests that PacifiCorp's low risk relative to the proxy group is considered in his recommended ROE.[3] Dr. Woolridge's recommendations result in an overall rate of return for PacifiCorp of 6.81 percent.[4]

Q. Please summarize CFBF witness Reed's recommendations for ROE for PacifiCorp in this proceeding.

A. Witness Lloyd Reed also reviews the currently authorized ROEs for PacifiCorp's operations in its other jurisdictions and recommends that the Commission adopt an

[3] Cal Advocates-05, Woolridge/4.
[4] *Id*.

ROE of 9.50 percent based entirely on the most recent ROE that was established in the Company's Oregon rate proceeding.[5]

Q. Is Witness Reed's recommendation for PacifiCorp in this proceeding reasonably supported?

A. No. Witness Lloyd Reed does not provide any analysis using the traditional cost of equity estimation methodologies, or a proxy group of risk comparable companies to support his recommendation. While witness Reed reviews the currently authorized ROEs for PacifiCorp's operations in its other jurisdictions, he does not conduct an analysis of the financial or business risk factors that differ across these jurisdictions. In addition, witness Reed's recommendation is based entirely on the settlement in the Company's Oregon rate proceeding; however, as the Commission is aware, settlements represent a compromise of the parties on various issues, only one of which was the ROE. Lastly, witness Reed also fails to acknowledge that the Commission recently approved ROEs for California's other large electric investor-owned utilities (IOUs) that were substantially higher than the 9.50 percent ROE he is recommending for PacifiCorp in this proceeding.[6]

Q. What are the recommendations of Dr. Woolridge and witness Reed regarding the appropriate capital structure for PacifiCorp in this proceeding?

A. Dr. Woolridge acknowledges that PacifiCorp's capital structure, with a common equity ratio of 52.25 percent is in line with those approved by the Commission for

[5] CFBF/100, Reed/5-10.
[6] Decision (D.) 22-12-031, Application 22-04-008, *et. al*., December 15, 2022. In its decision, the Commission authorized an ROE of 10.00 percent, 10.05 percent, and 9.95 percent for Pacific Gas and Electric, Southern California Edison, and San Diego Gas & Electric, respectively.

California electric utility companies and relies on the capital structure proposed by the Company.[7] Lloyd Reed proposes that the Company's capital structure in the current case be the same as was authorized in the Company's most recent Oregon proceeding, which included common equity of 50.00 percent.[8]

Q. Does witness Reed provide any analysis that a 50 percent equity ratio is reasonable and appropriate for PacifiCorp in this proceeding?

A. No. Lloyd Reed's recommendation is based entirely on the outcome of another rate proceeding. Witness Reed fails to acknowledge that the determination made in that case was based on the market conditions in that proceeding as well as the facts and circumstance in the record in that proceeding. Most importantly, the Company's Oregon rate proceeding was a settlement that was approved by the Oregon Public Utilities Commission. Settlements typically include trade-offs between the parties that results in an overall revenue requirement that is agreeable to the parties. Absent any additional analysis to support his position, it is not reasonable to highlight the ROE and capital structure that resulted from the Oregon proceeding as being reasonable in terms of this proceeding.

Q. Is the Company's proposed equity ratio reasonable?

A. Yes. As shown in my Direct Testimony, the Company's proposed equity ratio is slightly below the mean and median equity ratios of the utility operating companies of the proxy group entities.

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7 Cal Advocates at 4 and 28.
8 CFBF, Reed at 9.

Q. Do you address witness Lloyd Reed's testimony further in your rebuttal testimony?

A. No. Considering that witness Reed does not provide any analysis using the traditional cost of equity estimation methodologies, I do not address witness Reed's testimony further in my rebuttal testimony.

Q. How is the remainder of your testimony organized?

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

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

Section III discusses the comparable return standard and compares Dr. Woolridge's ROE recommendation in this proceeding to the returns of vertically-integrated electric utilities nationwide.

Section IV discusses current and projected capital market conditions and the effect of those conditions on the Company's cost of equity.

Section V provides the update to my cost of equity analyses based on market data as of December 31, 2022.

Section VI provides my response to Dr. Woolridge's direct testimony.

II. SUMMARY OF ANALYSES AND CONCLUSIONS

Q. What are your key conclusions and recommendations regarding the appropriate ROE for the Company?

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

- As a result of rising interest rates, the cost of equity has continued to increase in 2022, which is demonstrated in the increase in the quarterly average

authorized ROEs over the course of 2022 as well as in certain of the model results. For example, as shown in Figure 3 of my rebuttal testimony, the results of the Bond Yield Plus Risk Premium analysis, both using national average data and California specific data have increased significantly since the filing of my Direct Testimony. The results of my updated analyses continue to support the Company's requested ROE of 10.50 percent.

- A review of historical market data also supports a return of 10.50 percent, when reviewing average authorized ROEs in periods with similar interest rate environments. For example, as shown in Figure 2 of my rebuttal testimony, since 2008 when the yield on the 30-year Treasury bond has been in the range of 3.50 percent to 4.00 percent historically, the average authorized ROEs were in the range of 9.97 percent to 10.75 percent. This range is consistent with the range that I have established in my analyses. Further, the range of authorized ROEs at that time demonstrate that a return of 10,50 percent is reasonable in the current interest rate environment.

- Market conditions have changed significantly since the data that was used to establish the authorized ROEs in the recent decisions in the large energy utilities cases (Docket Nos. A.22-04-008, A.22-04-009, A.22-04-011, A.22-04-012). As shown in Figure 1 of my rebuttal testimony, the data used for those cases was from a time period of lower interest rates than currently exists in the market. At that time, interest rates were in the range of 3.00 percent whereas at year end 2022, interest rates were in the range of 4.00 percent. Therefore, it is reasonable to conclude that based on current market conditions, the cost of equity is higher today than when the large energy utilities' cases were decided.

- Further evidence supporting this conclusion is that Dr. Woolridge was in the large energy utilities' cases and is in this case. The change in the assumptions he has relied on in his CAPM analysis from that case to this case suggest an increase in the cost of equity of 100 basis points.

- Despite the fact that Dr. Woolridge's CAPM model indicates an increase in the COE of 100 basis points as compared with the large energy utilities' case, his recommended ROE in this proceeding is only 10 basis points higher than what he refers to as the "base" ROE in that proceeding, demonstrating that his recommendation in this case understates the current cost of equity. Despite the fact that Dr. Woolridge has filed ROE testimony in another recent proceeding in which he has relied on the same proxy group with data covering the same time period, Dr. Woolridge has inexplicably and without justification changed his cost of equity analyses and assumptions in this proceeding. The effect of these inconsistencies is that Dr. Woolridge's analyses have understated the cost of equity for PacifiCorp.

- Dr. Woolridge's analyses fail to consider the implications of current and prospective capital market conditions on the ROE to be set for PacifiCorp in this proceeding. In fact, Dr. Woolridge's recommended ROEs have varied only marginally over the past decade, ignoring significant changes in capital market conditions, particularly recent changes:
  - Interest rates are substantially higher than they were at the time the Company's current rates were found to be just and reasonable (*i.e.*, 177 basis points higher for 30-year Treasury yield; 212 basis points higher for 10-year Treasury yield).
  - Inflation is 2.75 times higher, and is expected to cause interest rates to remain elevated during the period in which the rates set in this proceeding will be in effect.
  - Credit rating agencies have downgraded the outlook on the utilities sector.

- When reasonable adjustments are made to Dr. Woolridge's DCF and CAPM analyses for consistency with his prior positions and to correct deficiencies in certain key assumptions, his cost of equity estimates are higher than, and thus fully support, the Company's proposed ROE of 10.50 percent – regardless of the proxy group that is relied upon.

- In addition, when my cost of equity models are updated to reflect the most current market data, the results also continue to support the Company's proposed ROE of 10.50 percent.

- Dr. Woolridge's review of authorized ROEs across the U.S. should not be relied on in establishing the ROE for the Company, as they incorrectly include authorized ROEs that are not derived based on market data and fail to consider the market conditions at the time of those authorized ROEs relative to the current capital market conditions.

III. COMPARABLE RETURN STANDARD

Q. How should authorized ROEs be considered in setting the ROE in this case?

A. The decisions of other regulatory commissions can provide a basic test of reasonableness and a benchmark that investors consider in comparing the authorized ROE in one jurisdiction to the returns available from other regulated utilities with comparable risk. It is important, however, to consider several factors that affect these regulatory decisions, specifically: (1) the market conditions at the time that the ROE was authorized; (2) any performance adjustments that were reflected in the authorized

ROE (positive or negative) that are company specific; and (3) whether or not the ROE is established based on a regulatory construct that is consistent with the regulatory environment for the subject utility. With these factors addressed, the remaining sample of ROEs can be relied upon as a basic test of reasonableness.

Q. Has the Commission considered authorized ROEs in other jurisdictions when authorizing an ROE for a utility?

A. Yes. For example, in the final order for the Company's 2019 General Rate Case proceeding, the Commission noted the allowed returns for vertically-integrated electric utilities nationally and California specifically in establishing the Company's ROE.[9]

Q. Has Dr. Woolridge conducted a meaningful review of previously authorized ROEs?

A. No. Dr. Woolridge has not considered the necessary factors to ensure that the authorized ROEs he cites are for risk-comparable companies, nor has he considered the differences in the market conditions that existed when the return was authorized relative to current market conditions. Regulatory commissions consider a variety of factors in establishing the ROE for a utility, including the results of the cost of equity estimation methodologies, risk factors and market conditions. Therefore, when reviewing the authorized ROE data from other jurisdictions and time periods, it is important to identify and understand these factors to determine whether the authorized ROE would be reasonable in current market conditions. Capital market

[9] D.20-02-025 at (Feb, 6, 2020).

conditions in 2022 have resulted in significantly elevated inflation and rising interest rates to combat that inflation that did not exist in the 2020 and 2021 time period. Therefore, authorized ROEs during that period cannot reasonably be compared to ROEs necessary to reflect the cost of equity for utilities in the current market environment without recognizing these differences.

Q. Have analysts recognized that market conditions are an important factor in the authorized ROE data?

A. Yes. Recently Moody's Investors Service (Moody's) noted that authorized ROEs in 2022 could increase as a result of the increase in interest rates, but noted that regulatory lag could result in a delay in the timing of those increases.[10]

Q. Recognizing these limitations, did you analyze recently-authorized return data to reflect cases that are most comparable to the Company?

A. Yes, I analyzed the recently authorized returns for vertically integrated electric utilities. In order to narrow the sample of recently authorized returns, I applied the following screening criteria to establish returns for companies that are of a similar risk profile as PacifiCorp:

- I included only vertically integrated electric utilities because of the incremental risk of generation for vertically-integrated electric utilities.
- I excluded limited-issue rider cases because these cases address only a specific issue or issues, such as the construction of generation assets and the associated incremental risk, and not a utility's entire operations. Thus, the returns authorized in such limited-issue rider cases would not be comparable to the rates being established for the Company in this proceeding.
- I excluded jurisdictions that set ROEs using a formula because these ROEs are not being determined using methodologies that have been relied upon by the Commission in prior cases.

[10] Moody's Investors Service, Regulated Electric and Gas Utilities – US, 2023 outlook negative due to higher natural gas prices, inflation and rising interest rates, November 10, 2022, at 4.

- Lastly, I excluded authorized returns that reflect a utility-specific penalty because an authorized ROE that includes a penalty is not indicative of a market-derived cost of equity.[11]

Q. What do you conclude from this analysis?

A. FIGURE 1 shows the authorized returns for vertically-integrated electric utilities in the U.S. for the past three years as well as the yield on the 30-year Treasury bond over the same time period. The range of authorized ROEs has been from 9.00 percent to 10.60 percent during this period. It is important to recognize that the yield on the 30-year Treasury bond had changed significantly over this time period. In 2020, the yield on the 30-year Treasury bond was in the range of 1.00 percent to 2.00 percent, in 2021, the yield was in a similar range, however in 2022, the yield on the 30-year Treasury bond increased significantly, ending 2022 in the 3.75 to 4.00 percent range. This change in the interest rate environment is important to consider when reviewing recently authorized ROEs. Further, it is important to note that Dr. Woolridge's proposed ROE of 9.00 percent for the Company would be the lowest authorized ROE for any vertically-integrated electric utility in the past three years (*i.e.*, out of the 69 observations), even in the lower interest rate environments of 2020 and 2021. Therefore, it is clear that Dr. Woolridge's recommended ROE is unreasonable when considering the higher interest rate environment as of the end of 2022 and continuing into 2023.

[11] For example, Central Maine Power Company was authorized an ROE in 2020 of 8.25 percent that reflected a 100-basis point penalty for management inefficiency, which is not representative of a market-derived cost of equity and should be excluded from the recently authorized return data.

The historical range of results presented in Figure 1 provides an indicator of the investor-required return over that time period. However, in determining the appropriate ROE for the Company, it is necessary to consider how changes in market conditions affect the cost of equity for utilities going forward as compared with the past three years. For example, as shown in Figure 1:

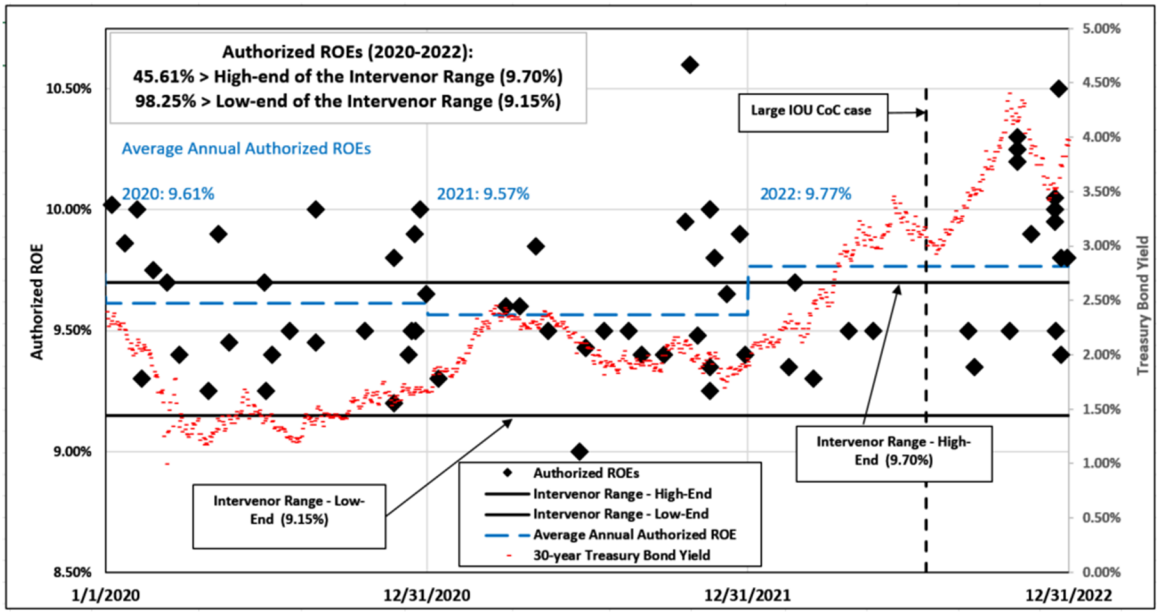
Average authorized ROEs for vertically integrated electric utilities were higher in 2022 than in 2021.

Interest rates have increased significantly over the year 2022 as compared with the level of interest rates experienced in 2020 or 2021.

While there is a lag due to the time period of the data used in rate proceedings, the duration of regulatory proceedings and the timing of regulatory decisions being issued, the last quarter of 2022 indicated higher ROEs than the remainder of the year.

Since the ROE recommended by Dr. Woolridge is unreasonably low even based on the recent historical average, it would be unreasonable to conclude that his recommendation reflects the investor-required return on equity for a vertically-integrated electric utility in current market conditions.

FIGURE 1: U.S. AUTHORIZED ROES OF VERTICALLY-INTEGRATED ELECTRIC UTILITIES, JANUARY 2020 THROUGH DECEMBER 31, 2022[12]



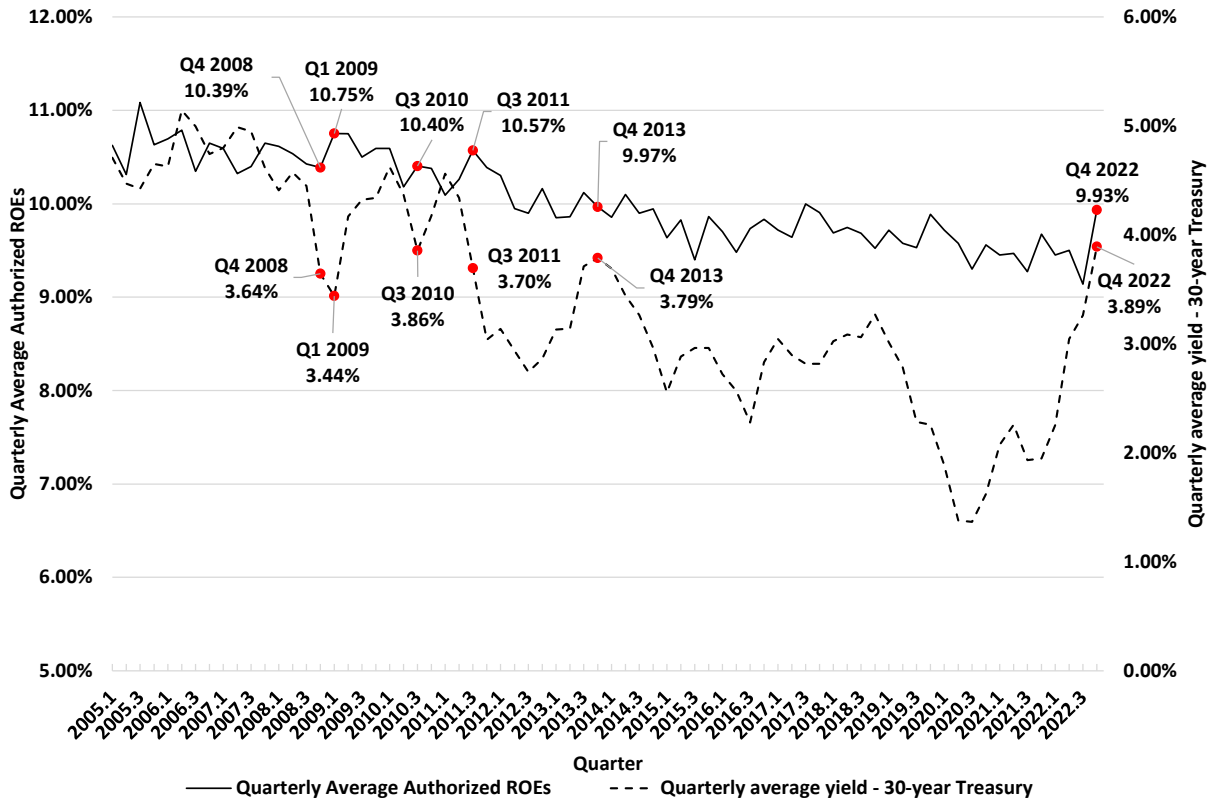
Q. Recognizing the limitations of recently authorized ROEs that you just discussed, is there additional relevant information that can be considered when reviewing historically authorized ROEs?

A. Yes. Because of the significant changes that have occurred in the market in terms of inflation and interest rates in the past nine months, it is important to consider what the authorized ROEs for vertically-integrated electric utilities have been when interest rates have previously approximated the levels at which they are currently. FIGURE 2 compares quarterly 30-year Treasury bond yields and quarterly authorized ROEs for vertically-integrated electric utilities since 2005. As shown, when interest rates have been at levels approximating the current interest rates, the authorized ROEs for vertically-integrated electric utilities have ranged from approximately 9.90 percent to

[12] S&P Capital IQ Pro.

10.75 percent, consistent with the Company's recommendation in this proceeding. For example, as shown, in 4Q/2022, the 30-year Treasury yield was 3.89 percent, and the average authorized ROE for vertically-integrated electric utilities at that same quarter was 9.93 percent. In comparison, in 3Q/2011, the 30-year Treasury yield was 3.70 percent, which is similar to current yields, and the average authorized ROE for vertically-integrated electric utilities at that same quarter was 10.57 percent. FIGURE 2 shows a number of other similar examples of prior periods in which interest rate levels have approximated current levels and the authorized ROEs during those periods.

FIGURE 2: 30-YEAR TREASURY BOND YIELDS AND U.S. AUTHORIZED ROES OF VERTICALLY-INTEGRATED ELECTRIC UTILITIES[13]



1 **Q. How do current market conditions differ from the conditions that were relied on**
2 **in the recent cost of capital proceedings for the larger investor-owned electric**
3 **utilities?**

4 A. It is reasonable to expect that the investor-required return on equity has increased
5 since the timing of the data used in the cost of capital proceedings for the large energy
6 utilities (Docket Nos. A.22-04-008, A.22-04-009, A.22-04-011, A.22-04-012). The

[13] S&P Capital IQ Pro. Includes the authorized ROEs for all vertically-integrated electric utilities, including those in California.

intervenor witnesses filed analysis in that proceeding using data from June and July 2022. As shown in Figure 1, while interest rates had increased somewhat by that time, the yield on the 30-year Treasury bond was in the range of 3.00 percent whereas as of December 31, 2022, the 30-day average yield on the 30-year Treasury bond was 3.71 percent. In addition, the data that the intervenors were relying on as assumptions in their analyses reflected the expectations for lower cost of capital environments. For example, the CalAdvocates witness in that proceeding, also Dr. Woolridge, relied on a 3.00 percent risk-free rate and a market risk premium of 5.5 percent in his CAPM analysis at that time.[14] In the current proceeding, Dr. Woolridge has increased his risk-free rate to 3.60 percent and his market risk premium to 6.00 percent. These increases in Dr. Woolridge's assumptions reflect an increase in the cost of capital of 100 basis points since the time of the large energy utilities' cost of capital proceedings. Therefore, it is reasonable that the ROE that is set in this proceeding would reflect the difference in the cost of equity since the large energy utilities' proceeding.

Q. Are you aware of any utilities that have experienced either a credit rating downgrade or negative market response related to the financial effects of a rate case decision?

A. Yes. As briefly referenced in my direct testimony,[15] the most recent example is the changes made by the Arizona Corporation Commission (ACC) to an Administrative

[14] Proceeding Numbers A.22-04-008, A.22-04-009, A.22-04-011, A.22-04-012, Direct Testimony of Dr. J. Randall Woolridge at 66.
[15] PAC/200, Bulkley/30-31.

Law Judge's (ALJ) recommended order in an Arizona Public Service Company (APS) rate proceeding caused credit rating agencies to institute negative ratings actions, and received a very negative reaction from the market with APS's parent company Pinnacle West's (PNW) stock price falling 24 percent and its Institutional Brokers' Estimate System (IBES) earnings growth rate estimate reduced to nearly zero. Specifically, the ACC reduced the authorized ROE for APS from the ALJ-recommended 10.00 percent to 8.70 percent. As a result of this rate case decision, Fitch downgraded the issuer default credit rating of APS and PNW's, citing heighted business risk.[16] Subsequently, Moody's also downgraded APS and PNW, noting that the downgrade was a function of "the recent decline in Arizona regulatory environment" and "the organization's weakened credit metrics."[17] Guggenheim Securities LLC, an equity analyst that follows PNW, informed its clients that the "Arizona Corporation Commission is now confirmed to be the single most value destructive regulatory environment in the country as far as investor-owned utilities are concerned."[18] Similarly, S&P Global Market Intelligence's Regulatory Research Associates (RRA) noted that this decision was "among the lowest ROEs RRA had encountered in its coverage of vertically integrated electric utilities in the past 30 years."

[16] FitchRatings, "Fitch Downgrades Pinnacle West Capital & Arizona Public Service to 'BBB+'; Outlooks Remain Negative," Oct. 12, 2021.
[17] Moody's Investors Service, Inc., "Rating Actions: Moody's downgrades Pinnacle West to Baa1 and Arizona Public Service to A3," Nov. 17, 2021.
[18] S&P Global Market Intelligence, "Pinnacle West shares tumble after regulators slash returns in rate case," Oct. 7, 2021.

In addition, ALLETE, Inc., CenterPoint Energy Houston Electric (CEHE), and Connecticut Light & Power have each received credit rating downgrades following a rate case decision. For example, Moody's downgraded ALLETE, Inc. from A3 to Baa1 primarily based on the less than favorable outcome in Minnesota Power's last fully litigated rate case in Minnesota, which included what Moody's noted was a below average authorized ROE of 9.25 percent.[19] Similarly, Fitch Ratings downgraded CEHE's Long-Term Issuer Default rating from A- to BBB+ and revised the rating outlook from Stable to Negative following the approval of an unfavorable outcome in a recent rate case in Texas.[20] Connecticut Light & Power had its outlook changed to negative by Moody's and Fitch following an interim decision in which its regulator proposed an ROE reduction of 90 basis points and a $30 million financial penalty as a result of the utility's performance in the Tropical Storm Isaias restoration efforts.[21]

These examples highlight the risk to PacifiCorp and its customers associated with Dr. Woolridge's proposed cost of equity in this proceeding, and demonstrates that his ROE recommendation for the Company does not meet the investor-required return on equity. Considering how credit rating agencies recently have reacted to authorized ROEs that are significantly below the national average such as suggested

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[19] Moody's Investors Service, Credit Opinion: ALLETE, Inc. Update following downgrade, at 3 (Apr. 3, 2019).
[20] Fitch Ratings, Fitch Downgrades CenterPoint Energy Houston Electric to BBB+; Affirms CNP; Outlooks Negative, Feb. 19, 2020.
[21] Moody's Investor Services, Rating Action: Moody's changes outlook of Eversource Energy and Connecticut Light & Power to Negative, June 14, 2021; Fitch Ratings, Rating Action Commentary: Fitch Revises Outlook on Connecticut Light and Power to Negative; Affirms Ratings, Sept. 21, 2021.

by Dr. Woolridge's recommendation, it is likely that adopting his recommended ROE would result in a similar response from rating agencies and the market overall.

Q. What is your conclusion about Dr. Woolridge's ROE recommendation?

A. As outlined in *Hope* and *Bluefield*, the return authorized for the Company must be comparable to the returns on assets with comparable risk. Dr. Woolridge's ROE recommendation is at the low end of the range of comparable authorized ROEs for vertically-integrated electric utilities over the past three years, and therefore would not meet the comparable return standard of *Hope* and *Bluefield* in current market conditions.

IV. UPDATED COST OF EQUITY RESULTS

Q. Have you updated your cost of equity analyses from your direct testimony?

A. Yes, I have updated the results of the cost of equity analyses conducted in my direct testimony based on market data through December 31, 2022, using the same methodologies as in my direct testimony. FIGURE 3 (see also Exhibits PAC/1401 through 1407) summarizes the results of my updated analyses as of December 31, 2022.

FIGURE 3: UPDATED COST OF EQUITY RESULTS

Constant Growth DCF	Minimum Gwth Rate	Average Gwth Rate	Maximum Gwth Rate
Mean Results:			
30-Day Avg. Stock Price	8.08%	9.38%	10.41%
90-Day Avg. Stock Price	8.17%	9.47%	10.50%
180-Day Avg. Stock Price	8.09%	9.39%	10.42%
Average	8.11%	9.41%	10.44%
Median Results:			
30-Day Avg. Stock Price	8.03%	9.33%	10.27%
90-Day Avg. Stock Price	8.00%	9.39%	10.37%
180-Day Avg. Stock Price	7.91%	9.32%	10.19%
Average	7.98%	9.35%	10.28%

CAPM / ECAPM / Bond Yield Risk Premium	Current 30-Day Avg 30-Year Treasury Yield	Near-Term Projected 30-Year Treasury Yield	Longer-Term Projected 30-Year Treasury Yield
CAPM:			
Current *Value Line* Beta	11.48%	11.50%	11.50%
Current Bloomberg Beta	10.90%	10.93%	10.94%
Long-term Avg. *Value Line* Beta	10.42%	10.46%	10.47%
ECAPM:			
Current *Value Line* Beta	11.77%	11.78%	11.79%
Current Bloomberg Beta	11.33%	11.36%	11.36%
Long-term Avg. *Value Line* Beta	10.97%	11.01%	11.01%
Bond Yield Risk Premium:			
US Vertically-Integrated Elec Utils	10.24%	10.31%	10.32%
CA Vertically-Integrated Elec Utils	10.66%	10.71%	10.72%

Q. Do the updated results support the Company's requested ROE of 10.50 percent in this proceeding?

A. Yes. The updated results reflecting market data through December 31, 2022, continue to support the Company's requested ROE of 10.50 percent. The results of DCF and CAPM models are generally on balance with the results filed in my direct testimony, with certain scenarios slightly higher and other scenarios slightly lower

than the results presented in my direct testimony. The results of the Bond Yield Risk Premium analyses have increased both when evaluating the ROEs of vertically-integrated electric utilities across the U.S., as well as vertically-integrated electric utilities solely in California. Further, capital market conditions have continued to evolve with significant increases in interest rates over the past few months. As discussed in more detail in Section V, yields on long-term government bonds exceed the dividend yields of utilities by a significant margin; as a result, equity analysts expect the utility sector to underperform the broader market over the near-term.

V. UPDATED CAPITAL MARKET CONDITIONS

Q. Please summarize Dr. Woolridge's position with respect to the effect of capital market conditions on his recommended ROE.

A. Dr. Woolridge fails to consider the effect of current market conditions on the cost of equity for utilities. While Dr. Woolridge acknowledges that interest rates and year-over-year inflation have increased significantly in 2022, he is dismissive of the effect of these changes on the cost of equity. Dr. Woolridge attempts to support his view that the cost of equity for utilities has not increased significantly based on his long-term projections for inflation of less than 2.5 percent, and the expectation of a future recession that would put downward pressure on interest rates. Further, Dr. Woolridge reviews authorized ROEs for the period from 2020 through 2021.[22]

[22] Cal Advocates-05, Woolridge/5.

Q. Have capital market conditions changed since the Commission established the ROE in the Company's last rate proceeding?

A. Yes. FIGURE 4 compares the levels of interest rates and inflation at the time of the Commission's decision in the Company's last rate case to those same indicators currently. As shown in FIGURE 4, the yield on the 10-year Treasury bond has increased 212 basis points and the yield on the 30-year Treasury bond has increased 177 basis points over this time period, while inflation has increased substantially, from 2.32 percent to 6.42 percent.

FIGURE 4: COMPARISON OF MARKET CONDITIONS – COMPANY'S PRIOR RATE CASE TO CURRENT RATE CASE

	Feb-20	Dec-22	Basis Point Increase
10-year Treasury Bond Yield	1.77%	3.89%	212
30-year Treasury Bond Yield	2.23%	4.00%	177
Y-o-Y Inflation	2.32%	6.42%	410

Q. Have market conditions also changed since you filed your direct testimony?

A. Yes. The data used in my direct testimony was through March 31, 2022. The following summarizes the changes since that time:

- The 30-day average yield on the 30-year Treasury bond increased from 2.37 percent to 3.71 percent through December 2022.
- Since March 31, 2022, the Federal Reserve increased the federal funds rate by 400 basis points. At the Federal Open Market Committee (FOMC) meeting in December 2022, Chairman Powell stated that he anticipates further increases in the federal funds rate, and that while inflation is off of its recent highs, it remains significantly above the Federal Reserve's long-term target.[23] .

[23] Transcript, Chair Powell, Press Conference, Dec. 14, 2022.

- Inflation remains elevated with the year-over-year change in the consumer price index remaining above 6.40 percent as of the end of December 2022.[24]

- U.S. employment remains extremely tight, with the unemployment rate near a 50-year low, job vacancies remain very high, and wage growth remains elevated.[25]

- The yields on long-term government bonds remain higher than the dividend yields of utilities. Given that the yields on long-term government bonds are expected to remain elevated, equity analysts expect that utility stock prices will decline over the near-term, resulting in increasing utility dividend yields. This means the cost of equity models that rely on current and historical market data (*i.e.*, current share prices in the DCF model) will likely underestimate the cost of equity over the near-term.

- Other regulatory commissions have recognized that the DCF model is not reflecting current market conditions as directly and therefore should not be relied upon entirely for setting the ROE in current market conditions.

Q. How has the market responded to this information?

A. While the yield curve has inverted, as discussed by Dr. Woolridge, the economy also presents evidence of strength through continued job growth and strong consumer confidence. Therefore, it is not a foregone conclusion as suggested by Dr. Woolridge that the economy will enter into a recession in the near future.[26] Further, Dr. Woolridge has offered no evidence to support his opinion that interest rates will be declining in the near future.

[24] Bureau of Labor Statistics, CPI for All Urban Customers, Seasonally Adjusted.
[25] Transcript, Chair Powell, Press Conference, Dec. 14, 2022.
[26] Cal Advocates-05, Woolridge/5.

Q. What is your response to Dr. Woolridge's views that long-term inflation will return to levels below 2.5 percent?[27]

A. Dr. Woolridge is overlooking the fact that the FOMC has been relying on monetary policy tools, specifically increasing interest rates in order to achieve a lower inflationary environment. Therefore, it is disingenuous to suggest that inflation will be decreasing without specifically recognizing that the path to lower inflation is the use of more restrictive monetary policy, which means higher interest rates. This strategy was reiterated by Chairman Powell most recently in the December 2022 FOMC meeting:

> We continue to anticipate that ongoing increases will be appropriate in order to attain a stance of monetary policy that is sufficiently restrictive to return inflation to 2 percent over time.
>
> …..
>
> Inflation remains well above our longer-run goal of 2 percent. Over the 12 months ending in October, total PCE prices rose 6 percent; excluding the volatile food and energy categories, core PCE prices rose 5 percent. In November, the 12-month change in the CPI was 7.1 percent, and the change in the core CPI was 6 percent. The inflation data received so far for October and November show a welcome reduction in the monthly pace of price increases. But it will take substantially more evidence to give confidence that inflation is on a sustained downward path.
>
> …..
>
> As shown in the SEP [*i.e., Summary of Economic Projections*], the median projection for the appropriate level of the federal funds rate is 5.1 percent at the end of next year, 1/2 percentage point higher than projected in September. The median projection is 4.1 percent at the end of 2024 and 3.1 percent at the end of 2025, still above the median estimate of its longer-run value.
>
> …..
>
> And today we're -- the SEP they were published shows again that overwhelmingly FOMC participants believe that inflation risks are to the upside.
>
> …..
>
> You know, our focus right now is really on moving our policy stance to one that is restrictive enough to ensure a return of inflation to our 2 percent goal over time. It's not on rate cuts. And we think that we'll have to maintain a restrictive stance of policy for some time. Historical experience caution strongly against prematurely loosening

[27] Cal Advocates-05, Woolridge/12.

policy. I guess I would say it this way: I wouldn't see us considering rate cuts until the Committee is confident that inflation is moving down to 2 percent in a sustained way. So that's the -- that's the test I would articulate. And you're correct. There are not rate cuts in the SEP for 2023.[28]

As noted, the FOMC increased rates another 50 basis points at the December 14, 2022 FOMC meeting and indicated that rates will remain high through 2023. Therefore, Dr. Woolridge has overlooked that the FOMC's policy objective of inflation at or below a threshold of 2.5 percent is being achieved through a higher overall cost of capital.

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

A. Equity analysts project that utilities will underperform the broader market as interest rates have increased. Fidelity recently classified the utility sector as underweight,[29] and Morningstar has noted that as long as inflation persists the utility sector will underperform, stating:

> [a]s long as inflation remains the market's top concern, we expect utilities to underperform. Utilities are the most sensitive to inflation because of their mostly fixed revenue, large capital investment budgets, and borrowing needs. We think long-term investors who want utilities in their portfolios should focus on those in constructive regulatory environments with the most protection from inflation. [30]

[28] Transcript, Chair Powell, Press Conference, Dec. 14, 2022.
[29] Fidelity, "Fourth Quarter 2022, Investment Research Update," Oct. 26, 2022.
[30] Miller, Travis, "As Long as Inflation Worries Persist, We Expect Utilities to Underperform: Renewable energy continues to be a long-term boon for the sector," July 6, 2022.

In discussing the utility sector's strong performance relative to the broader market in 2022, Morningstar has noted that, unsurprisingly, utilities have benefited from recession concerns. However, Morningstar has stated:

> We think utilities will struggle to match those returns going forward. U.S. utilities are 3% overvalued based on our fair value estimates, making it the most overvalued sector. Dividend yields have lost their appeal. In June, 10-year U.S. Treasury rates topped the Morningstar U.S. Utilities Index dividend yield for the first time in 14 years.[31]

Additionally, the *Wall Street Journal* recently noted that the S&P Utilities Index was down 14 percent over the past month, attributing the decline to the recent increase in long-term treasury yields:

> A big draw of utility stocks has become less attractive as interest rates have climbed. Utility stocks are known for their sizable dividends, offering investors a regular stream of income. Companies in the S&P 500 utilities sector offer a dividend yield of 3.3%, among the highest payout percentages in the index, according to FactSet.
>
> But the outsize dividends of utility stocks are no match for climbing bond yields. The yield on the benchmark 10-year Treasury note finished above 4% on Monday for a second consecutive session. Friday marked the 10-year yield's first close above the 4% level since 2008 and 11 straight weeks of gains. Treasurys are viewed as essentially risk-free if held to maturity.
>
> "The 10-year is repricing everything. I've got something that's even safer and yields even more," said Kevin Barry, chief investment officer at Summit Financial, comparing Treasurys and utility stocks.[32]

[31] Miller, Travis, "Utilities Brighten Under Cloud of Recession, but Future Dim at Lofty Valuations," Oct. 12, 2022.
[32] Miao, Hannah, "Utility Stock stumble as treasury yields climb," *The Wall Street Journal*, Oct. 18, 2022.

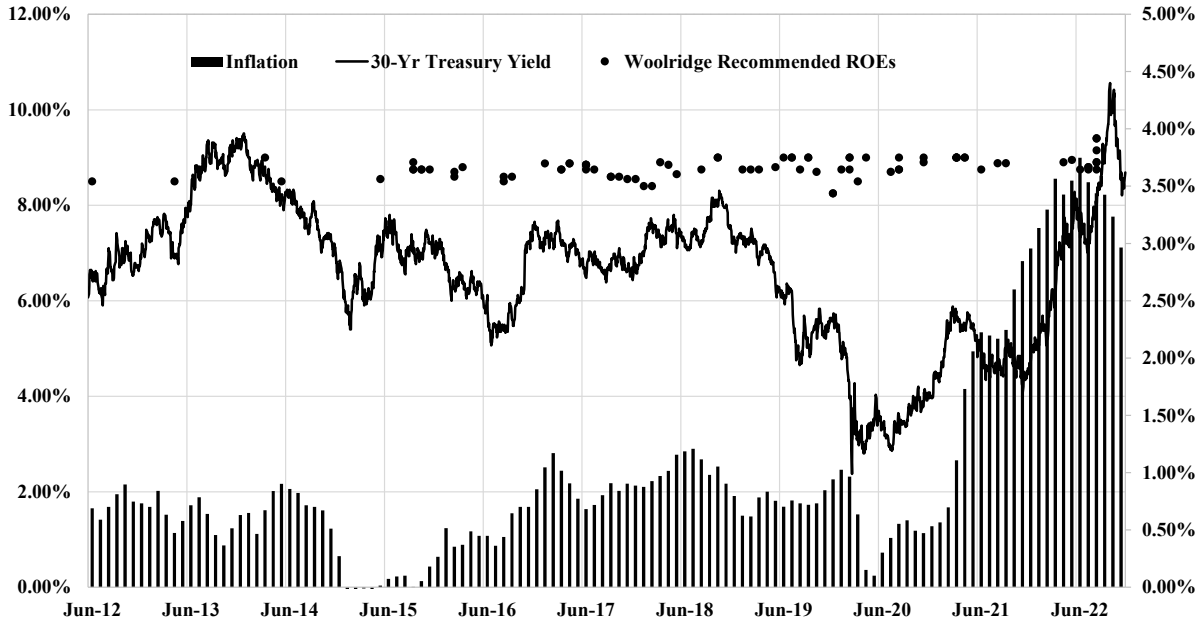
Similarly, Barron's recently noted that the decline in share prices can be attributed to the relatively high valuations and low dividend yields of utilities as compared to other asset classes such as Treasuries.[33] According to Barron's, even after the recent decline in share prices, the Utilities Select ETF was yielding 2.85 percent, which is a yield that will not "lure in buyers when the ultrasafe 10-year Treasury note yields close to 4%."[34] Therefore, Barron's currently recommends not buying utility stocks.

Q. Although market conditions change over time, and have significantly changed in the past 9 months, does Dr. Woolridge's recommended ROE change as market conditions change?

A. No. As shown FIGURE 5, while interest rates and inflation have changed dramatically over time, Dr. Woolridge has consistently recommended an ROE for utilities over the past decade ranging primarily between 8.50 percent to 9.00 percent, regardless of market conditions. Dr. Woolridge's apparent disregard for changing capital market conditions over time in his recommended ROE demonstrates that his ROE recommendations are highly arbitrary and results-oriented.

[33] Sonenshine, Jacob, "Utilities Stocks Have Fallen off a Cliff. They Just Got Downgraded, Too," Barron's, Oct. 17, 2022.
[34] *Id*.

FIGURE 5: COMPARISON OF DR. WOOLRIDGE RECOMMENDED ROES RELATIVE TO 30-YEAR TREASURY BOND YIELDS AND INFLATION, JUNE 2012 TO DECEMBER 2022



VI. RATING AGENCIES' REVIEWS OF THE UTILITY SECTOR

Q. Has Dr. Woolridge accurately characterized the rating agency views on utility credit quality in the current market environment?

A. No. Dr. Woolridge's summary of the credit rating agencies views on utility ROEs and credit quality is approximately seven years out of date. The Moody's report that Dr. Woolridge relies on to support his views on declining ROEs was published in 2015. Since that time, Moody's has issued several reports on the utility industry, including many downgrades of utilities for lower credit metrics resulting from federal tax reform and other market risk factors. Most recently, in November 2022, Moody's issued a negative outlook on the regulated electric and gas utilities in the U.S. due to higher gas prices, inflation and rising interest rates. Moody's noted that the financial

metrics of utilities are already under pressure with little cushion entering 2023 that could erode funds from operations- to-debt ratios below the 14 percent threshold if cost recovery is delayed.[35] Moody's noted that if utilities are to maintain their credit quality over the next few years, it will be necessary for cash flow growth to exceed historical levels.[36]

Q. Have other rating agencies commented on the financial strength of the utility sector?

A. Yes. In January 2022, S&P Global reported that for the second consecutive year, rating downgrades outpaced upgrades for the investor-owned North American regulated utility industry, noting that credit quality in 2021 was primarily pressured by weak financial measures and environmental, social and governance credit risks that would continue to weigh on credit quality throughout 2022. In addition, S&P noted that for the first time ever the median Investor-Owned Utility Rating fell to the BBB category.[37] S&P also noted that persistent pressure from inflation, higher interest rates and rising commodity prices would likely lead to further weakening of the industry's credit quality in 2022.[38]

In a December 2022 report, FitchRatings provided its outlook on the utility sector as "Deteriorating."[39] FitchRatings also noted that cost pressures were

[35] Moody's Investors Service, Regulated Electric and Gas Utilities – US, 2023 outlook negative due to higher natural gas prices, inflation and rising interest rates, Nov. 10, 2022.
[36] Moody's Investors Service, Regulated Electric and Gas Utilities – US Inflation, high natural gas prices complicate prospects for supportive rate increases, Nov. 11, 2022.
[37] S&P Global, Report: The Median Investor-Owned Utility Rating Falls to the 'BBB' Category for the First Time Ever, Jan. 25, 2022.
[38] *Id.*
[39] FitchRatings, North American Utilities, Power & Gas Outlook 2023, Dec. 2022 at 1.

challenging the utility sector's financial strength and identified higher ROEs and better regulatory constructs as near-term tools to mitigate that pressure.[40]

Q. What are your conclusions regarding Dr. Woolridge's assessment of the rating agencies perspectives on the utility sector and the effect of capital markets on this sector?

A. Dr. Woolridge's overall analysis of market conditions should not be relied upon in determining the ROE for PacifiCorp. Dr. Woolridge's analysis of the rating agencies' perspective on utility ROEs is significantly outdated and does not reflect recent market conditions. Further, Dr. Woolridge's attempt to substitute his own speculations about future market conditions for the actual current market data that has been presented in this proceeding in the determination of the appropriate ROE for PacifiCorp should be rejected. As discussed, interest rates and inflation are at levels that significantly exceed the levels experienced in the Company's last rate proceeding. Since the Commission's decision in the Company's last rate case, which was issued in February 2020, several factors have contributed to an overall weakening of the financial metrics of the utility sector, including tax reform,[41] increased operating costs, and significantly elevated capital investment. The combination of these factors has resulted in the credit rating agencies downgrading many companies within the industry, and concluding a negative rating on the sector

[40] FitchRatings 34th Annual U.S. Utilities, Power & Gas Presentation, Cost Pressures Challenge the Status Quo, Nov. 14, 2022, p.16.
[41] While income tax reform occurred in 2017, the effects of that act on utilities include a permanent reduction in the cash flow metrics of utility companies as a result of the loss of accelerated depreciation.

overall. While the credit rating agencies address these issues from the perspective of debt holders, these same risks also affect equity holders and increase the cost of equity.

VII. RESPONSE TO DR. WOOLRIDGE

Q. Please summarize Dr. Woolridge's cost of equity analyses.

A. Dr. Woolridge develops a range of cost of equity returns from 9.10 percent to 9.55 percent using the constant growth DCF methodology[42] for two proxy groups – an electric proxy group that he develops based on his own criteria and the proxy group that I relied upon in my direct testimony. He estimates a cost of equity of 8.70 percent for both proxy groups using the CAPM. Dr. Woolridge states that he relies primarily on the results of the DCF model,[43] however, he selects a recommended ROE of 9.00 percent, which is below the estimates produced by the DCF model. Dr. Woolridge accepts the Company's proposed capital structure.

Q. What are the primary areas of disagreement between you and Dr. Woolridge?

A. There are several specific areas of Dr. Woolridge's cost of equity analyses with which I disagree, including:

- primary reliance on the DCF model to develop his recommended ROE;
- the proxy group;
- the appropriate growth rates to be used in the Constant Growth DCF model;
- the assumptions used in the CAPM analysis;
- the applicability of the Risk Premium analysis; and,
- the business and financial risks of the Company as compared with the proxy group.

[42] Cal Advocates-05, Woolridge/51.
[43] Cal Advocates-05, Woolridge/4.

Q. Has the Commission relied on multiple ROE models in setting the ROE in prior cases?

A. Yes. In its decision in the 2018 case for the larger electric utilities, the Commission stated:

> Hence, our basic objective in a cost of capital proceeding is to set the equity return at the lowest level that meets the test of reasonableness. At the same, time, the adopted equity return should be sufficient to provide a margin of safety to pay interest, pay reasonable common dividends, and allow for some money to be kept in the business as retained earnings. To accomplish this objective, we have consistently evaluated analytical financial models as a starting point to arrive at a range of fair equity returns. The financial models commonly used in equity return proceedings are the Capital Asset Pricing Model (CAPM), Risk Premium Model (RPM), and Discounted Cash Flow Analysis (DCF).[44]

A. Proxy Group Development

Q. Please summarize the differences between your proxy group and the proxy group relied upon by Dr. Woolridge.

A. Dr. Woolridge establishes the proxy group used for his analysis using several of the same screening criteria relied upon in the development of my proxy group, including companies being covered by Value Line, having investment grade credit ratings, consistently paying dividend, and having projected earnings per share (EPS) growth rates available from equity analysts. The primary difference between my proxy group and the group established by Dr. Woolridge is the more relaxed revenue screening criteria used by Dr. Woolridge, which results in a larger proxy group that may be less comparable to the subject company. However, Dr. Woolridge presents the results of

[44] D.18-03-035 at 7 (Mar. 22, 2018) (citations omitted).

his cost of equity estimation methodologies using both his proxy group and my proxy group.

Q. What are the primary differences between your proxy group and Dr. Woolridge's proxy group?

A. The primary differences between the screening criteria that I rely on and Dr. Woolridge rely on are: (1) Dr. Woolridge relies on a revenue screen whereas I rely on an operating income screen; (2) Dr. Woolridge includes companies that were involved in transformative transactions; and (3) Dr. Woolridge includes companies that have a significantly different risk profile than PacifiCorp.

First, the use of a revenue screen results in a larger group that derives less earnings from electric utility operations than the operating income screen. Operating income is the more appropriate screen criterion because it better reflects the contribution of each business segment to the corporation's earnings. For regulated utilities that collect the cost of purchased gas, fuel, and/or power on a pass-through basis through rates, regulated revenue can fluctuate materially with changes in weather without affecting the corporation's earnings or financial position. In contrast, operating income, which excludes purchased commodity costs, more closely represents the effect of each business segment on the corporation's overall risk profile. Dr. Woolridge's revenue screen results in the inclusion of CMS Energy, Consolidated Edison, Dominion Resources, and Southern Company, all of which derive a relatively high percentage of revenue from electric operations but less than 70 percent of their operating income is derived from regulated electric operations. Therefore, these companies are less comparable to PacifiCorp.

Second, I exclude Dominion Resources from my proxy group due to the transformative transaction resulting from the sale of Questar Pipeline, LLC, while Dr. Woolridge includes this company in his proxy group. Companies are typically removed from the proxy group as a result of transformative transactions to ensure that any effect of the transaction on the market data for the proxy company does not affect the cost of equity analysis. While not a transformative transaction, I also eliminated Pinnacle West Capital Corp. from my proxy group based on this principle. As discussed in my direct testimony, the stock price and growth rate projections for Pinnacle West Capital Corp. were significantly affected as a result of a negative rate case determination for its Arizona Public Service operating subsidiary. Therefore, it is reasonable to exclude this company from the group.

Finally, Hawaiian Electric has significant unregulated banking operations and also operates an island utility that has very different operating risks than PacifiCorp and therefore should

Q. What are your conclusions about the appropriate proxy group for PacifiCorp?

A. I continue to support the use of the proxy group developed in my direct testimony. The proxy group companies in my group derive a greater portion of their operating income from electric utility operations and are therefore more comparable to PacifiCorp than Dr. Woolridge's proxy group companies.

B. Dr. Woolridge's Application of the DCF model

Q. Please summarize Dr. Woolridge's DCF analyses.

A. Dr. Woolridge relies on the constant growth DCF model to estimate the cost of equity using two proxy groups, his electric utility proxy group (Panel A) and my proxy

group (Panel B). Dr. Woolridge calculates dividend yields using average stock prices over three periods, 30 days, 90 days and 180 days, for the period ending November 25, 2022; however, he ultimately relies on the average dividend yields using the stock prices of the proxy group over the 30-day and 90-day periods. While Dr. Woolridge reviews many growth rates, including historical and projected dividend, book value and earnings growth rates, the growth rate that he selects for his DCF models is primarily based on EPS growth rates. Based on his selected assumptions, Dr. Woolridge's DCF models produce a result of 9.10 percent for Panel A and 9.55 percent for Panel B.[45]

Q. Is Dr. Woolridge's dividend yield assumption in the DCF reasonable?

A. No, it is not. Dr. Woolridge calculates the mean (*i.e.*, average of all observations) and median (*i.e.*, unaffected by extreme outliers, either low or high) results for each proxy group over a 30-day and 90-day stock price averaging period; however, the dividend yield that he relies on is the average of the mean and median results. As shown in FIGURE 6, the use of the average of both the mean and median results for the 30-day average and 90-day average time periods serves to arbitrarily reduce the dividend yield relied upon in his analysis.

[45] Exhibit JRW-5, at 1.

FIGURE 6: DR. WOOLRIDGE DIVIDEND YIELDS

		30-day average	90-day average	Dr. Woolridge Assumption
Panel A	Mean	3.7%	3.5%	3.65%
	Median	3.8%	3.6%	
Panel B	Mean	3.6%	3.5%	3.69%
	Median	3.9%	3.7%	

Q. Is Dr. Woolridge's calculation of the dividend yield using the average of the mean and median results consistent with his CAPM analysis?

A. No, it is not. While Dr. Woolridge relies on the average of the mean and median results to estimate the dividend yield for his DCF analysis, as shown in Exhibit JRW-6, page 3, when Dr. Woolridge calculates the measure of central tendency for the betas used in his CAPM, he relies solely on the median results. Comparing the mean and median dividend yields shown in FIGURE 6, it is evident that the underlying data includes low end outliers since the median result is greater than the mean result. If Dr. Woolridge had relied on the median dividend yields consistent with his approach of using the median results in his CAPM analysis, the results of his DCF analysis would have increased.

Q. If Dr. Woolridge had relied on the median 30-day average dividend yield, how would the results of Dr. Woolridge's DCF changed?

A. As shown in FIGURE 6, if Dr. Woolridge had relied on a dividend yield of 3.80 percent instead of 3.65 percent for Panel A, his DCF result would have increased by

13 basis points. Similarly, if he had relied on a dividend yield of 3.90 percent instead of 3.69 percent for Panel B, his DCF result would have increased by 21 basis points.

Q. Please summarize the growth rates that Dr. Woolridge has relied upon in his DCF analysis.

A. Dr. Woolridge considers various potential sources of growth rates to be used in the DCF analysis, including historical and projected dividends per share (DPS), book value per share (BVPS), and EPS growth rates reported by *Value Line*, projected EPS growth rates reported by Yahoo!, Zacks and S&P, and an estimate of a sustainable growth rate calculated using *Value Line* projections. FIGURE 7 summarizes the growth rate ranges considered by Dr. Woolridge and the growth rate that he ultimately relies on for his DCF model.

FIGURE 7: SUMMARY OF DR. WOOLRIDGE'S GROWTH RATE ANALYSIS[46]

Growth Rate Indicator	Panel A	Panel B
Historical average *Value Line* Growth in EPS, DPS and BVPS	4.8%	4.8%
Projected *Value Line* Growth in EPS, DPS and BVPS	5.2%	5.5%
Sustainable Growth Rate	4.0%	4.1%
Projected EPS from Yahoo!, Zacks, and S&P Cap IQ (mean/median)	5.3% / 5.6%	5.6% / 5.7%
Range	5.25% - 5.50%	NA
Dr. Woolridge Assumption	5.375%	5.50%

[46] Exhibit JRW-5, p. 6.

Q. How did Dr. Woolridge establish his growth rate range and his estimated growth rate?

A. While Dr. Woolridge reviews many growth rate estimates, his final growth rate is just selected based on his own judgement. Dr. Woolridge establishes a range of growth rates for his proxy group that ignores the historical growth rates.[47] Further, he states that in setting the growth rates used in his DCF analysis he has "[g]iven primary weight to the projected EPS growth rate of Wall Street analysts."[48] Dr. Woolridge suggests, however, that long-term EPS growth rates are "overly optimistic and upwardly biased."[49] While he ultimately relies primarily on the EPS growth rates in his analysis, he suggests that the DCF growth rate needs to be adjusted downward from projected EPS growth rates "to reflect the upward bias in the DCF model."50 In the end, Dr. Woolridge simply applies his judgement to select a range and a point estimate for the growth rate to be used in his analysis. As shown in FIGURE 8, in each case, the midpoint of the range of actual EPS growth rates is higher than the growth rates selected by Dr. Woolridge. In the case of Panel B, the growth rate that Dr. Woolridge selected is below the range of the EPS growth rates for the proxy group.

[47] Cal Advocate-05, Woolridge/50.
[48] *Id.*
[49] *Id*., at 71.
[50] *Id*., at 47.

FIGURE 8: DR. WOOLRIDGE GROWTH RATE SELECTIONS

	Mean	Median	Relied On
Panel A EPS growth rates	5.30%	5.60%	
Woolridge Panel A Range	5.25%	5.50%	5.375%
Panel B EPS growth rates	6.00%	5.80%	
Woolridge Panel B Selection	Range not identified		5.75%

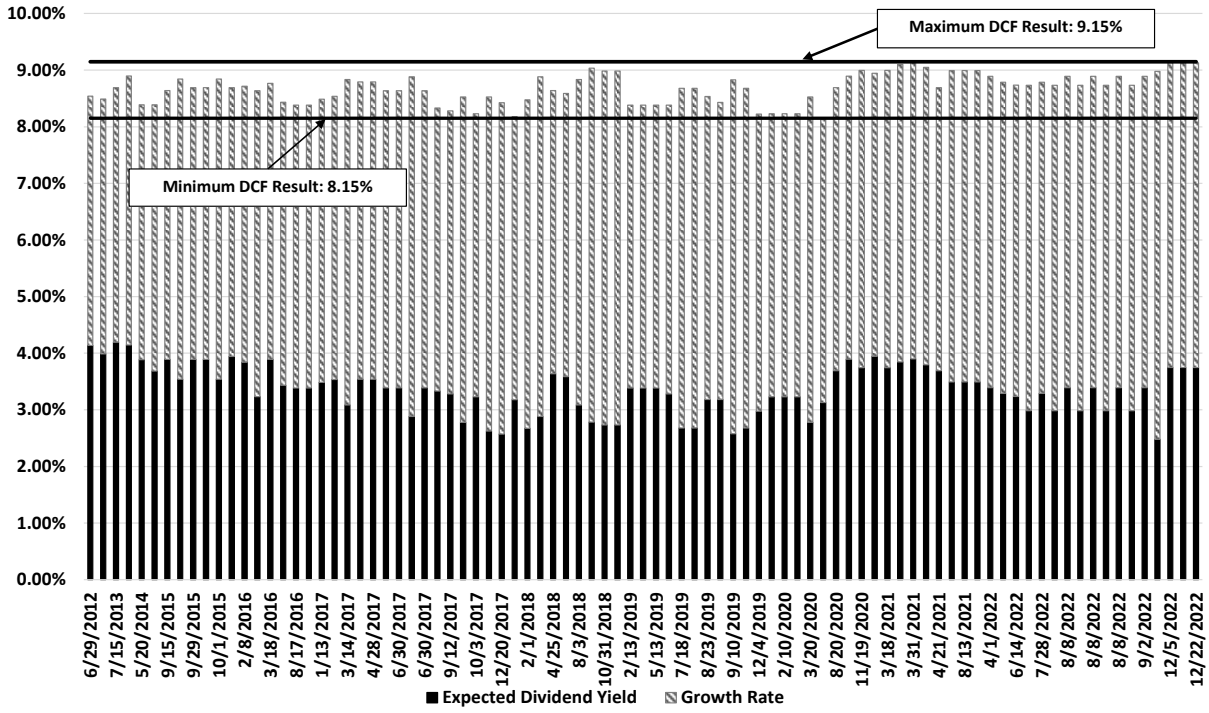
Q. Do you have any further concerns with Dr. Woolridge's selection of the growth rate for his DCF analysis?

A. Yes. I have two further concerns – Dr. Woolridge's selection of the growth rate for his DCF analysis appears to be results-oriented; and Dr. Woolridge simply chooses the growth rate that he relies on from within the projections he has summarized and does not derive a result for each individual proxy group company, causing his DCF result to be entirely subjective.

First, FIGURE 9 summarizes the dividend yields and growth rates that Dr. Woolridge has relied on in the development of his Constant Growth DCF models for over 70 cases since June 2012. As can be seen in the figure, as the calculated dividend yield changes, it is offset by Dr. Woolridge's selection of the growth rate such that his DCF result remains within a very narrow band from 8.15 percent to 9.15 percent. Specifically, while the dividend yields for his proxy groups have declined in response to capital market conditions, Dr. Woolridge simply selects a higher projected growth rate in the Constant Growth DCF model. Conversely, when the

dividend yields for his proxy group increase, Dr. Woolridge selects a lower projected growth rate.

FIGURE 9: COMPARISON OF DR. WOOLRIDGE HISTORICAL DIVIDEND YIELDS AND GROWTH RATES



Q. Is there any merit in Dr. Woolridge's view that projected EPS growth rates are optimistic and upwardly biased?

A. No. As an initial matter, the Federal Energy Regulatory Commission (FERC) addressed the concern about analyst growth rate forecasts over five years ago in Opinion No. 531-B. In that decision, the FERC reaffirmed its rejection of the argument that analyst growth rates should not be used in the DCF analysis because the analysts making those projections allegedly are overly-optimistic in their growth rate projections. The FERC also noted that the appropriate dividend growth rate to include in a DCF analysis is the growth rate expected by the market. The FERC

indicated that while the market may be wrong in its expectations, the cost of common equity to a regulated enterprise depends upon what the market expects, as reflected in the IBES growth projections, not upon precisely what is actually going to happen. Since that time, the FERC has re-evaluated the appropriate methodologies to establish an ROE in many opinions; however, the use of projected EPS growth rates has been consistently applied in all FERC opinions, including most recently in its Opinion No. 569-A in May 2020.

Similarly, in terms of alleged "upward bias," the Global Analysts Research Settlement of 2003 (the Global Settlement) served to remove all incentives for analyst bias in the financial industry. Specifically, the Global Settlement required financial institutions to insulate investment banking from analysis, prohibited analysts from participating in "road shows," and required the settling financial institutions to fund independent third-party research. In addition, analysts covering the common stock of the proxy companies must certify that their analyses and recommendations are not related, either directly or indirectly, to their compensation.

A 2010 article in Financial Analysts Journal, which was published seven years after the Global Settlement, found that analyst forecast bias had significantly declined or disappeared entirely:

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

that the recent efforts of regulators have helped neutralize analysts' conflicts of interest.[51]

Q. Is it appropriate to rely on either historical or projected DPS or BVPS growth rates in the DCF?

A. No. Earnings are the fundamental determinant of a company's ability to pay dividends. Dividend growth can only be sustained by earnings growth. Further, both dividends and book value per share may be directly affected by short run management decisions. As a result, dividend growth rates and book value growth rates may not accurately reflect a company's long-term growth. In contrast, earnings growth rates are not affected by short-run cash management decisions and are the only forward-looking growth rates available on a consensus basis.

Q. Dr. Woolridge also considers retention growth rates (also known as "internal growth rates" or "sustainable growth rates"). Are retention growth rates a reasonable basis for growth in the DCF model?

A. No. The underlying premise of the "retention growth" calculation is that future earnings will increase as the retention ratio (*i.e.*, the portion of earnings not paid out in dividends) increases. There are, however, several reasons why that may not be the case. Management decisions to either conserve cash for capital investments, to manage the dividend payout for the purpose of minimizing future dividend

[51] Armen Hovakimian and Ekkachai Saenyasiri, "Conflicts of Interest and Analyst Behavior: Evidence from Recent Changes in Regulation," *Financial Analysts Journal*, Volume 66, Number 4, July/Aug, 2010.

reductions, or to signal future earnings prospects, can and do influence dividend payout (and therefore earnings retention) decisions in the near-term.

Q. Is there academic research to support your position?

A. Yes. In 2006, two articles were published in Financial Analysts Journal that addressed the theory that high dividend payouts (*i.e.*, low retention ratios) are associated with low future earnings growth.[52] Both of those articles cite a 2003 study by Arnott and Asness, who found that, over the course of 130 years of data, future earnings growth is associated with high, rather than low, payout ratios.[53] In essence, the findings of all three studies are that there is a negative, not a positive, relationship between earnings growth rates and payout ratios. Therefore, I disagree with Dr. Woolridge's use of retention growth rates in the DCF model.

Q. Does Dr. Woolridge's calculation of the retention growth rate consider all sources of growth?

A. No. As shown on Exhibit JRW-5, page 4 of 6, Dr. Woolridge's calculation of projected retention growth rates considers only the product of projected earnings retention rates and projected earned returns on common equity, or internally generated funds.[54] Thus, Dr. Woolridge fails to consider that earnings growth also occurs as

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[52] Ping Zhou and William Ruland, "Dividend Payout and Future Earnings Growth," *Financial Analysts Journal*, Vol. 62, No. 3 (2006); *see also* Owain ap Gwilym, James Seaton, Karina Suddason, Stephen Thomas, "International Evidence on the Payout Ratio, Earnings, Dividends and Returns," *Financial Analysts Journal*, Vol. 62, No. 1 (2006).

[53] Robert Arnott, Clifford Asness, "Surprise: Higher Dividends = Higher Earnings Growth," *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.

[54] In the sustainable growth formula, this is commonly referred to as the product of "b x r", where "b" is the retention ratio, or the portion of net income not paid in dividends, and "r" is the expected ROE on the portion of net income that is retained within the company as a means for future growth.

a result of new equity issuances, or externally-generated funds.[55] Accounting for both internally-generated and externally-generated funds is recognized as a common approach to calculating the sustainable growth rate, and by only considering the funds from internally-generated sources, Dr. Woolridge's sustainable growth rate calculation understates the prospective "sustainable" growth rates that he considers and that set the lower end of his growth rate range.

Q. How would reasonable changes to the dividend yield and growth rates used in Dr. Woolridge's DCF analysis affect the results of his DCF model?

A. Exhibit PAC/1408, which is summarized in FIGURE 10, compares Dr. Woolridge's as-filed DCF results for Panel A and Panel B to the results of those same relationship between earnings growth rates and payout ratios. Therefore, I disagree with Dr. Woolridge's use of retention growth rates in the DCF model.

Q. How would reasonable changes to the dividend yield and growth rates used in Dr. Woolridge's DCF analysis affect the results of his DCF model?

A. Exhibit PAC/1408, which is summarized in FIGURE 10, compares Dr. Woolridge's as-filed DCF results for Panel A and Panel B to the results of those same analyses when the dividend yield calculation is updated to reflect the median 30-day average dividend yield for the proxy group companies, and the range set by the mean and median of Dr. Woolridge's analysts' projected EPS growth rates. As shown, the cost

[55] In the sustainable growth formula, this is shown as the product of "s" x "v", where "s" represents the growth in shares outstanding and "v" is that portion of the market-to-book (M/B) ratio that exceeds unity.

of equity results for Panel A range from 9.15 percent to 9.46 percent, while the results for Panel B range from 9.73 percent to 9.98 percent.

FIGURE 10: CORRECTIONS TO DR. WOOLRIDGE'S DCF ANALYSIS.

	Panel A Dr. Woolridge Proxy Group	Panel B Bulkley Proxy Group
As Filed	9.10%	9.55%
As Updated		
30-day Average (median) Dividend Yield	9.23%	9.73%
Low EPS Growth Rate	9.15%	9.78%
High EPS Growth Rate	9.46%	9.98%

C. Dr. Woolridge's Application of the CAPM

Q. Please summarize Dr. Woolridge's CAPM analyses.

A. For the risk-free rate, Dr. Woolridge notes that at the time he prepared his CAPM analysis, the yield on the 30-year Treasury bond was higher than it had been over the period from 2010-2022, which was 1.3 percent to 4.75 percent.[56] In addition, he cites to *Kroll* (formerly Duff & Phelps) recommending the use of a normalized risk-free rate of 3.50 percent or the spot yield on the 20-year Treasury bond, if that is higher than their estimate of the normalized risk-free rate.[57] Based on this data, and the inverted yield curve shown in Figure 5 of his testimony, Dr. Woolridge elects to rely on a risk-free rate of 3.60 percent in his CAPM.[58] For beta, Dr. Woolridge relies on the median beta coefficients reported by *Value Line* for his proxy group companies.[59]

[56] Cal Advocates-05, Woolridge/53.
[57] *Id.*
[58] *Id.*
[59] Exhibit JRW-6, pp. 1 and 3.

For the market risk premium (MRP), Dr. Woolridge considers historical risk premia, *ex-ante* market risk premium studies, surveys of financial professionals, and expected return models and market data, and then selects a MRP of 6.00 percent.[60] Based on these assumptions, Dr. Woolridge's CAPM result is 8.70 percent for both for Panel A and for Panel B.[61]

Q. Do you agree with Dr. Woolridge's estimate of the risk-free rate?

A. No. Dr. Woolridge relies on the yield curve shown in Figure 5 of his direct testimony. The data used to develop this curve is based on the yields at various tenors of Treasury bonds on a single day. The use of spot data in the cost of equity estimation models can result in significant differences in the cost of equity estimates that are driven entirely on the trading data of a particular day. For example, Dr. Woolridge filed direct testimony in the Central Maine Power (CMP) rate case on December 5, 2022 (CMP 2022 Rate Case), and in that case, he also considered the spot 20-year Treasury bond yield and relied on a risk-free rate of 4.00 percent. In other words, when Dr. Woolridge filed his testimony in this PacifiCorp proceeding, which was just 17 days after his CMP testimony, the CAPM.[62] For beta, Dr. Woolridge relies on the median beta coefficients reported by *Value Line* for his proxy group companies.[63] For the market risk premium (MRP), Dr. Woolridge considers historical risk premia, *ex-ante* market risk premium studies, surveys of financial professionals, and expected return models and market data, and then selects a MRP of

[60] Cal Advocayes-05, Woolridge/64.
[61] Exhibit JRW-6, p. 1.
[62] *Id.*
[63] Exhibit JRW-6, pp. 1 and 3.

6.00 percent.[64] Based on these assumptions, Dr. Woolridge's CAPM result is 8.70 percent for both for Panel A and for Panel B.[65]

Q. How would the result of Dr. Woolridge's CAPM change if he had relied on a risk-free rate that was consistent with the risk-free rate used in the CMP 2022 Rate Case?

A. As shown in PAC/1409, the results of his CAPM analyses would have increased by 40 basis points. The cost of equity estimate for Panels A and Panel B would be 9.10 percent instead of 8.70 percent.

Q. What is your response to the MRP data that Dr. Woolridge has reviewed?

A. Many of the surveys and studies relied upon by Dr. Woolridge and summarized in Exhibit JRW-6, page 6 were published based on different market conditions. Dr. Woolridge recognizes that that many of these studies were published prior to the financial crisis that began in 2009 and some studies were published in the early 2000s. Therefore, these studies do not take into consideration current market information and should be not be considered in the estimation of the MRP. Further, while Dr. Woolridge suggests that he has removed the oldest studies in the summary provided in Exhibit JRW-6, page 6, eleven of the eighteen studies (61 percent) he considers were published prior to 2022 and therefore cannot consider the current market conditions in the estimate of the MRP. In terms of the remaining seven studies, it is unclear whether or not the data includes 2022; however, considering that interest rates began increasing in March 2022 and the extreme increases in inflation

[64] Cal Advocayes-05, Woolridge/64.
[65] Exhibit JRW-6, p. 1.

also began early in 2022 and have been evolving rapidly over the year, it is unlikely that the full effect of Federal Reserve's monetary policy changes throughout 2022 and current inflation have been considered in these studies.

Q. Are there drawbacks to the use of survey data?

A. Yes. The drawbacks include biased responses and biased sampling as noted by Brigham, Shone and Vinson (1985).[66] Further, Damodaran noted that the survey results received were affected by how the questions were asked in the survey and on recent stock price movements.[67] Finally, Graham and Harvey (2018) noted that the response rate in their CFO survey was only 5 percent to 8 percent.[68]

Q. Have other regulators endorsed the calculation of the forward-looking market risk premium that is similar to the methodology you relied on?

A. Yes. The FERC, the Illinois Commerce Commission (ICC), the Pennsylvania Public Utility Commission (Pennsylvania PUC), and the Maine Public Utilities Commission (Maine PUC) have also relied on the Constant Growth DCF model to estimate the market return. In Opinion No. 569-A, the FERC continued to support the use of the Constant Growth DCF model to calculate the market return for the CAPM noting:

> [w]e also continue to find that the CAPM should use a one-step DCF for its risk premium. This is because the rationale for using a two-step DCF methodology for a specific group of utilities does not apply when conducting a DCF study of the dividend-paying companies in the S&P 500, as the Commission found in Opinion Nos. 531-B and 569.172 A long-term component is unnecessary because of the regular updates to the S&P 500, which allows it to

[66] Brigham, Eugene F., Shome, Dilip K., and Vinson, Steve R. 'The Risk Premium Approach to Measuring Utility's Cost of Equity." Financial Management, vol. 14, no 1, 1985, p.33
[67] Damodaran, Aswath. "Equity Risk Premiums (ERP): Determinants, Estimation, and Implications.
[68] Graham, John R., and Harvey, Campbell R. "The Equity Risk Premium in 2018." SSRN Electronic Journal, 2018. Crossref, ssrn.com/abstract= 3151162.

> continue to grow at a short-term growth rate and because S&P 500 companies include stocks that are both new and mature, the latter of which have a moderating effect on the short-term growth rates.[69]

Finally, as shown in FIGURE 11, the Staff of the ICC, the Bureau of Investigation and Enforcement (I&E) of the Pennsylvania PUC, and the Staff of the Maine PUC have also supported the forward-looking market risk premium. In each case, the market return was estimated using the Constant Growth DCF model and analysts' earnings growth rate projections, which resulted in a range of market return estimates from 11.33 percent to 13.94 percent. Furthermore, as also shown in FIGURE 11, the ICC, the Pennsylvania PUC and the Maine PUC relied on the estimated CAPM results by the Staff of the ICC, the I&E of the Pennsylvania PUC, and the Staff of the Maine PUC, respectively, to determine the authorized ROE in each of the proceedings and did not dispute the use of the Constant Growth DCF model to calculate the market return.

[69] FERC Docket No. EL-14-12-004, Opinion No. 569-A (May 21, 2020), at para. 85.

FIGURE 11: REGULATORY COMMISSIONS – 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%)[70]	9/8/21	Yes[71]
I&E	Aqua Pennsylvania, Inc.	Docket No. R-2021-3027385	CGDCF of the Value Line Universe and S&P 500 (12.14%)[72]	5/12/22	Yes, the PPUC placed primary weight on I&E's CAPM[73]
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%)[74]	4/1/20	Yes[75]

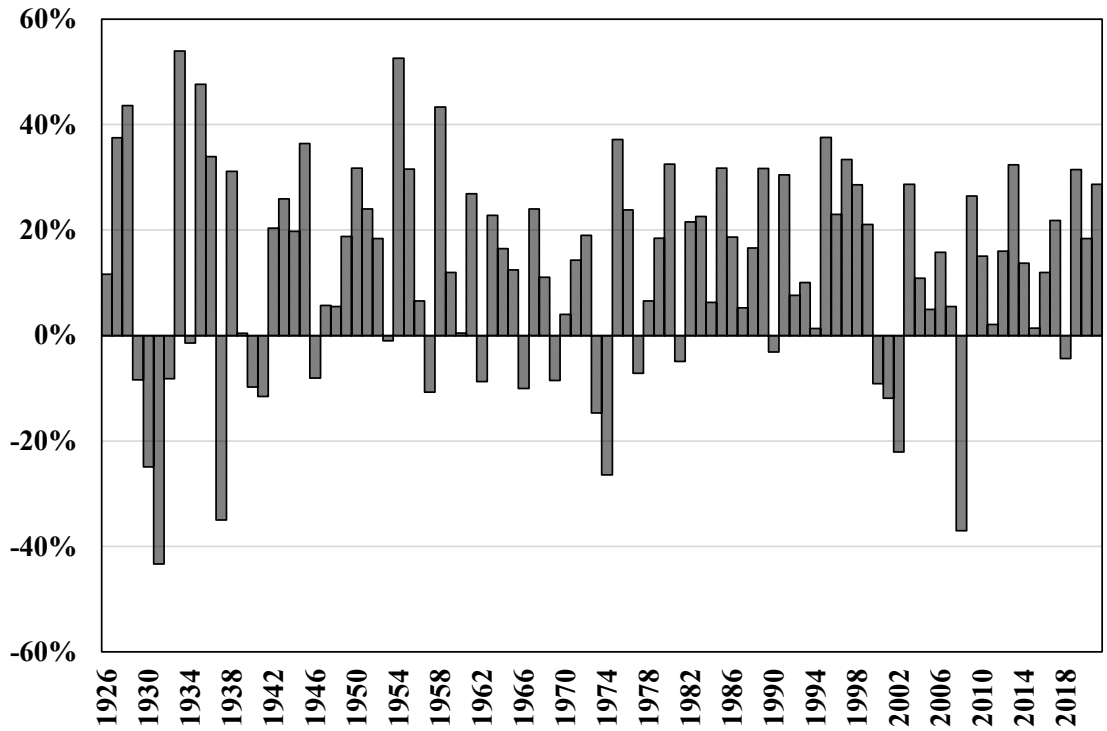
Q. Please respond to Dr. Woolridge's assertion that the compound annual return on the U.S. stock market is approximately 10 percent from 1928-2021.

A. Dr. Woolridge's suggestion fails to consider that annual returns are independent observations, unrelated to the prior year return. Therefore, the compound annual return over the historical time period does not recognize the wide range of returns over that period. As shown in Figure 9 in my direct testimony, and provided again for reference in FIGURE 12, over that historical time period, the annual return on the market has been in excess of 12.63 percent (*i.e.*, the market return relied on in my

[70] North Shore Gas Company, Proposed increase in rates for gas distribution service (tariffs filed October 15, 2020, ICC Docket No. 20-0810, Order at 71 (Sept. 8, 2021).
[71] *Id.,* at 86-87.
[72] *Penn. Pub. Util. Commission, et al. v. Aqua Pennsylvania, Inc.,* Pennsylvania PUC Docket No. 2021-3027385, Opinion and Order at 147 (Public Meeting held May 12, 2022).
[73] *Id.,* at 178.
[74] Northern Utilities, Inc. d/b/a Unitil Request for Approval of Rate Change (35-A M.R.S. §307), Maine PUC Docket No. 2019-00092, Bench Analysis at 21 (Oct. 29, 2019).
[75] *Id.,* at 58.

updated cost of equity estimation analyses based on data through December 31, 2022) approximately 52 percent of the years. This data demonstrates that an actual return in the range that I have estimated is not uncommon. Further, the Commission's decision in the large energy utilities case generally supports the market return estimate used in my analysis. In that case, the Commission noted that all parties recognized that historical market returns and economically logical projections fall within the range of 12 percent.[76]

FIGURE 12: HISTORICAL EQUITY MARKET RETURNS 1926-2021[77]



[76] Application of Pacific Gas and Electric Company for Authority to Establish its Authorized Cost of Capital for Utility Operations for 2023 and to Reset the Cost of Capital Adjustment Mechanism, Decision 22-12-031, December 15, 2022.
[77] *Kroll* Stocks, Bonds, Bills, and Inflation. 2022.

Q. How would the results of Dr. Woolridge's CAPM change if he had relied on the same risk-free rate that he uses in the CMP 2022 Rate Case, as well as the MRP that would result from that same risk-free rate and the forward-looking estimate of the market return as in your updated CAPM analysis reflecting data as of December 31, 2022?

A. As shown in PAC/1409, which is also summarized in FIGURE 13, the cost of equity estimates for Dr. Woolridge's CAPM analysis for both Panel A and Panel B would be 11.34 percent instead of the 8.70 percent that Dr. Woolridge estimates.

FIGURE 13: ADJUSTED RESULTS OF DR. WOOLRIDGE'S CAPM ANALYSES

	Panel A	Panel B
Risk Free Rate	4.00%	4.00%
Beta	0.85	0.85
Market Return	12.63%	12.63%
Market Risk Premium[78]	8.63%	8.63%
CAPM Cost of Equity	11.34%	11.34%

Q. You have discussed adjustments that should be made to both Dr. Woolridge's DCF and CAPM analyses. Overall, how would Dr. Woolridge's ROE estimate change if those adjusted results were relied upon?

A. As shown in PAC/1410, which is also summarized in FIGURE 14, the midpoint of Dr. Woolridge's adjusted DCF and CAPM results for Panel A range from 10.25

[78] Market return – Risk free rate = MRP.

percent to 10.40 percent, while the midpoint of his adjusted DCF and CAPM results for Panel B range from 10.56 percent to 10.66 percent.

FIGURE 14: SUMMARY OF UPDATED COST OF EQUITY RESULTS

	Range of Results	
	Low	**High**
Panel A		
DCF	9.15%	9.46%
CAPM	11.34%	11.34%
Midpoint	10.25%	10.40%
Panel B		
DCF	9.78%	9.98%
CAPM	11.34%	11.34%
Midpoint	10.56%	10.66%

Note, I have assumed the midpoint of Dr. Woolridge's adjusted DCF and adjusted CAPM analyses on the basis that he relied on the midpoint of those analyses in the CMP 2022 Rate Case. Specifically, in the CMP 2022 Rate Case, Dr. Woolridge originally relied on the midpoint of his DCF (*i.e.*, 8.90 percent) and CAPM (*i.e.*, 9.10 percent) results for purposes of his recommended ROE (*i.e.*, a midpoint of 9.00 percent). However, after it was pointed out that there was an error in his DCF analysis, Dr. Woolridge subsequently filed an update to his testimony that resulted in an increase in his DCF result to 9.10 percent. Even though the results of his corrected DCF and originally filed CAPM were both higher (*i.e.*, 9.10 percent) than his original ROE recommendation (*i.e.*, 9.00 percent), Dr. Woolridge did not adjust his ROE recommendation. While Dr. Woolridge did not adjust his ROE recommendation upon his correction, it is reasonable that the midpoint of the results

would continue to be utilized, and as such, I have reflected the midpoint of Dr. Woolridge's adjusted DCF and adjusted CAPM results in this proceeding.

D. Dr. Woolridge's Criticisms of the ECAPM model

Q. Please summarize Dr. Woolridge's critique of the use of the ECAPM analysis.

A. Dr. Woolridge's criticisms of the ECAPM are that the model has not been validated in any academic journals, and that he is not aware of any tests of the CAPM that use adjusted betas.

Q. Is Dr. Woolridge correct that there is no academic support for the use of the ECAPM?

A. No. A study by Chretien and Coggins (2011) evaluated the CAPM and its ability to estimate the risk premium for the utility industry in particular subgroups of utilities.[79] Their study considered the CAPM, the Fama-French three-factor model and a model similar to the ECAPM used in my Direct Testimony. In the study, the ECAPM relied on adjusted betas, which were adjusted using the same approach applied by *Value Line*. The Chretien and Coggins (2011) study showed that the ECAPM significantly outperformed the traditional CAPM model at predicting the observed risk premium for the various utility subgroups.[80]

Q. Is Dr. Woolridge correct that there are no tests of the CAPM that rely on adjusted betas?

A. No. The Chretien and Coggins (2011) study relied on adjusted betas.

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[79] Chrétien, Stéphane, and Frank Coggins. "Cost Of Equity For Energy Utilities: Beyond The CAPM." *Energy Studies Review*, Vol. 18, No. 2, 2011.
[80] *Id*.

Q. Have any regulatory commissions explicitly relied on the ECAPM?

A. Yes. Both the New York Public Service Commission (NYPSC) and the Montana Public Service Commission (Montana PSC) have accepted the ECAPM analysis with the use of adjusted beta coefficients in establishing the authorized ROE for regulated utilities. Specifically, the NYPSC has given equal weight to the results of the CAPM and ECAPM (which it refers to as the "Zero Beta" CAPM) analyses,[81] while the Montana PSC has expressed a preference for the ECAPM analysis.[82]

Q. Do you agree with Dr. Woolridge that it is not appropriate to use adjusted betas in the ECAPM?

A. No, I do not. The purpose of adjusting beta is to account for the tendency of beta to trend back over time to the market beta of 1.00. The betas published by *Value Line* include this adjustment, which was first proposed by Marshall E. Blume in 1975.[83] The use of adjusted betas in the CAPM is important because if beta trends towards 1.00, as Blume noted, then the adjusted beta will be more reflective of the beta that can be expected over the near-term. This is equally important in the specification of the CAPM in this case since the cost of equity for PacifiCorp is being estimated for the period during which the Company's rates will be in effect.

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

[81] *See, e.g.*, Corning Natural Gas, Case No. 20-G-0101, Order, May 19, 2021 at 44-46.
[82] In the Matter of the Joint Application for Approval to Change and Establish Natural Gas Delivery Service Rates for Energy West Montana, Inc. and Cut Bank Gas Company, Montana PSC Docket No. D2017.9.80, Order No. 7575c at 46 (Sept. 26, 2018).
[83] Blume, Marshall E. "Betas And Their Regression Tendencies." *The Journal of Finance*, vol. 30, no. 3, 1975, pp. 785–795.

relationship is flatter than what is estimated by the CAPM. While beta is not observable and must be estimated, the theory behind the ECAPM is that even if the true value of a stock's beta were observable, the CAPM would understate the return for stocks with betas less than 1.00 and overstate the results for stocks with betas greater than 1.00.

In other words, the adjusted beta provides a better approximation of the expected beta over the near-term, while the ECAPM is adjusting for the fact that the actual risk-return relationship observed is flatter than is predicted by the CAPM – meaning that these adjustments are not duplicative.

Q. What are your conclusions regarding Dr. Woolridge's criticisms of the ECAPM?

A. Dr. Woolridge's concerns regarding the ECAPM are unfounded, as there is both academic and regulatory commission support for the use of the ECAPM, and the adjustment to beta in the CAPM is different from the adjustment applied in the ECAPM. Therefore, I continue to believe that the ECAPM is a reasonable model for the Commission to consider in determining the ROE for PacifiCorp in this proceeding.

E. Dr. Woolridge's Criticisms of the Bond Yield Risk Premium Analysis

Q. Please summarize Dr. Woolridge's criticisms of the use of the Bond Yield Plus Risk Premium analysis.

A. Dr. Woolridge states that the Bond Yield Plus Risk Premium approach is a gauge of commission behavior and not investor behavior, and that the methodology produces

an inflated measure of the risk premium because it uses historic authorized ROEs and Treasury yields but is applied to projected Treasury yields.[84]

Q. Do you agree with Dr. Woolridge that this methodology is not valid because it does not measure investor behavior?

A. No, I do not. First, it is important to recognize the inconsistency in Dr. Woolridge's consideration of previously authorized ROEs. On the one hand, Dr. Woolridge suggests that my Bond Yield Risk Premium analysis cannot be relied upon because the authorized ROEs are commission behavior and not investor behavior. On the other hand, he devotes an entire section of his testimony to an analysis of this same data, authorized ROEs and 30-year Treasury bond yields, which I used in the Bond Yield Risk Premium analysis.[85] In fact, Dr. Woolridge relies on this section of his testimony as support for his recommended ROE. Therefore, while Dr. Woolridge suggests that my Bond Yield Risk Premium analysis cannot be considered because it reflects other factors such as capital structure, credit ratings, and other risk measures used by commissions to determine appropriate ROEs, he disregards these concerns when he relies on this data to support his ROE recommendation.[86] Further, Dr. Woolridge's analysis relies on a much shorter time-period of authorized ROE data, and fails to consider the differences in capital market conditions between the time period he has reviewed (2010-2021) and current market conditions. Therefore, Dr.

[84] Direct Testimony of J. Randall Woolridge, Ph.D., at 89.
[85] Direct Testimony of J. Randall Woolridge, Ph.D., at 16-22.
[86] Cal Advocates-05, Woolridge/22.

Woolridge's criticism of my Bond Yield Risk Premium analysis is inconsistent with his own reliance on interest rate and authorized ROE data.

Q. Why is it important to consider the relationship between authorized ROEs and Treasury bond yields?

A. It is unquestionable that both credit rating agencies and investors consider the authorized ROE data in their determination of the valuation of utility stocks. Therefore, the relationship between recently authorized ROEs and the prevailing interest rates at the time that the ROE was authorized is reasonable to consider when setting the ROE in the context of a rate proceeding. To the extent that the returns in a jurisdiction are lower than the returns that have been authorized more broadly, credit rating agencies will consider this in the overall risk assessment of the regulatory jurisdiction in which the company operates. As I discussed previously, both credit rating agencies and investors have responded negatively to authorized ROEs deemed to be low. It is important to consider credit ratings because they affect the overall cost of borrowing, and they act as a signal to equity investors about the risk of investing in the equity of a company. Therefore, lower credit ratings can affect both the cost of debt and equity.

Q. Dr. Woolridge also suggests that the Bond Yield Risk Premium analysis cannot be relied upon because it relies on projected Treasury bond yields that are always expected to increase. Do you agree with this criticism?

A. No, I do not. Dr. Woolridge's criticism mischaracterizes the analysis that I developed in my direct testimony. As shown on PAC/207 in my direct testimony and in PAC/1407 in my rebuttal testimony, I have relied on both a current Treasury bond

yield (*i.e.*, the current 30-day average of the 30-year Treasury bond yield), as well as two projections from the *Blue Chip Financial Forecast* in the Bond Yield Risk Premium analysis. Thus, Dr. Woolridge's suggestion that I have only relied on projected Treasury bond yields is incorrect.

Q. Please summarize your evaluation of Dr. Woolridge's analyses and recommended ROE.

A. There are a number of inconsistencies between the methodologies on which Dr. Woolridge relies for his ROE recommendation and his criticisms of my analyses. Accordingly, as discussed herein, I do not agree with Dr. Woolridge's cost of equity analyses, nor his criticisms of my analyses. Specifically:

- While Dr. Woolridge criticizes the growth rates used in my DCF analysis, in developing his own DCF analysis, Dr. Woolridge effectively abandons all growth rate estimates other than Wall Street analysts' EPS growth rates. Therefore, the growth rates that he is relying on are consistent with those used in my analysis. The difference between our analyses however, is that I rely on the projected EPS growth rates for each company, as reported by the consensus forecast publications whereas Dr. Woolridge reviews the forecasts and simply selects a growth rate based on his own judgement. Exercising his judgement at this point in the analysis biases the results of his DCF analysis.

- Dr. Woolridge's use of the cost of equity estimation methodologies to support his recommended ROE appears to be results-oriented. For example:
    - Rather than relying on equity analysts' actual current EPS growth rate estimates, Dr. Woolridge simply selects a growth rate estimate that produces a cost of equity that is within the narrow range he has developed using the DCF model for the past decade of 8.15 percent to 9.15 percent, regardless of the overall market conditions.

    - Dr. Woolridge claims that he relies primarily on the DCF model because the CAPM provides a less reliable estimate of the cost of equity for a public utility. However, in the selection of his final recommended ROE, he selects 9.00 percent, which is lower than any of the DCF results he develops and can only be based on his reliance of the CAPM model as well. Further, in the Central Maine Power rate case in which Dr. Woolridge also filed testimony filed in

December 2022, he relied on the CAPM result, which was higher than his DCF result to support a recommendation of 9.00 percent.

- Finally, while Dr. Woolridge provides numerous pages of testimony and multiple analyses devoted to authorized ROE data and Treasury bond yields, he suggests that my Bond Yield Risk Premium approach, which develops the relationship between these two indicators, is unreliable. However, the analyses presented in my direct and rebuttal testimonies demonstrate both that there is a relationship between authorized ROEs and Treasury bond yields. Further, my Bond Yield Risk Premium analysis demonstrates that the cost of equity is increasing, and that Dr. Woolridge's recommended ROE of 9.00 percent is below the range of reasonable returns in current market conditions.

Q. Does this conclude your rebuttal testimony?

A. Yes.

Application No. 22-05-006
Exhibit PAC/1401
Witness: Ann E. Bulkley

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

PACIFICORP

Exhibit Accompanying Rebuttal Testimony of

Ann E. Bulkley

Summary of ROE Analyses Results

February 2023

Constant Growth DCF			
	Minimum Gwth Rate	Average Gwth Rate	Maximum Gwth Rate
Mean Results:			
30-Day Avg. Stock Price	8.08%	9.38%	10.41%
90-Day Avg. Stock Price	8.17%	9.47%	10.50%
180-Day Avg. Stock Price	8.09%	9.39%	10.42%
Average	8.11%	9.41%	10.44%
Median Results:			
30-Day Avg. Stock Price	8.03%	9.33%	10.27%
90-Day Avg. Stock Price	8.00%	9.39%	10.37%
180-Day Avg. Stock Price	7.91%	9.32%	10.19%
Average	7.98%	9.35%	10.28%

CAPM / ECAPM / Bond Yield Risk Premium			
	Current 30-Day Avg 30-Year Treasury Yield	Near-Term Projected 30-Year Treasury Yield	Longer-Term Projected 30-Year Treasury Yield
CAPM:			
Current *Value Line* Beta	11.48%	11.50%	11.50%
Current Bloomberg Beta	10.90%	10.93%	10.94%
Long-term Avg. *Value Line* Beta	10.42%	10.46%	10.47%
ECAPM:			
Current *Value Line* Beta	11.77%	11.78%	11.79%
Current Bloomberg Beta	11.33%	11.36%	11.36%
Long-term Avg. *Value Line* Beta	10.97%	11.01%	11.01%
Bond Yield Risk Premium:			
US Vertically-Integrated Elec Utils	10.24%	10.31%	10.32%
CA Vertically-Integrated Elec Utils	10.66%	10.71%	10.72%

Application No. 22-05-006
Exhibit PAC/1402
Witness: Ann E. Bulkley

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

PACIFICORP

Exhibit Accompanying Rebuttal Testimony of

Ann E. Bulkley

Constant Growth DCF Model

February 2023

Exhibit 1402/CONSTANT GROWTH DCF MODEL
PacifiCorp Proxy Group

Stock Price Averaging Convention: 30 days

		1	2	3	4	5	6	7	8	9	10	11
Company		Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	VL Earnings Growth	Yahoo! Finance (IBES)	Zacks Earnings Growth	Average Growth Rate	Min Gwth Rate	Mean Gwth Rate	Max Gwth Rate
ALLETE, Inc.	ALE	$2.60	$65.18	3.99%	4.15%	6.00%	8.70%	9.30%	8.00%	10.11%	12.15%	13.47%
Alliant Energy Corporation	LNT	$1.71	$55.33	3.09%	3.18%	6.00%	5.53%	5.90%	5.81%	8.71%	8.99%	9.18%
Ameren Corporation	AEE	$2.36	$87.99	2.68%	2.77%	6.50%	5.91%	6.90%	6.44%	8.67%	9.21%	9.67%
American Electric Power Company, Inc.	AEP	$3.32	$95.32	3.48%	3.59%	6.50%	6.18%	6.10%	6.26%	9.69%	9.85%	10.10%
Avista Corporation	AVA	$1.76	$41.98	4.19%	4.29%	3.00%	5.20%	5.20%	4.47%	7.26%	8.75%	9.50%
CMS Energy Corporation	CMS	$1.84	$61.86	2.97%	3.09%	6.50%	8.26%	8.20%	7.65%	9.57%	10.74%	11.36%
Duke Energy Corporation	DUK	$4.02	$100.46	4.00%	4.11%	5.00%	6.15%	5.50%	5.55%	9.10%	9.66%	10.27%
Entergy Corporation	ETR	$4.28	$114.57	3.74%	3.84%	4.00%	6.19%	6.80%	5.66%	7.81%	9.50%	10.66%
Evergy, Inc.	EVRG	$2.45	$60.86	4.03%	4.13%	7.50%	2.43%	5.30%	5.08%	6.50%	9.20%	11.68%
IDACORP, Inc.	IDA	$3.16	$107.53	2.94%	2.99%	4.00%	3.40%	3.40%	3.60%	6.39%	6.59%	7.00%
NextEra Energy, Inc.	NEE	$1.70	$84.45	2.01%	2.12%	10.50%	10.36%	9.70%	10.19%	11.81%	12.30%	12.62%
NorthWestern Corporation	NWE	$2.52	$57.22	4.40%	4.47%	2.50%	4.50%	1.70%	2.90%	6.14%	7.37%	9.00%
OGE Energy Corporation	OGE	$1.66	$39.74	4.17%	4.26%	6.50%	1.90%	5.00%	4.47%	6.11%	8.73%	10.80%
Otter Tail Corporation	OTTR	$1.65	$58.28	2.83%	2.93%	4.50%	9.00%	n/a	6.75%	7.39%	9.68%	11.96%
Portland General Electric Company	POR	$1.81	$48.11	3.76%	3.83%	4.50%	1.39%	5.30%	3.73%	5.18%	7.56%	9.16%
Southern Company	SO	$2.72	$68.76	3.96%	4.07%	6.50%	6.68%	4.00%	5.73%	8.03%	9.80%	10.77%
Xcel Energy Inc.	XEL	$1.95	$69.40	2.81%	2.90%	6.00%	6.80%	6.50%	6.43%	8.89%	9.33%	9.71%
Mean										8.08%	9.38%	10.41%
Median										8.03%	9.33%	10.27%

Notes:
[1] Bloomberg Professional as of December 31, 2022.
[2] Bloomberg Professional 30-day average as of December 31, 2022.
[3] Equals [1]/[2].
[4] Equals [3] x (1+0.5 x[8]).
[5] Value Line.
[6] Yahoo! Finance.
[7] Zacks.
[8] Equals average of [5], [6], [7].
[9] Equals [3] x (1+0.5x(min([5], [6]. [7]))+(min([5], [6]. [7]).
[10] Equals [4] + [8].
[11] Equals [3] x (1+0.5x(max([5], [6]. [7]))+(max([5], [6]. [7]).

Exhibit 1402/CONSTANT GROWTH DCF MODEL
PacifiCorp Proxy Group

Stock Price Averaging Convention: 90 days

Company		1 Annualized Dividend	2 Stock Price	3 Dividend Yield	4 Expected Dividend	5 VL Earnings Growth	6 Yahoo! Finance	7 Zacks Earnings	8 Average Growth	9 Min Gwth Rate	10 Mean Gwth Rate	11 Max Gwth Rate
ALLETE, Inc.	ALE	$2.60	$58.55	4.44%	4.62%	6.00%	8.70%	9.30%	8.00%	10.57%	12.62%	13.95%
Alliant Energy Corporation	LNT	$1.71	$55.33	3.09%	3.18%	6.00%	5.53%	5.90%	5.81%	8.71%	8.99%	9.18%
Ameren Corporation	AEE	$2.36	$85.80	2.75%	2.84%	6.50%	5.91%	6.90%	6.44%	8.74%	9.28%	9.75%
American Electric Power Company, Inc.	AEP	$3.32	$93.15	3.56%	3.68%	6.50%	6.18%	6.10%	6.26%	9.77%	9.94%	10.18%
Avista Corporation	AVA	$1.76	$39.93	4.41%	4.51%	3.00%	5.20%	5.20%	4.47%	7.47%	8.97%	9.72%
CMS Energy Corporation	CMS	$1.84	$61.12	3.01%	3.13%	6.50%	8.26%	8.20%	7.65%	9.61%	10.78%	11.39%
Duke Energy Corporation	DUK	$4.02	$98.28	4.09%	4.20%	5.00%	6.15%	5.50%	5.55%	9.19%	9.75%	10.37%
Entergy Corporation	ETR	$4.28	$110.52	3.87%	3.98%	4.00%	6.19%	6.80%	5.66%	7.95%	9.65%	10.80%
Evergy, Inc.	EVRG	$2.45	$61.82	3.96%	4.06%	7.50%	2.43%	5.30%	5.08%	6.44%	9.14%	11.61%
IDACORP, Inc.	IDA	$3.16	$104.70	3.02%	3.07%	4.00%	3.40%	3.40%	3.60%	6.47%	6.67%	7.08%
NextEra Energy, Inc.	NEE	$1.70	$82.00	2.07%	2.18%	10.50%	10.36%	9.70%	10.19%	11.87%	12.37%	12.68%
NorthWestern Corporation	NWE	$2.52	$53.61	4.70%	4.77%	2.50%	4.50%	1.70%	2.90%	6.44%	7.67%	9.31%
OGE Energy Corporation	OGE	$1.66	$38.56	4.30%	4.39%	6.50%	1.90%	5.00%	4.47%	6.24%	8.86%	10.94%
Otter Tail Corporation	OTTR	$1.65	$63.11	2.61%	2.70%	4.50%	9.00%	n/a	6.75%	7.17%	9.45%	11.73%
Portland General Electric Company	POR	$1.81	$47.08	3.84%	3.92%	4.50%	1.39%	5.30%	3.73%	5.26%	7.65%	9.25%
Southern Company	SO	$2.72	$69.33	3.92%	4.04%	6.50%	6.68%	4.00%	5.73%	8.00%	9.76%	10.73%
Xcel Energy Inc.	XEL	$1.95	$68.07	2.86%	2.96%	6.00%	6.80%	6.50%	6.43%	8.95%	9.39%	9.76%
Mean										8.17%	9.47%	10.50%
Median										8.00%	9.39%	10.37%

Notes:
[1] Bloomberg Professional as of December 31, 2022.
[2] Bloomberg Professional 90-day average as of December 31, 2022.
[3] Equals [1]/[2].
[4] Equals [3] x (1+0.5 x[8]).
[5] Value Line.
[6] Yahoo! Finance.
[7] Zacks.
[8] Equals average of [5], [6], [7].
[9] Equals [3] x (1+0.5x(min([5], [6]. [7]))+(min([5], [6]. [7]).
[10] Equals [4] + [8].
[11] Equals [3] x (1+0.5x(max([5], [6]. [7]))+(max([5], [6]. [7]).

Exhibit 1402/CONSTANT GROWTH DCF MODEL
PacifiCorp Proxy Group

Stock Price Averaging Convention: 180 days

Company		1 Annualized Dividend	2 Stock Price	3 Dividend Yield	4 Expected Dividend	5 VL Earnings Growth	6 Yahoo! Finance	7 Zacks Earnings	8 Average Growth	9 Min Gwth Rate	10 Mean Gwth Rate	11 Max Gwth Rate
ALLETE, Inc.	ALE	$2.60	$58.88	4.42%	4.59%	6.00%	8.70%	9.30%	8.00%	10.55%	12.59%	13.92%
Alliant Energy Corporation	LNT	$1.71	$57.17	2.99%	3.08%	6.00%	5.53%	5.90%	5.81%	8.60%	8.89%	9.08%
Ameren Corporation	AEE	$2.36	$87.98	2.68%	2.77%	6.50%	5.91%	6.90%	6.44%	8.67%	9.21%	9.68%
American Electric Power Company, Inc.	AEP	$3.32	$94.92	3.50%	3.61%	6.50%	6.18%	6.10%	6.26%	9.70%	9.87%	10.11%
Avista Corporation	AVA	$1.76	$40.77	4.32%	4.41%	3.00%	5.20%	5.20%	4.47%	7.38%	8.88%	9.63%
CMS Energy Corporation	CMS	$1.84	$64.15	2.87%	2.98%	6.50%	8.26%	8.20%	7.65%	9.46%	10.63%	11.25%
Duke Energy Corporation	DUK	$4.02	$102.51	3.92%	4.03%	5.00%	6.15%	5.50%	5.55%	9.02%	9.58%	10.19%
Entergy Corporation	ETR	$4.28	$112.16	3.82%	3.92%	4.00%	6.19%	6.80%	5.66%	7.89%	9.59%	10.75%
Evergy, Inc.	EVRG	$2.45	$63.90	3.83%	3.93%	7.50%	2.43%	5.30%	5.08%	6.31%	9.01%	11.48%
IDACORP, Inc.	IDA	$3.16	$105.46	3.00%	3.05%	4.00%	3.40%	3.40%	3.60%	6.45%	6.65%	7.06%
NextEra Energy, Inc.	NEE	$1.70	$79.78	2.13%	2.24%	10.50%	10.36%	9.70%	10.19%	11.93%	12.43%	12.74%
NorthWestern Corporation	NWE	$2.52	$54.99	4.58%	4.65%	2.50%	4.50%	1.70%	2.90%	6.32%	7.55%	9.19%
OGE Energy Corporation	OGE	$1.66	$38.79	4.27%	4.37%	6.50%	1.90%	5.00%	4.47%	6.21%	8.83%	10.91%
Otter Tail Corporation	OTTR	$1.65	$64.73	2.55%	2.63%	4.50%	9.00%	n/a	6.75%	7.11%	9.38%	11.66%
Portland General Electric Company	POR	$1.81	$47.92	3.78%	3.85%	4.50%	1.39%	5.30%	3.73%	5.19%	7.58%	9.18%
Southern Company	SO	$2.72	$70.87	3.84%	3.95%	6.50%	6.68%	4.00%	5.73%	7.91%	9.67%	10.65%
Xcel Energy Inc.	XEL	$1.95	$69.67	2.80%	2.89%	6.00%	6.80%	6.50%	6.43%	8.88%	9.32%	9.69%
Mean										8.09%	9.39%	10.42%
Median										7.91%	9.32%	10.19%

Notes:
[1] Bloomberg Professional as of December 31, 2022.
[2] Bloomberg Professional 180-day average as of December 31, 2022.
[3] Equals [1]/[2].
[4] Equals [3] x (1+0.5 x[8]).
[5] Value Line.
[6] Yahoo! Finance.
[7] Zacks.
[8] Equals average of [5], [6], [7].
[9] Equals [3] x (1+0.5x(min([5], [6]. [7]))+(min([5], [6]. [7]).
[10] Equals [4] + [8].
[11] Equals [3] x (1+0.5x(max([5], [6]. [7]))+(max([5], [6]. [7]).

Application No. 22-05-006
Exhibit PAC/1403
Witness: Ann E. Bulkley

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

PACIFICORP

Exhibit Accompanying Rebuttal Testimony of

Ann E. Bulkley

Capital Asset Pricing Model

February 2023

Exhibit 1403/CAPITAL ASSET PRICING MODEL
PacifiCorp Proxy Group

Current Risk Free Rate / Value Line Beta

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Treasury Bond Yield	Beta	Market Return	Mkt Risk Premium	CAPM	ECAPM
ALLETE, Inc.	ALE	3.71%	0.90	12.63%	8.92%	11.74%	11.96%
Alliant Energy Corporation	LNT	3.71%	0.85	12.63%	8.92%	11.29%	11.63%
Ameren Corporation	AEE	3.71%	0.85	12.63%	8.92%	11.29%	11.63%
American Electric Power Company, Inc.	AEP	3.71%	0.75	12.63%	8.92%	10.40%	10.96%
Avista Corporation	AVA	3.71%	0.90	12.63%	8.92%	11.74%	11.96%
CMS Energy Corporation	CMS	3.71%	0.80	12.63%	8.92%	10.85%	11.29%
Duke Energy Corporation	DUK	3.71%	0.85	12.63%	8.92%	11.29%	11.63%
Entergy Corporation	ETR	3.71%	0.95	12.63%	8.92%	12.19%	12.30%
Evergy, Inc.	EVRG	3.71%	0.90	12.63%	8.92%	11.74%	11.96%
IDACORP, Inc.	IDA	3.71%	0.80	12.63%	8.92%	10.85%	11.29%
NextEra Energy, Inc.	NEE	3.71%	0.90	12.63%	8.92%	11.74%	11.96%
NorthWestern Corporation	NWE	3.71%	0.90	12.63%	8.92%	11.74%	11.96%
OGE Energy Corporation	OGE	3.71%	1.00	12.63%	8.92%	12.63%	12.63%
Otter Tail Corporation	OTTR	3.71%	0.85	12.63%	8.92%	11.29%	11.63%
Portland General Electric Company	POR	3.71%	0.85	12.63%	8.92%	11.29%	11.63%
Southern Company	SO	3.71%	0.95	12.63%	8.92%	12.19%	12.30%
Xcel Energy Inc.	XEL	3.71%	0.80	12.63%	8.92%	10.85%	11.29%
Mean						11.48%	11.77%
Median						11.29%	11.63%

Notes:
[1] Bloomberg Professional; 30-day average as of December 31, 2022.
[2] Value Line.
[3] PAC/1404.
[4] Equals [3]-[1].
[5] Equals [1] + [2] x [4].
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4]).

Exhibit 1403/CAPITAL ASSET PRICING MODEL
PacifiCorp Proxy Group

Near-Term Projected Risk Free Rate / Value Line Beta

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Treasury Bond Yield	Beta	Market Return	Mkt Risk Premium	CAPM	ECAPM
ALLETE, Inc.	ALE	3.88%	0.90	12.63%	8.75%	11.76%	11.98%
Alliant Energy Corporation	LNT	3.88%	0.85	12.63%	8.75%	11.32%	11.65%
Ameren Corporation	AEE	3.88%	0.85	12.63%	8.75%	11.32%	11.65%
American Electric Power Company, Inc.	AEP	3.88%	0.75	12.63%	8.75%	10.44%	10.99%
Avista Corporation	AVA	3.88%	0.90	12.63%	8.75%	11.76%	11.98%
CMS Energy Corporation	CMS	3.88%	0.80	12.63%	8.75%	10.88%	11.32%
Duke Energy Corporation	DUK	3.88%	0.85	12.63%	8.75%	11.32%	11.65%
Entergy Corporation	ETR	3.88%	0.95	12.63%	8.75%	12.20%	12.30%
Evergy, Inc.	EVRG	3.88%	0.90	12.63%	8.75%	11.76%	11.98%
IDACORP, Inc.	IDA	3.88%	0.80	12.63%	8.75%	10.88%	11.32%
NextEra Energy, Inc.	NEE	3.88%	0.90	12.63%	8.75%	11.76%	11.98%
NorthWestern Corporation	NWE	3.88%	0.90	12.63%	8.75%	11.76%	11.98%
OGE Energy Corporation	OGE	3.88%	1.00	12.63%	8.75%	12.63%	12.63%
Otter Tail Corporation	OTTR	3.88%	0.85	12.63%	8.75%	11.32%	11.65%
Portland General Electric Company	POR	3.88%	0.85	12.63%	8.75%	11.32%	11.65%
Southern Company	SO	3.88%	0.95	12.63%	8.75%	12.20%	12.30%
Xcel Energy Inc.	XEL	3.88%	0.80	12.63%	8.75%	10.88%	11.32%
Mean						11.50%	11.78%
Median						11.32%	11.65%

Notes:
[1] Blue Chip Financial Forecasts, Vol. 42, No. 1, January 1, 2023, at 2.
[2] Value Line.
[3] PAC/1404.
[4] Equals [3]-[1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

Exhibit 1403/CAPITAL ASSET PRICING MODEL
PacifiCorp Proxy Group

Long-Term Projected Risk Free Rate / Value Line Beta

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Treasury Bond Yield	Beta	Market Return	Mkt Risk Premium	CAPM	ECAPM
ALLETE, Inc.	ALE	3.90%	0.90	12.63%	8.73%	11.76%	11.98%
Alliant Energy Corporation	LNT	3.90%	0.85	12.63%	8.73%	11.32%	11.65%
Ameren Corporation	AEE	3.90%	0.85	12.63%	8.73%	11.32%	11.65%
American Electric Power Company, Inc.	AEP	3.90%	0.75	12.63%	8.73%	10.45%	11.00%
Avista Corporation	AVA	3.90%	0.90	12.63%	8.73%	11.76%	11.98%
CMS Energy Corporation	CMS	3.90%	0.80	12.63%	8.73%	10.89%	11.32%
Duke Energy Corporation	DUK	3.90%	0.85	12.63%	8.73%	11.32%	11.65%
Entergy Corporation	ETR	3.90%	0.95	12.63%	8.73%	12.20%	12.31%
Evergy, Inc.	EVRG	3.90%	0.90	12.63%	8.73%	11.76%	11.98%
IDACORP, Inc.	IDA	3.90%	0.80	12.63%	8.73%	10.89%	11.32%
NextEra Energy, Inc.	NEE	3.90%	0.90	12.63%	8.73%	11.76%	11.98%
NorthWestern Corporation	NWE	3.90%	0.90	12.63%	8.73%	11.76%	11.98%
OGE Energy Corporation	OGE	3.90%	1.00	12.63%	8.73%	12.63%	12.63%
Otter Tail Corporation	OTTR	3.90%	0.85	12.63%	8.73%	11.32%	11.65%
Portland General Electric Company	POR	3.90%	0.85	12.63%	8.73%	11.32%	11.65%
Southern Company	SO	3.90%	0.95	12.63%	8.73%	12.20%	12.31%
Xcel Energy Inc.	XEL	3.90%	0.80	12.63%	8.73%	10.89%	11.32%
Mean						11.50%	11.79%
Median						11.32%	11.65%

Notes:
[1] Blue Chip Financial Forecasts, Vol. 41, No. 12, December 1, 2022, at 14
[2] Value Line.
[3] PAC/1404.
[4] Equals [3]-[1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

Exhibit 1403/CAPITAL ASSET PRICING MODEL
PacifiCorp Proxy Group

Current Risk Free Rate / Bloomberg Beta

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Treasury Bond Yield	Beta	Market Return	Mkt Risk Premium	CAPM	ECAPM
ALLETE, Inc.	ALE	3.71%	0.84	12.63%	8.92%	11.18%	11.54%
Alliant Energy Corporation	LNT	3.71%	0.80	12.63%	8.92%	10.83%	11.28%
Ameren Corporation	AEE	3.71%	0.76	12.63%	8.92%	10.48%	11.02%
American Electric Power Company, Inc.	AEP	3.71%	0.77	12.63%	8.92%	10.60%	11.11%
Avista Corporation	AVA	3.71%	0.76	12.63%	8.92%	10.51%	11.04%
CMS Energy Corporation	CMS	3.71%	0.76	12.63%	8.92%	10.47%	11.01%
Duke Energy Corporation	DUK	3.71%	0.73	12.63%	8.92%	10.19%	10.80%
Entergy Corporation	ETR	3.71%	0.86	12.63%	8.92%	11.40%	11.71%
Evergy, Inc.	EVRG	3.71%	0.79	12.63%	8.92%	10.74%	11.22%
IDACORP, Inc.	IDA	3.71%	0.81	12.63%	8.92%	10.93%	11.36%
NextEra Energy, Inc.	NEE	3.71%	0.83	12.63%	8.92%	11.10%	11.48%
NorthWestern Corporation	NWE	3.71%	0.87	12.63%	8.92%	11.43%	11.73%
OGE Energy Corporation	OGE	3.71%	0.93	12.63%	8.92%	12.00%	12.16%
Otter Tail Corporation	OTTR	3.71%	0.88	12.63%	8.92%	11.57%	11.83%
Portland General Electric Company	POR	3.71%	0.79	12.63%	8.92%	10.75%	11.22%
Southern Company	SO	3.71%	0.78	12.63%	8.92%	10.68%	11.17%
Xcel Energy Inc.	XEL	3.71%	0.75	12.63%	8.92%	10.40%	10.96%
Mean						10.90%	11.33%
Median						10.75%	11.22%

Notes:
[1] Bloomberg Professional; 30-day average as of December 31, 2022.
[2] Bloomberg Professional.
[3] PAC/1404.
[4] Equals [3]-[1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

Exhibit 1403/CAPITAL ASSET PRICING MODEL
PacifiCorp Proxy Group

Near-Term Projected Risk Free Rate / Bloomberg Beta

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Treasury Bond Yield	Beta	Market Return	Mkt Risk Premium	CAPM	ECAPM
ALLETE, Inc.	ALE	3.88%	0.84	12.63%	8.75%	11.20%	11.56%
Alliant Energy Corporation	LNT	3.88%	0.80	12.63%	8.75%	10.87%	11.31%
Ameren Corporation	AEE	3.88%	0.76	12.63%	8.75%	10.52%	11.05%
American Electric Power Company, Inc.	AEP	3.88%	0.77	12.63%	8.75%	10.64%	11.14%
Avista Corporation	AVA	3.88%	0.76	12.63%	8.75%	10.55%	11.07%
CMS Energy Corporation	CMS	3.88%	0.76	12.63%	8.75%	10.51%	11.04%
Duke Energy Corporation	DUK	3.88%	0.73	12.63%	8.75%	10.24%	10.84%
Entergy Corporation	ETR	3.88%	0.86	12.63%	8.75%	11.43%	11.73%
Evergy, Inc.	EVRG	3.88%	0.79	12.63%	8.75%	10.78%	11.24%
IDACORP, Inc.	IDA	3.88%	0.81	12.63%	8.75%	10.96%	11.38%
NextEra Energy, Inc.	NEE	3.88%	0.83	12.63%	8.75%	11.13%	11.50%
NorthWestern Corporation	NWE	3.88%	0.87	12.63%	8.75%	11.45%	11.75%
OGE Energy Corporation	OGE	3.88%	0.93	12.63%	8.75%	12.01%	12.17%
Otter Tail Corporation	OTTR	3.88%	0.88	12.63%	8.75%	11.59%	11.85%
Portland General Electric Company	POR	3.88%	0.79	12.63%	8.75%	10.78%	11.24%
Southern Company	SO	3.88%	0.78	12.63%	8.75%	10.72%	11.20%
Xcel Energy Inc.	XEL	3.88%	0.75	12.63%	8.75%	10.44%	10.99%
Mean						10.93%	11.36%
Median						10.78%	11.24%

Notes:
[1] Blue Chip Financial Forecasts, Vol. 42, No. 1, January 1, 2023, at 2.
[2] Bloomberg Professional.
[3] PAC/1404.
[4] Equals [3]-[1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

Exhibit 1403/CAPITAL ASSET PRICING MODEL
PacifiCorp Proxy Group

Long-Term Projected Risk Free Rate / Bloomberg Beta

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Treasury Bond Yield	Beta	Market Return	Mkt Risk Premium	CAPM	ECAPM
ALLETE, Inc.	ALE	3.90%	0.84	12.63%	8.73%	11.21%	11.56%
Alliant Energy Corporation	LNT	3.90%	0.80	12.63%	8.73%	10.87%	11.31%
Ameren Corporation	AEE	3.90%	0.76	12.63%	8.73%	10.53%	11.05%
American Electric Power Company, Inc.	AEP	3.90%	0.77	12.63%	8.73%	10.65%	11.14%
Avista Corporation	AVA	3.90%	0.76	12.63%	8.73%	10.56%	11.08%
CMS Energy Corporation	CMS	3.90%	0.76	12.63%	8.73%	10.52%	11.05%
Duke Energy Corporation	DUK	3.90%	0.73	12.63%	8.73%	10.25%	10.84%
Entergy Corporation	ETR	3.90%	0.86	12.63%	8.73%	11.43%	11.73%
Evergy, Inc.	EVRG	3.90%	0.79	12.63%	8.73%	10.78%	11.25%
IDACORP, Inc.	IDA	3.90%	0.81	12.63%	8.73%	10.97%	11.38%
NextEra Energy, Inc.	NEE	3.90%	0.83	12.63%	8.73%	11.13%	11.51%
NorthWestern Corporation	NWE	3.90%	0.87	12.63%	8.73%	11.46%	11.75%
OGE Energy Corporation	OGE	3.90%	0.93	12.63%	8.73%	12.01%	12.17%
Otter Tail Corporation	OTTR	3.90%	0.88	12.63%	8.73%	11.59%	11.85%
Portland General Electric Company	POR	3.90%	0.79	12.63%	8.73%	10.79%	11.25%
Southern Company	SO	3.90%	0.78	12.63%	8.73%	10.72%	11.20%
Xcel Energy Inc.	XEL	3.90%	0.75	12.63%	8.73%	10.45%	10.99%
Mean						10.94%	11.36%
Median						10.79%	11.25%

Notes:
[1] Blue Chip Financial Forecasts, Vol. 41, No. 12, December 1, 2022, at 14.
[2] Bloomberg Professional.
[3] PAC/1404.
[4] Equals [3]-[1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

Exhibit 1403/CAPITAL ASSET PRICING MODEL
PacifiCorp Proxy Group

Current Risk Free Rate / Long-Term Beta

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Treasury Bond Yield	Beta	Market Return	Mkt Risk Premium	CAPM	ECAPM
ALLETE, Inc.	ALE	3.71%	0.79	12.63%	8.92%	10.71%	11.19%
Alliant Energy Corporation	LNT	3.71%	0.75	12.63%	8.92%	10.40%	10.96%
Ameren Corporation	AEE	3.71%	0.73	12.63%	8.92%	10.18%	10.79%
American Electric Power Company, Inc.	AEP	3.71%	0.68	12.63%	8.92%	9.73%	10.46%
Avista Corporation	AVA	3.71%	0.79	12.63%	8.92%	10.71%	11.19%
CMS Energy Corporation	CMS	3.71%	0.69	12.63%	8.92%	9.87%	10.56%
Duke Energy Corporation	DUK	3.71%	0.67	12.63%	8.92%	9.64%	10.39%
Entergy Corporation	ETR	3.71%	0.75	12.63%	8.92%	10.36%	10.93%
Evergy, Inc.	EVRG	3.71%	0.98	12.63%	8.92%	12.41%	12.47%
IDACORP, Inc.	IDA	3.71%	0.73	12.63%	8.92%	10.22%	10.83%
NextEra Energy, Inc.	NEE	3.71%	0.73	12.63%	8.92%	10.22%	10.83%
NorthWestern Corporation	NWE	3.71%	0.75	12.63%	8.92%	10.36%	10.93%
OGE Energy Corporation	OGE	3.71%	0.93	12.63%	8.92%	12.01%	12.16%
Otter Tail Corporation	OTTR	3.71%	0.85	12.63%	8.92%	11.29%	11.63%
Portland General Electric Company	POR	3.71%	0.74	12.63%	8.92%	10.30%	10.89%
Southern Company	SO	3.71%	0.63	12.63%	8.92%	9.31%	10.14%
Xcel Energy Inc.	XEL	3.71%	0.64	12.63%	8.92%	9.41%	10.22%
Mean						10.42%	10.97%
Median						10.30%	10.89%

Notes:
[1] Bloomberg Professional; 30-day average as of December 31, 2022.
[2] PAC/1405.
[3] PAC/1404.
[4] Equals [3]-[1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

Exhibit 1403/CAPITAL ASSET PRICING MODEL
PacifiCorp Proxy Group

Near-Term Projected Risk Free Rate / Long-Term Beta

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Treasury Bond Yield	Beta	Market Return	Mkt Risk Premium	CAPM	ECAPM
ALLETE, Inc.	ALE	3.88%	0.79	12.63%	8.75%	10.75%	11.22%
Alliant Energy Corporation	LNT	3.88%	0.75	12.63%	8.75%	10.44%	10.99%
Ameren Corporation	AEE	3.88%	0.73	12.63%	8.75%	10.23%	10.83%
American Electric Power Company, Inc.	AEP	3.88%	0.68	12.63%	8.75%	9.79%	10.50%
Avista Corporation	AVA	3.88%	0.79	12.63%	8.75%	10.75%	11.22%
CMS Energy Corporation	CMS	3.88%	0.69	12.63%	8.75%	9.92%	10.60%
Duke Energy Corporation	DUK	3.88%	0.67	12.63%	8.75%	9.70%	10.43%
Entergy Corporation	ETR	3.88%	0.75	12.63%	8.75%	10.40%	10.96%
Evergy, Inc.	EVRG	3.88%	0.98	12.63%	8.75%	12.41%	12.47%
IDACORP, Inc.	IDA	3.88%	0.73	12.63%	8.75%	10.27%	10.86%
NextEra Energy, Inc.	NEE	3.88%	0.73	12.63%	8.75%	10.27%	10.86%
NorthWestern Corporation	NWE	3.88%	0.75	12.63%	8.75%	10.40%	10.96%
OGE Energy Corporation	OGE	3.88%	0.93	12.63%	8.75%	12.02%	12.17%
Otter Tail Corporation	OTTR	3.88%	0.85	12.63%	8.75%	11.32%	11.65%
Portland General Electric Company	POR	3.88%	0.74	12.63%	8.75%	10.35%	10.92%
Southern Company	SO	3.88%	0.63	12.63%	8.75%	9.37%	10.19%
Xcel Energy Inc.	XEL	3.88%	0.64	12.63%	8.75%	9.47%	10.26%
Mean						10.46%	11.01%
Median						10.35%	10.92%

Notes:
[1] Blue Chip Financial Forecasts, Vol. 42, No. 1, January 1, 2023, at 2.
[2] PAC/1405.
[3] PAC/1404.
[4] Equals [3]-[1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

Exhibit 1403/CAPITAL ASSET PRICING MODEL
PacifiCorp Proxy Group

Long-Term Projected Risk Free Rate / Long-Term Beta

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

Company	Ticker	[1] Treasury Bond Yield	[2] Beta	[3] Market Return	[4] Mkt Risk Premium	[5] CAPM	[6] ECAPM
ALLETE, Inc.	ALE	3.90%	0.79	12.63%	8.73%	10.76%	11.22%
Alliant Energy Corporation	LNT	3.90%	0.75	12.63%	8.73%	10.45%	11.00%
Ameren Corporation	AEE	3.90%	0.73	12.63%	8.73%	10.23%	10.83%
American Electric Power Company, Inc.	AEP	3.90%	0.68	12.63%	8.73%	9.79%	10.50%
Avista Corporation	AVA	3.90%	0.79	12.63%	8.73%	10.76%	11.22%
CMS Energy Corporation	CMS	3.90%	0.69	12.63%	8.73%	9.93%	10.60%
Duke Energy Corporation	DUK	3.90%	0.67	12.63%	8.73%	9.71%	10.44%
Entergy Corporation	ETR	3.90%	0.75	12.63%	8.73%	10.41%	10.96%
Evergy, Inc.	EVRG	3.90%	0.98	12.63%	8.73%	12.41%	12.47%
IDACORP, Inc.	IDA	3.90%	0.73	12.63%	8.73%	10.28%	10.86%
NextEra Energy, Inc.	NEE	3.90%	0.73	12.63%	8.73%	10.28%	10.86%
NorthWestern Corporation	NWE	3.90%	0.75	12.63%	8.73%	10.41%	10.96%
OGE Energy Corporation	OGE	3.90%	0.93	12.63%	8.73%	12.02%	12.17%
Otter Tail Corporation	OTTR	3.90%	0.85	12.63%	8.73%	11.32%	11.65%
Portland General Electric Company	POR	3.90%	0.74	12.63%	8.73%	10.35%	10.92%
Southern Company	SO	3.90%	0.63	12.63%	8.73%	9.38%	10.20%
Xcel Energy Inc.	XEL	3.90%	0.64	12.63%	8.73%	9.48%	10.27%
Mean						10.47%	11.01%
Median						10.35%	10.92%

Notes:
[1] Blue Chip Financial Forecasts, Vol. 41, No. 12, December 1, 2022, at 2
[2] PAC/1405.
[3] PAC/1404.
[4] Equals [3]-[1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

Application No. 22-05-006
Exhibit PAC/1404
Witness: Ann E. Bulkley

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

PACIFICORP

Exhibit Accompanying Rebuttal Testimony of

Ann E. Bulkley

Market Return Calculation

February 2023

Exhibit 1404/MARKET RETURN CALCULATION

[1] Estimated Weighted Average Dividend Yield	**1.81%**
[2] Estimated Weighted Average Long-Term Growth Rate	**10.72%**
[3] S&P 500 Estimated Required Market Return	**12.63%**

Name	Ticker	[4] Shares Outst'g	[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	325.62	83.03	27,037	0.10%	5.73%	0.01%	3.50%	0.00%
Signature Bank/New York NY	SBNY	62.93	115.22	7,250	0.03%	1.94%	0.00%	16.50%	0.00%
American Express Co	AXP	747.23	147.75	110,404	0.41%	1.41%	0.01%	10.00%	0.04%
Verizon Communications Inc	VZ	4,199.82	39.40	165,473	0.61%	6.62%	0.04%	2.50%	0.02%
Broadcom Inc	AVGO	417.89	559.13	233,653		3.29%		30.00%	
Boeing Co/The	BA	595.98	190.49	113,529					
Caterpillar Inc	CAT	520.41	239.56	124,669	0.46%	2.00%	0.01%	11.00%	0.05%
JPMorgan Chase & Co	JPM	2,933.21	134.10	393,343	1.45%	2.98%	0.04%	5.00%	0.07%
Chevron Corp	CVX	1,933.64	179.49	347,069		3.16%		44.00%	
Coca-Cola Co/The	KO	4,324.51	63.61	275,082	1.01%	2.77%	0.03%	7.50%	0.08%
AbbVie Inc	ABBV	1,768.48	161.61	285,804	1.05%	3.66%	0.04%	4.50%	0.05%
Walt Disney Co/The	DIS	1,823.59	86.88	158,434				30.50%	
FleetCor Technologies Inc	FLT	73.75	183.68	13,547	0.05%			10.50%	0.01%
Extra Space Storage Inc	EXR	133.92	147.18	19,711	0.07%	4.08%	0.00%	4.00%	0.00%
Exxon Mobil Corp	XOM	4,118.29	110.30	454,248		3.30%			
Phillips 66	PSX	472.63	104.08	49,192		3.73%		85.00%	
General Electric Co	GE	1,092.67	65.38	71,444		0.49%		21.00%	
HP Inc	HPQ	982.15	26.87	26,390	0.10%	3.91%	0.00%	12.50%	0.01%
Home Depot Inc/The	HD	1,019.19	315.86	321,920	1.18%	2.41%	0.03%	9.00%	0.11%
Monolithic Power Systems Inc	MPWR	46.94	353.61	16,599		0.85%		23.50%	
International Business Machines Corp	IBM	904.13	140.89	127,382	0.47%	4.68%	0.02%	3.00%	0.01%
Johnson & Johnson	JNJ	2,614.48	176.65	461,849	1.70%	2.56%	0.04%	8.00%	0.14%
McDonald's Corp	MCD	732.42	263.53	193,016	0.71%	2.31%	0.02%	10.50%	0.07%
Merck & Co Inc	MRK	2,535.40	110.95	281,302	1.03%	2.63%	0.03%	8.00%	0.08%
3M Co	MMM	552.74	119.92	66,285	0.24%	4.97%	0.01%	7.50%	0.02%
American Water Works Co Inc	AWK	181.83	152.42	27,714	0.10%	1.72%	0.00%	3.00%	0.00%
Bank of America Corp	BAC	8,022.43	33.12	265,703	0.98%	2.66%	0.03%	8.50%	0.08%
Pfizer Inc	PFE	5,613.32	51.24	287,626	1.06%	3.20%	0.03%	6.50%	0.07%
Procter & Gamble Co/The	PG	2,369.70	151.56	359,151	1.32%	2.41%	0.03%	6.50%	0.09%
AT&T Inc	T	7,127.00	18.41	131,208	0.48%	6.03%	0.03%	1.00%	0.00%
Travelers Cos Inc/The	TRV	234.35	187.49	43,938	0.16%	1.98%	0.00%	6.50%	0.01%
Raytheon Technologies Corp	RTX	1,470.06	100.92	148,359	0.55%	2.18%	0.01%	7.00%	0.04%
Analog Devices Inc	ADI	509.30	164.03	83,540	0.31%	1.85%	0.01%	14.00%	0.04%
Walmart Inc	WMT	2,696.80	141.79	382,379	1.41%	1.58%	0.02%	7.50%	0.11%
Cisco Systems Inc	CSCO	4,108.10	47.26	194,159	0.71%	3.22%	0.02%	9.00%	0.06%
Intel Corp	INTC	4,127.00	26.43	109,077		5.52%			
General Motors Co	GM	1,420.70	33.64	47,792	0.18%	1.07%	0.00%	10.00%	0.02%
Microsoft Corp	MSFT	7,454.47	239.82	1,787,732	6.57%	1.13%	0.07%	16.50%	1.08%
Dollar General Corp	DG	223.58	246.25	55,055	0.20%	0.89%	0.00%	10.00%	0.02%
Cigna Corp	CI	305.74	331.34	101,304	0.37%	1.35%	0.01%	10.00%	0.04%
Kinder Morgan Inc	KMI	2,247.74	18.08	40,639	0.15%	6.14%	0.01%	19.00%	0.03%
Citigroup Inc	C	1,936.85	45.23	87,604	0.32%	4.51%	0.01%	3.50%	0.01%
American International Group Inc	AIG	742.98	63.24	46,986	0.17%	2.02%	0.00%	6.50%	0.01%
Altria Group Inc	MO	1,792.17	45.71	81,920	0.30%	8.23%	0.02%	5.50%	0.02%
HCA Healthcare Inc	HCA	282.72	239.96	67,841	0.25%	0.93%	0.00%	12.50%	0.03%
International Paper Co	IP	355.67	34.63	12,317	0.05%	5.34%	0.00%	13.50%	0.01%
Hewlett Packard Enterprise Co	HPE	1,281.82	15.96	20,458	0.08%	3.01%	0.00%	7.50%	0.01%
Abbott Laboratories	ABT	1,743.57	109.79	191,427	0.70%	1.86%	0.01%	7.00%	0.05%
Aflac Inc	AFL	621.79	71.94	44,732	0.16%	2.34%	0.00%	9.00%	0.01%
Air Products and Chemicals Inc	APD	221.99	308.26	68,430	0.25%	2.10%	0.01%	11.00%	0.03%
Royal Caribbean Cruises Ltd	RCL	255.18	49.43	12,614					
Hess Corp	HES	308.31	141.82	43,724		1.06%			
Archer-Daniels-Midland Co	ADM	549.33	92.85	51,006	0.19%	1.72%	0.00%	13.00%	0.02%
Automatic Data Processing Inc	ADP	414.83	238.86	99,086	0.36%	2.09%	0.01%	10.00%	0.04%
Verisk Analytics Inc	VRSK	156.39	176.42	27,590	0.10%	0.70%	0.00%	13.00%	0.01%
AutoZone Inc	AZO	18.77	2,466.18	46,280	0.17%			14.50%	0.02%
Avery Dennison Corp	AVY	80.97	181.00	14,655	0.05%	1.66%	0.00%	12.00%	0.01%
Enphase Energy Inc	ENPH	135.92	264.96	36,014				26.50%	
MSCI Inc	MSCI	79.96	465.17	37,194	0.14%	1.07%	0.00%	14.50%	0.02%
Ball Corp	BALL	313.92	51.14	16,054		1.56%		21.50%	
Ceridian HCM Holding Inc	CDAY	153.60	64.15	9,853					
Carrier Global Corp	CARR	836.26	41.25	34,496		1.79%			
Bank of New York Mellon Corp/The	BK	808.28	45.52	36,793	0.14%	3.25%	0.00%	6.00%	0.01%
Otis Worldwide Corp	OTIS	416.59	78.31	32,623		1.48%			
Baxter International Inc	BAX	504.12	50.97	25,695	0.09%	2.28%	0.00%	8.00%	0.01%
Becton Dickinson and Co	BDX	284.27	254.30	72,289	0.27%	1.43%	0.00%	4.50%	0.01%
Berkshire Hathaway Inc	BRK/B	1,301.98	308.90	402,182	1.48%			6.00%	0.09%
Best Buy Co Inc	BBY	221.26	80.21	17,748	0.07%	4.39%	0.00%	4.00%	0.00%
Boston Scientific Corp	BSX	1,432.31	46.27	66,273	0.24%			17.00%	0.04%

Exhibit 1404/MARKET RETURN CALCULATION

[1] Estimated Weighted Average Dividend Yield	**1.81%**
[2] Estimated Weighted Average Long-Term Growth Rate	**10.72%**
[3] S&P 500 Estimated Required Market Return	**12.63%**

Name	Ticker	[4] Shares Outst'g	[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.
Bristol-Myers Squibb Co	BMY	2,126.16	71.95	152,977		3.17%			
Brown-Forman Corp	BF/B	309.95	65.68	20,358	0.07%	1.25%	0.00%	14.00%	0.01%
Coterra Energy Inc	CTRA	788.47	24.57	19,373		11.07%			
Campbell Soup Co	CPB	299.47	56.38	16,883	0.06%	2.63%	0.00%	5.00%	0.00%
Hilton Worldwide Holdings Inc	HLT	270.46	126.36	34,175		0.47%			
Carnival Corp	CCL	1,112.71	8.06	8,968					
Qorvo Inc	QRVO	101.39	90.64	9,190	0.03%			14.50%	0.00%
Lumen Technologies Inc	LUMN	1,034.58	5.22	5,401	0.02%			1.50%	0.00%
UDR Inc	UDR	325.54	38.73	12,608	0.05%	3.92%	0.00%	10.50%	0.00%
Clorox Co/The	CLX	123.39	140.33	17,315	0.06%	3.36%	0.00%	7.50%	0.00%
Paycom Software Inc	PAYC	60.02	310.31	18,625				21.00%	
CMS Energy Corp	CMS	290.25	63.33	18,382	0.07%	2.91%	0.00%	6.50%	0.00%
Newell Brands Inc	NWL	413.60	13.08	5,410		7.03%			
Colgate-Palmolive Co	CL	835.21	78.79	65,807	0.24%	2.39%	0.01%	6.50%	0.02%
EPAM Systems Inc	EPAM	57.51	327.74	18,849				20.50%	
Comerica Inc	CMA	130.95	66.85	8,754	0.03%	4.07%	0.00%	9.00%	0.00%
Conagra Brands Inc	CAG	479.26	38.70	18,547	0.07%	3.41%	0.00%	4.00%	0.00%
Consolidated Edison Inc	ED	354.86	95.31	33,822	0.12%	3.32%	0.00%	4.00%	0.00%
Corning Inc	GLW	845.81	31.94	27,015	0.10%	3.38%	0.00%	17.50%	0.02%
Cummins Inc	CMI	141.02	242.29	34,168	0.13%	2.59%	0.00%	8.50%	0.01%
Caesars Entertainment Inc	CZR	214.57	41.60	8,926					
Danaher Corp	DHR	727.96	265.42	193,216	0.71%	0.38%	0.00%	16.00%	0.11%
Target Corp	TGT	460.31	149.04	68,605	0.25%	2.90%	0.01%	12.00%	0.03%
Deere & Co	DE	298.24	428.76	127,872	0.47%	1.12%	0.01%	16.50%	0.08%
Dominion Energy Inc	D	833.28	61.32	51,096	0.19%	4.35%	0.01%	5.50%	0.01%
Dover Corp	DOV	140.35	135.41	19,005	0.07%	1.49%	0.00%	9.00%	0.01%
Alliant Energy Corp	LNT	251.02	55.21	13,859	0.05%	3.10%	0.00%	6.00%	0.00%
Steel Dynamics Inc	STLD	175.57	97.70	17,153	0.06%	1.39%	0.00%	2.00%	0.00%
Duke Energy Corp	DUK	770.00	102.99	79,302	0.29%	3.90%	0.01%	5.00%	0.01%
Regency Centers Corp	REG	171.12	62.50	10,695	0.04%	4.16%	0.00%	12.50%	0.00%
Eaton Corp PLC	ETN	397.70	156.95	62,419	0.23%	2.06%	0.00%	12.00%	0.03%
Ecolab Inc	ECL	284.83	145.56	41,460	0.15%	1.46%	0.00%	10.50%	0.02%
PerkinElmer Inc	PKI	126.32	140.22	17,712	0.07%	0.20%	0.00%	4.00%	0.00%
Emerson Electric Co	EMR	582.30	96.06	55,936	0.21%	2.17%	0.00%	9.50%	0.02%
EOG Resources Inc	EOG	587.39	129.52	76,079		2.55%		26.00%	
Aon PLC	AON	206.85	300.14	62,085	0.23%	0.75%	0.00%	7.50%	0.02%
Entergy Corp	ETR	203.48	112.50	22,892	0.08%	3.80%	0.00%	4.00%	0.00%
Equifax Inc	EFX	122.44	194.36	23,798	0.09%	0.80%	0.00%	7.00%	0.01%
EQT Corp	EQT	367.05	33.83	12,417		1.77%			
IQVIA Holdings Inc	IQV	185.74	204.89	38,056	0.14%			14.50%	0.02%
Gartner Inc	IT	79.02	336.14	26,563	0.10%			18.00%	0.02%
FedEx Corp	FDX	252.40	173.20	43,715	0.16%	2.66%	0.00%	13.00%	0.02%
FMC Corp	FMC	125.97	124.80	15,721	0.06%	1.86%	0.00%	11.00%	0.01%
Brown & Brown Inc	BRO	283.22	56.97	16,135	0.06%	0.81%	0.00%	8.00%	0.00%
Ford Motor Co	F	3,949.64	11.63	45,934		5.16%		33.50%	
NextEra Energy Inc	NEE	1,987.16	83.60	166,127	0.61%	2.03%	0.01%	10.50%	0.06%
Franklin Resources Inc	BEN	500.26	26.38	13,197	0.05%	4.55%	0.00%	4.00%	0.00%
Garmin Ltd	GRMN	191.66	92.29	17,689	0.07%	3.16%	0.00%	6.00%	0.00%
Freeport-McMoRan Inc	FCX	1,429.33	38.00	54,314		1.58%		27.50%	
Dexcom Inc	DXCM	386.26	113.24	43,740					
General Dynamics Corp	GD	274.55	248.11	68,118	0.25%	2.03%	0.01%	9.00%	0.02%
General Mills Inc	GIS	589.61	83.85	49,439	0.18%	2.58%	0.00%	3.50%	0.01%
Genuine Parts Co	GPC	141.16	173.51	24,493	0.09%	2.06%	0.00%	9.00%	0.01%
Atmos Energy Corp	ATO	141.02	112.07	15,804	0.06%	2.64%	0.00%	7.50%	0.00%
WW Grainger Inc	GWW	50.53	556.25	28,107	0.10%	1.24%	0.00%	11.00%	0.01%
Halliburton Co	HAL	908.05	39.35	35,732		1.22%		31.00%	
L3Harris Technologies Inc	LHX	190.40	208.21	39,644	0.15%	2.15%	0.00%	18.00%	0.03%
Healthpeak Properties Inc	PEAK	537.54	25.07	13,476	0.05%	4.79%	0.00%	17.00%	0.01%
Catalent Inc	CTLT	179.96	45.01	8,100				21.00%	
Fortive Corp	FTV	353.81	64.25	22,732	0.08%	0.44%	0.00%	12.00%	0.01%
Hershey Co/The	HSY	146.97	231.57	34,034	0.13%	1.79%	0.00%	9.00%	0.01%
Synchrony Financial	SYF	450.54	32.86	14,805	0.05%	2.80%	0.00%	9.50%	0.01%
Hormel Foods Corp	HRL	546.42	45.55	24,890	0.09%	2.41%	0.00%	6.50%	0.01%
Arthur J Gallagher & Co	AJG	210.84	188.54	39,752	0.15%	1.08%	0.00%	18.50%	0.03%
Mondelez International Inc	MDLZ	1,365.62	66.65	91,019	0.33%	2.31%	0.01%	9.50%	0.03%
CenterPoint Energy Inc	CNP	629.43	29.99	18,877	0.07%	2.53%	0.00%	6.50%	0.00%
Humana Inc	HUM	126.60	512.19	64,843	0.24%	0.62%	0.00%	11.00%	0.03%
Willis Towers Watson PLC	WTW	108.24	244.58	26,473	0.10%	1.34%	0.00%	8.50%	0.01%
Illinois Tool Works Inc	ITW	307.19	220.30	67,673	0.25%	2.38%	0.01%	11.00%	0.03%

Exhibit 1404/MARKET RETURN CALCULATION

[1] Estimated Weighted Average Dividend Yield	**1.81%**
[2] Estimated Weighted Average Long-Term Growth Rate	**10.72%**
[3] S&P 500 Estimated Required Market Return	**12.63%**

		[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Name	Ticker	Shares Outst'g	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.
CDW Corp/DE	CDW	135.39	178.58	24,178	0.09%	1.32%	0.00%	8.50%	0.01%
Trane Technologies PLC	TT	230.31	168.09	38,712		1.59%			
Interpublic Group of Cos Inc/The	IPG	388.53	33.31	12,942	0.05%	3.48%	0.00%	10.00%	0.00%
International Flavors & Fragrances Inc	IFF	254.96	104.84	26,730	0.10%	3.09%	0.00%	7.50%	0.01%
Generac Holdings Inc	GNRC	63.36	100.66	6,377				23.50%	
NXP Semiconductors NV	NXPI	259.14	158.03	40,951	0.15%	2.14%	0.00%	12.00%	0.02%
Kellogg Co	K	341.28	71.24	24,313	0.09%	3.31%	0.00%	3.50%	0.00%
Broadridge Financial Solutions Inc	BR	117.66	134.13	15,781	0.06%	2.16%	0.00%	9.50%	0.01%
Kimberly-Clark Corp	KMB	337.49	135.75	45,815	0.17%	3.42%	0.01%	5.50%	0.01%
Kimco Realty Corp	KIM	618.46	21.18	13,099	0.05%	4.34%	0.00%	8.50%	0.00%
Oracle Corp	ORCL	2,696.25	81.74	220,392	0.81%	1.57%	0.01%	10.00%	0.08%
Kroger Co/The	KR	715.82	44.58	31,911	0.12%	2.33%	0.00%	6.50%	0.01%
Lennar Corp	LEN	254.77	90.50	23,056	0.08%	1.66%	0.00%	8.50%	0.01%
Eli Lilly & Co	LLY	950.18	365.84	347,613	1.28%	1.24%	0.02%	11.50%	0.15%
Bath & Body Works Inc	BBWI	228.42	42.14	9,625		1.90%		26.50%	
Charter Communications Inc	CHTR	155.67	339.10	52,788				23.00%	
Lincoln National Corp	LNC	169.22	30.72	5,198	0.02%	5.86%	0.00%	11.50%	0.00%
Loews Corp	L	237.43	58.33	13,849	0.05%	0.43%	0.00%	18.50%	0.01%
Lowe's Cos Inc	LOW	604.70	199.24	120,481	0.44%	2.11%	0.01%	12.50%	0.06%
IDEX Corp	IEX	75.42	228.33	17,221	0.06%	1.05%	0.00%	11.00%	0.01%
Marsh & McLennan Cos Inc	MMC	496.01	165.48	82,080	0.30%	1.43%	0.00%	11.00%	0.03%
Masco Corp	MAS	225.53	46.67	10,525	0.04%	2.40%	0.00%	8.00%	0.00%
S&P Global Inc	SPGI	325.80	334.94	109,123	0.40%	1.02%	0.00%	9.50%	0.04%
Medtronic PLC	MDT	1,330.18	77.72	103,382	0.38%	3.50%	0.01%	7.50%	0.03%
Viatris Inc	VTRS	1,212.69	11.13	13,497		4.31%			
CVS Health Corp	CVS	1,313.97	93.19	122,449	0.45%	2.60%	0.01%	6.00%	0.03%
DuPont de Nemours Inc	DD	496.79	68.63	34,095	0.13%	1.92%	0.00%	9.50%	0.01%
Micron Technology Inc	MU	1,091.18	49.98	54,537	0.20%	0.92%	0.00%	13.00%	0.03%
Motorola Solutions Inc	MSI	167.20	257.71	43,090	0.16%	1.37%	0.00%	10.50%	0.02%
Cboe Global Markets Inc	CBOE	106.08	125.47	13,310	0.05%	1.59%	0.00%	10.00%	0.00%
Laboratory Corp of America Holdings	LH	88.60	235.48	20,864	0.08%	1.22%	0.00%	1.50%	0.00%
Newmont Corp	NEM	793.74	47.20	37,464	0.14%	4.66%	0.01%	9.50%	0.01%
NIKE Inc	NKE	1,259.69	117.01	147,396		1.16%		24.00%	
NiSource Inc	NI	406.13	27.42	11,136	0.04%	3.43%	0.00%	9.50%	0.00%
Norfolk Southern Corp	NSC	231.51	246.42	57,050	0.21%	2.01%	0.00%	10.00%	0.02%
Principal Financial Group Inc	PFG	244.68	83.92	20,534	0.08%	3.05%	0.00%	6.00%	0.00%
Eversource Energy	ES	348.31	83.84	29,202	0.11%	3.04%	0.00%	6.50%	0.01%
Northrop Grumman Corp	NOC	153.91	545.61	83,976	0.31%	1.27%	0.00%	6.50%	0.02%
Wells Fargo & Co	WFC	3,810.49	41.29	157,335	0.58%	2.91%	0.02%	12.00%	0.07%
Nucor Corp	NUE	256.54	131.81	33,815	0.12%	1.55%	0.00%	2.50%	0.00%
Occidental Petroleum Corp	OXY	908.91	62.99	57,252		0.83%			
Omnicom Group Inc	OMC	203.92	81.57	16,633	0.06%	3.43%	0.00%	6.50%	0.00%
ONEOK Inc	OKE	446.95	65.70	29,365	0.11%	5.69%	0.01%	11.50%	0.01%
Raymond James Financial Inc	RJF	215.06	106.85	22,980	0.08%	1.57%	0.00%	15.00%	0.01%
PG&E Corp	PCG	1,987.70	16.26	32,320	0.12%			7.50%	0.01%
Parker-Hannifin Corp	PH	128.41	291.00	37,366	0.14%	1.83%	0.00%	15.50%	0.02%
Rollins Inc	ROL	492.47	36.54	17,995	0.07%	1.42%	0.00%	10.50%	0.01%
PPL Corp	PPL	736.32	29.22	21,515	0.08%	3.08%	0.00%	3.00%	0.00%
ConocoPhillips	COP	1,246.07	118.00	147,036	0.54%	0.59%	0.00%	20.00%	0.11%
PulteGroup Inc	PHM	227.82	45.53	10,373	0.04%	1.41%	0.00%	7.00%	0.00%
Pinnacle West Capital Corp	PNW	113.14	76.04	8,603	0.03%	4.55%	0.00%	0.50%	0.00%
PNC Financial Services Group Inc/The	PNC	403.32	157.94	63,700	0.23%	3.80%	0.01%	12.00%	0.03%
PPG Industries Inc	PPG	235.03	125.74	29,552	0.11%	1.97%	0.00%	4.00%	0.00%
Progressive Corp/The	PGR	585.00	129.71	75,880	0.28%	0.31%	0.00%	6.50%	0.02%
Public Service Enterprise Group Inc	PEG	498.95	61.27	30,571	0.11%	3.53%	0.00%	4.50%	0.01%
Robert Half International Inc	RHI	108.50	73.83	8,010	0.03%	2.33%	0.00%	10.50%	0.00%
Edison International	EIX	381.88	63.62	24,295	0.09%	4.64%	0.00%	16.00%	0.01%
Schlumberger Ltd	SLB	1,417.99	53.46	75,806		1.31%		23.50%	
Charles Schwab Corp/The	SCHW	1,815.85	83.26	151,187	0.56%	1.06%	0.01%	9.00%	0.05%
Sherwin-Williams Co/The	SHW	259.14	237.33	61,502	0.23%	1.01%	0.00%	11.50%	0.03%
West Pharmaceutical Services Inc	WST	74.03	235.35	17,424	0.06%	0.32%	0.00%	17.00%	0.01%
J M Smucker Co/The	SJM	106.64	158.46	16,898	0.06%	2.57%	0.00%	4.00%	0.00%
Snap-on Inc	SNA	53.16	228.49	12,145	0.04%	2.84%	0.00%	4.50%	0.00%
AMETEK Inc	AME	229.65	139.72	32,087	0.12%	0.63%	0.00%	10.00%	0.01%
Southern Co/The	SO	1,088.67	71.41	77,742	0.29%	3.81%	0.01%	6.50%	0.02%
Truist Financial Corp	TFC	1,326.77	43.03	57,091	0.21%	4.83%	0.01%	5.50%	0.01%
Southwest Airlines Co	LUV	593.75	33.67	19,992		2.14%			
W R Berkley Corp	WRB	265.48	72.57	19,266	0.07%	0.55%	0.00%	15.50%	0.01%
Stanley Black & Decker Inc	SWK	147.94	75.12	11,113	0.04%	4.26%	0.00%	6.00%	0.00%

Exhibit 1404/MARKET RETURN CALCULATION

[1] Estimated Weighted Average Dividend Yield	**1.81%**
[2] Estimated Weighted Average Long-Term Growth Rate	**10.72%**
[3] S&P 500 Estimated Required Market Return	**12.63%**

		[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Name	Ticker	Shares Outst'g	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.
Public Storage	PSA	175.64	280.19	49,212	0.18%	2.86%	0.01%	8.00%	0.01%
Arista Networks Inc	ANET	305.57	121.35	37,081	0.14%			10.00%	0.01%
Sysco Corp	SYY	506.77	76.45	38,742	0.14%	2.56%	0.00%	16.50%	0.02%
Corteva Inc	CTVA	718.60	58.78	42,239	0.16%	1.02%	0.00%	16.50%	0.03%
Texas Instruments Inc	TXN	907.57	165.22	149,949	0.55%	3.00%	0.02%	7.50%	0.04%
Textron Inc	TXT	208.77	70.80	14,781	0.05%	0.11%	0.00%	10.50%	0.01%
Thermo Fisher Scientific Inc	TMO	392.20	550.69	215,978	0.79%	0.22%	0.00%	11.00%	0.09%
TJX Cos Inc/The	TJX	1,155.50	79.60	91,978	0.34%	1.48%	0.01%	17.00%	0.06%
Globe Life Inc	GL	97.27	120.55	11,726	0.04%	0.69%	0.00%	8.50%	0.00%
Johnson Controls International plc	JCI	686.70	64.00	43,949	0.16%	2.19%	0.00%	12.50%	0.02%
Ulta Beauty Inc	ULTA	50.88	469.07	23,867	0.09%			15.50%	0.01%
Union Pacific Corp	UNP	614.80	207.07	127,307	0.47%	2.51%	0.01%	9.50%	0.04%
Keysight Technologies Inc	KEYS	178.80	171.07	30,586	0.11%			13.00%	0.01%
UnitedHealth Group Inc	UNH	934.35	530.18	495,373	1.82%	1.24%	0.02%	12.00%	0.22%
Marathon Oil Corp	MRO	635.07	27.07	17,191		1.33%			
Bio-Rad Laboratories Inc	BIO	24.75	420.49	10,407	0.04%			11.50%	0.00%
Ventas Inc	VTR	399.72	45.05	18,007	0.07%	4.00%	0.00%	10.50%	0.01%
VF Corp	VFC	388.57	27.61	10,728	0.04%	7.39%	0.00%	9.00%	0.00%
Vornado Realty Trust	VNO	191.82	20.81	3,992		10.19%		-20.50%	
Vulcan Materials Co	VMC	132.91	175.11	23,273	0.09%	0.91%	0.00%	8.50%	0.01%
Weyerhaeuser Co	WY	735.92	31.00	22,813	0.08%	2.32%	0.00%	7.00%	0.01%
Whirlpool Corp	WHR	54.48	141.46	7,706	0.03%	4.95%	0.00%	6.00%	0.00%
Williams Cos Inc/The	WMB	1,218.34	32.90	40,083	0.15%	5.17%	0.01%	12.00%	0.02%
Constellation Energy Corp	CEG	326.66	86.21	28,162		0.65%			
WEC Energy Group Inc	WEC	315.44	93.76	29,575	0.11%	3.33%	0.00%	6.00%	0.01%
Adobe Inc	ADBE	464.90	336.53	156,453	0.58%			14.50%	0.08%
AES Corp/The	AES	667.95	28.76	19,210	0.07%	2.31%	0.00%	14.00%	0.01%
Amgen Inc	AMGN	533.58	262.64	140,139	0.52%	3.24%	0.02%	5.50%	0.03%
Apple Inc	AAPL	15,908.12	129.93	2,066,942	7.60%	0.71%	0.05%	13.50%	1.03%
Autodesk Inc	ADSK	215.77	186.87	40,320	0.15%			14.00%	0.02%
Cintas Corp	CTAS	101.60	451.62	45,885	0.17%	1.02%	0.00%	14.00%	0.02%
Comcast Corp	CMCSA	4,313.96	34.70	149,695	0.55%	3.11%	0.02%	9.00%	0.05%
Molson Coors Beverage Co	TAP	200.15	51.52	10,311		2.95%		49.50%	
KLA Corp	KLAC	141.72	377.03	53,432	0.20%	1.38%	0.00%	20.00%	0.04%
Marriott International Inc/MD	MAR	316.54	148.89	47,130	0.17%	1.07%	0.00%	17.50%	0.03%
McCormick & Co Inc/MD	MKC	250.60	82.89	20,772	0.08%	1.88%	0.00%	5.00%	0.00%
PACCAR Inc	PCAR	347.77	98.97	34,419	0.13%	1.01%	0.00%	5.00%	0.01%
Costco Wholesale Corp	COST	443.73	456.50	202,562	0.74%	0.79%	0.01%	10.50%	0.08%
First Republic Bank/CA	FRC	182.93	121.89	22,297	0.08%	0.89%	0.00%	11.50%	0.01%
Stryker Corp	SYK	378.43	244.49	92,522	0.34%	1.23%	0.00%	8.50%	0.03%
Tyson Foods Inc	TSN	287.82	62.25	17,917	0.07%	3.08%	0.00%	6.00%	0.00%
Lamb Weston Holdings Inc	LW	143.83	89.36	12,853	0.05%	1.25%	0.00%	11.50%	0.01%
Applied Materials Inc	AMAT	844.14	97.38	82,202	0.30%	1.07%	0.00%	13.50%	0.04%
American Airlines Group Inc	AAL	649.90	12.72	8,267					
Cardinal Health Inc	CAH	262.13	76.87	20,150	0.07%	2.58%	0.00%	5.00%	0.00%
Cincinnati Financial Corp	CINF	157.18	102.39	16,094	0.06%	2.70%	0.00%	9.00%	0.01%
Paramount Global	PARA	608.47	16.88	10,271	0.04%	5.69%	0.00%	4.50%	0.00%
DR Horton Inc	DHI	344.55	89.14	30,713	0.11%	1.12%	0.00%	0.50%	0.00%
Electronic Arts Inc	EA	276.08	122.18	33,731	0.12%	0.62%	0.00%	11.50%	0.01%
Expeditors International of Washington Inc	EXPD	159.14	103.92	16,537	0.06%	1.29%	0.00%	10.00%	0.01%
Fastenal Co	FAST	572.76	47.32	27,103	0.10%	2.62%	0.00%	8.50%	0.01%
M&T Bank Corp	MTB	172.61	145.06	25,039	0.09%	3.31%	0.00%	9.00%	0.01%
Xcel Energy Inc	XEL	547.25	70.11	38,368	0.14%	2.78%	0.00%	6.00%	0.01%
Fiserv Inc	FISV	635.03	101.07	64,182	0.24%			11.00%	0.03%
Fifth Third Bancorp	FITB	686.40	32.81	22,521	0.08%	4.02%	0.00%	9.50%	0.01%
Gilead Sciences Inc	GILD	1,254.24	85.85	107,677	0.40%	3.40%	0.01%	12.00%	0.05%
Hasbro Inc	HAS	138.11	61.01	8,426	0.03%	4.59%	0.00%	9.00%	0.00%
Huntington Bancshares Inc/OH	HBAN	1,442.73	14.10	20,343	0.07%	4.40%	0.00%	12.50%	0.01%
Welltower Inc	WELL	472.52	65.55	30,974	0.11%	3.72%	0.00%	2.50%	0.00%
Biogen Inc	BIIB	144.00	276.92	39,877				-10.50%	
Northern Trust Corp	NTRS	208.42	88.49	18,443	0.07%	3.39%	0.00%	8.00%	0.01%
Packaging Corp of America	PKG	92.53	127.91	11,836	0.04%	3.91%	0.00%	11.00%	0.00%
Paychex Inc	PAYX	360.47	115.56	41,656	0.15%	2.73%	0.00%	10.00%	0.02%
QUALCOMM Inc	QCOM	1,121.00	109.94	123,243	0.45%	2.73%	0.01%	18.00%	0.08%
Roper Technologies Inc	ROP	106.05	432.09	45,824	0.17%	0.63%	0.00%	3.50%	0.01%
Ross Stores Inc	ROST	344.37	116.07	39,971	0.15%	1.07%	0.00%	14.00%	0.02%
IDEXX Laboratories Inc	IDXX	82.82	407.96	33,786	0.12%			12.00%	0.01%
Starbucks Corp	SBUX	1,147.80	99.20	113,862	0.42%	2.14%	0.01%	16.00%	0.07%
KeyCorp	KEY	932.97	17.42	16,252	0.06%	4.71%	0.00%	7.50%	0.00%

Exhibit 1404/MARKET RETURN CALCULATION

[1] Estimated Weighted Average Dividend Yield	**1.81%**
[2] Estimated Weighted Average Long-Term Growth Rate	**10.72%**
[3] S&P 500 Estimated Required Market Return	**12.63%**

Name	Ticker	[4] Shares Outst'g	[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.
Fox Corp	FOXA	302.48	30.37	9,186	0.03%	1.65%	0.00%	11.00%	0.00%
Fox Corp	FOX	240.22	28.45	6,834		1.76%			
State Street Corp	STT	366.94	77.57	28,464	0.10%	3.25%	0.00%	8.50%	0.01%
Norwegian Cruise Line Holdings Ltd	NCLH	421.40	12.24	5,158					
US Bancorp	USB	1,530.24	43.61	66,734	0.25%	4.40%	0.01%	6.00%	0.01%
A O Smith Corp	AOS	126.87	57.24	7,262	0.03%	2.10%	0.00%	11.50%	0.00%
Gen Digital Inc	GEN	651.36	21.43	13,959	0.05%	2.33%	0.00%	11.50%	0.01%
T Rowe Price Group Inc	TROW	223.47	109.06	24,371	0.09%	4.40%	0.00%	8.00%	0.01%
Waste Management Inc	WM	410.48	156.88	64,396	0.24%	1.66%	0.00%	6.50%	0.02%
Constellation Brands Inc	STZ	184.47	231.75	42,750	0.16%	1.38%	0.00%	5.00%	0.01%
DENTSPLY SIRONA Inc	XRAY	214.91	31.84	6,843	0.03%	1.57%	0.00%	12.00%	0.00%
Zions Bancorp NA	ZION	149.62	49.16	7,355	0.03%	3.34%	0.00%	6.50%	0.00%
Alaska Air Group Inc	ALK	126.84	42.94	5,446					
Invesco Ltd	IVZ	454.79	17.99	8,182	0.03%	4.17%	0.00%	10.00%	0.00%
Linde PLC	LIN	492.58	326.18	160,670	0.59%	1.43%	0.01%	12.00%	0.07%
Intuit Inc	INTU	280.93	389.22	109,342	0.40%	0.80%	0.00%	17.50%	0.07%
Morgan Stanley	MS	1,690.11	85.02	143,693	0.53%	3.65%	0.02%	8.50%	0.04%
Microchip Technology Inc	MCHP	550.01	70.25	38,638	0.14%	1.87%	0.00%	10.00%	0.01%
Chubb Ltd	CB	415.05	220.60	91,560	0.34%	1.50%	0.01%	14.50%	0.05%
Hologic Inc	HOLX	245.83	74.81	18,391				25.00%	
Citizens Financial Group Inc	CFG	492.49	39.37	19,389	0.07%	4.27%	0.00%	8.00%	0.01%
O'Reilly Automotive Inc	ORLY	62.58	844.03	52,816	0.19%			13.00%	0.03%
Allstate Corp/The	ALL	265.21	135.60	35,962	0.13%	2.51%	0.00%	2.50%	0.00%
Equity Residential	EQR	377.92	59.00	22,297		4.24%		-6.00%	
BorgWarner Inc	BWA	234.15	40.25	9,425	0.03%	1.69%	0.00%	9.50%	0.00%
Keurig Dr Pepper Inc	KDP	1,416.25	35.66	50,504	0.19%	2.24%	0.00%	11.50%	0.02%
Organon & Co	OGN	254.36	27.93	7,104		4.01%			
Host Hotels & Resorts Inc	HST	715.03	16.05	11,476		2.99%		59.50%	
Incyte Corp	INCY	222.48	80.32	17,869				25.50%	
Simon Property Group Inc	SPG	326.95	117.48	38,410	0.14%	6.13%	0.01%	3.00%	0.00%
Eastman Chemical Co	EMN	119.99	81.44	9,772	0.04%	3.88%	0.00%	9.50%	0.00%
AvalonBay Communities Inc	AVB	139.90	161.52	22,596	0.08%	3.94%	0.00%	9.00%	0.01%
Prudential Financial Inc	PRU	368.00	99.46	36,601	0.13%	4.83%	0.01%	5.00%	0.01%
United Parcel Service Inc	UPS	729.82	173.84	126,872	0.47%	3.50%	0.02%	11.50%	0.05%
Walgreens Boots Alliance Inc	WBA	862.33	37.36	32,217	0.12%	5.14%	0.01%	5.00%	0.01%
STERIS PLC	STE	99.82	184.69	18,436	0.07%	1.02%	0.00%	10.00%	0.01%
McKesson Corp	MCK	141.79	375.12	53,189	0.20%	0.58%	0.00%	10.00%	0.02%
Lockheed Martin Corp	LMT	262.07	486.49	127,496	0.47%	2.47%	0.01%	8.00%	0.04%
AmerisourceBergen Corp	ABC	203.29	165.71	33,687	0.12%	1.17%	0.00%	8.50%	0.01%
Capital One Financial Corp	COF	381.70	92.96	35,483		2.58%			
Waters Corp	WAT	59.41	342.58	20,352	0.07%			6.00%	0.00%
Nordson Corp	NDSN	57.16	237.72	13,587	0.05%	1.09%	0.00%	12.00%	0.01%
Dollar Tree Inc	DLTR	221.18	141.44	31,284	0.12%			12.00%	0.01%
Darden Restaurants Inc	DRI	122.39	138.33	16,930		3.50%		21.50%	
Evergy Inc	EVRG	229.48	62.93	14,441		3.89%			
Match Group Inc	MTCH	279.31	41.49	11,588				21.00%	
Domino's Pizza Inc	DPZ	35.40	346.40	12,262	0.05%	1.27%	0.00%	14.00%	0.01%
NVR Inc	NVR	3.20	4,612.58	14,742	0.05%			5.50%	0.00%
NetApp Inc	NTAP	215.57	60.06	12,947	0.05%	3.33%	0.00%	8.50%	0.00%
DXC Technology Co	DXC	230.07	26.50	6,097	0.02%			12.00%	0.00%
Old Dominion Freight Line Inc	ODFL	110.48	283.78	31,353	0.12%	0.42%	0.00%	11.50%	0.01%
DaVita Inc	DVA	90.10	74.67	6,728	0.02%			8.50%	0.00%
Hartford Financial Services Group Inc/The	HIG	318.10	75.83	24,121	0.09%	2.24%	0.00%	6.50%	0.01%
Iron Mountain Inc	IRM	290.71	49.85	14,492	0.05%	4.96%	0.00%	11.00%	0.01%
Estee Lauder Cos Inc/The	EL	231.27	248.11	57,380	0.21%	1.06%	0.00%	14.00%	0.03%
Cadence Design Systems Inc	CDNS	274.32	160.64	44,066	0.16%			12.00%	0.02%
Tyler Technologies Inc	TYL	41.64	322.41	13,425	0.05%			12.00%	0.01%
Universal Health Services Inc	UHS	64.16	140.89	9,039	0.03%	0.57%	0.00%	7.00%	0.00%
Skyworks Solutions Inc	SWKS	160.16	91.13	14,595	0.05%	2.72%	0.00%	9.00%	0.00%
Quest Diagnostics Inc	DGX	113.89	156.44	17,816	0.07%	1.69%	0.00%	3.50%	0.00%
Activision Blizzard Inc	ATVI	782.63	76.55	59,910	0.22%	0.61%	0.00%	12.50%	0.03%
Rockwell Automation Inc	ROK	114.75	257.57	29,555	0.11%	1.83%	0.00%	9.50%	0.01%
Kraft Heinz Co/The	KHC	1,224.93	40.71	49,867	0.18%	3.93%	0.01%	6.50%	0.01%
American Tower Corp	AMT	465.61	211.86	98,643	0.36%	2.95%	0.01%	9.00%	0.03%
Regeneron Pharmaceuticals Inc	REGN	107.08	721.49	77,260	0.28%			3.00%	0.01%
Amazon.com Inc	AMZN	10,201.65	84.00	856,939				26.50%	
Jack Henry & Associates Inc	JKHY	72.95	175.56	12,807	0.05%	1.12%	0.00%	9.00%	0.00%
Ralph Lauren Corp	RL	41.09	105.67	4,342	0.02%	2.84%	0.00%	12.00%	0.00%
Boston Properties Inc	BXP	156.76	67.58	10,594		5.80%		-1.00%	

Exhibit 1404/MARKET RETURN CALCULATION

[1] Estimated Weighted Average Dividend Yield	**1.81%**
[2] Estimated Weighted Average Long-Term Growth Rate	**10.72%**
[3] S&P 500 Estimated Required Market Return	**12.63%**

		[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Name	Ticker	Shares Outst'g	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.
Amphenol Corp	APH	595.10	76.14	45,311	0.17%	1.10%	0.00%	13.00%	0.02%
Howmet Aerospace Inc	HWM	413.71	39.41	16,304	0.06%	0.41%	0.00%	12.00%	0.01%
Pioneer Natural Resources Co	PXD	237.60	228.39	54,265		10.00%		21.00%	
Valero Energy Corp	VLO	385.52	126.86	48,907	0.18%	3.09%	0.01%	11.00%	0.02%
Synopsys Inc	SNPS	152.42	319.29	48,665	0.18%			12.50%	0.02%
Etsy Inc	ETSY	125.69	119.78	15,055				24.50%	
CH Robinson Worldwide Inc	CHRW	117.71	91.56	10,777	0.04%	2.66%	0.00%	8.50%	0.00%
Accenture PLC	ACN	658.39	266.84	175,685	0.65%	1.68%	0.01%	12.50%	0.08%
TransDigm Group Inc	TDG	54.38	629.65	34,237	0.13%			19.50%	0.02%
Yum! Brands Inc	YUM	281.69	128.08	36,079	0.13%	1.78%	0.00%	10.50%	0.01%
Prologis Inc	PLD	923.08	112.73	104,059	0.38%	2.80%	0.01%	6.00%	0.02%
FirstEnergy Corp	FE	571.75	41.94	23,979	0.09%	3.72%	0.00%	3.00%	0.00%
VeriSign Inc	VRSN	106.02	205.44	21,780	0.08%			11.00%	0.01%
Quanta Services Inc	PWR	142.90	142.50	20,363	0.07%	0.22%	0.00%	16.50%	0.01%
Henry Schein Inc	HSIC	135.55	79.87	10,826	0.04%			7.00%	0.00%
Ameren Corp	AEE	258.37	88.92	22,974	0.08%	2.65%	0.00%	6.50%	0.01%
ANSYS Inc	ANSS	87.11	241.59	21,045	0.08%			8.50%	0.01%
FactSet Research Systems Inc	FDS	38.10	401.21	15,285	0.06%	0.89%	0.00%	10.50%	0.01%
NVIDIA Corp	NVDA	2,460.00	146.14	359,504		0.11%		23.00%	
Sealed Air Corp	SEE	144.66	49.88	7,216	0.03%	1.60%	0.00%	10.00%	0.00%
Cognizant Technology Solutions Corp	CTSH	513.92	57.19	29,391	0.11%	1.89%	0.00%	8.00%	0.01%
SVB Financial Group	SIVB	59.10	230.14	13,602	0.05%			8.50%	0.00%
Intuitive Surgical Inc	ISRG	353.39	265.35	93,771	0.34%			12.50%	0.04%
Take-Two Interactive Software Inc	TTWO	167.82	104.13	17,475	0.06%			8.00%	0.01%
Republic Services Inc	RSG	316.00	128.99	40,761	0.15%	1.54%	0.00%	12.50%	0.02%
eBay Inc	EBAY	542.66	41.47	22,504	0.08%	2.12%	0.00%	15.50%	0.01%
Goldman Sachs Group Inc/The	GS	338.64	343.38	116,280	0.43%	2.91%	0.01%	5.00%	0.02%
SBA Communications Corp	SBAC	107.97	280.31	30,264		1.01%		35.50%	
Sempra Energy	SRE	314.33	154.54	48,577	0.18%	2.96%	0.01%	7.00%	0.01%
Moody's Corp	MCO	183.20	278.62	51,043	0.19%	1.00%	0.00%	4.00%	0.01%
ON Semiconductor Corp	ON	432.42	62.37	26,970				22.50%	
Booking Holdings Inc	BKNG	38.79	2,015.28	78,171				22.00%	
F5 Inc	FFIV	60.37	143.51	8,664	0.03%			10.00%	0.00%
Akamai Technologies Inc	AKAM	157.24	84.30	13,256	0.05%			5.50%	0.00%
Charles River Laboratories International Inc	CRL	50.88	217.90	11,087	0.04%			12.00%	0.00%
MarketAxess Holdings Inc	MKTX	37.64	278.89	10,497	0.04%	1.00%	0.00%	10.00%	0.00%
Devon Energy Corp	DVN	653.70	61.51	40,209		8.78%		33.50%	
Bio-Techne Corp	TECH	156.97	82.88	13,010	0.05%	0.39%	0.00%	14.50%	0.01%
Alphabet Inc	GOOGL	5,973.00	88.23	526,998					
Teleflex Inc	TFX	46.91	249.63	11,709	0.04%	0.54%	0.00%	10.00%	0.00%
Allegion plc	ALLE	87.85	105.26	9,247	0.03%	1.56%	0.00%	11.00%	0.00%
Netflix Inc	NFLX	445.02	294.88	131,227	0.48%			14.50%	0.07%
Warner Bros Discovery Inc	WBD	2,428.40	9.48	23,021					
Agilent Technologies Inc	A	296.07	149.65	44,307	0.16%	0.60%	0.00%	12.00%	0.02%
Trimble Inc	TRMB	246.63	50.56	12,469	0.05%			10.00%	0.00%
Elevance Health Inc	ELV	238.83	512.97	122,512	0.45%	1.00%	0.00%	12.50%	0.06%
CME Group Inc	CME	359.73	168.16	60,491	0.22%	2.38%	0.01%	8.50%	0.02%
Juniper Networks Inc	JNPR	324.56	31.96	10,373	0.04%	2.63%	0.00%	10.50%	0.00%
BlackRock Inc	BLK	150.20	708.63	106,433	0.39%	2.75%	0.01%	10.00%	0.04%
DTE Energy Co	DTE	193.74	117.53	22,770	0.08%	3.24%	0.00%	4.50%	0.00%
Celanese Corp	CE	108.43	102.24	11,086	0.04%	2.74%	0.00%	7.50%	0.00%
Nasdaq Inc	NDAQ	491.28	61.35	30,140	0.11%	1.30%	0.00%	8.50%	0.01%
Philip Morris International Inc	PM	1,550.20	101.21	156,896	0.58%	5.02%	0.03%	5.00%	0.03%
Ingersoll Rand Inc	IR	404.93	52.25	21,157		0.15%			
Salesforce Inc	CRM	1,000.00	132.59	132,590	0.49%			19.50%	0.10%
Huntington Ingalls Industries Inc	HII	39.90	230.68	9,205	0.03%	2.15%	0.00%	10.00%	0.00%
MetLife Inc	MET	784.61	72.37	56,782	0.21%	2.76%	0.01%	5.00%	0.01%
Tapestry Inc	TPR	240.96	38.08	9,176	0.03%	3.15%	0.00%	15.00%	0.01%
CSX Corp	CSX	2,102.41	30.98	65,133	0.24%	1.29%	0.00%	10.50%	0.03%
Edwards Lifesciences Corp	EW	618.26	74.61	46,128	0.17%			11.00%	0.02%
Ameriprise Financial Inc	AMP	106.42	311.37	33,135	0.12%	1.61%	0.00%	15.00%	0.02%
Zebra Technologies Corp	ZBRA	51.63	256.41	13,238	0.05%			11.50%	0.01%
Zimmer Biomet Holdings Inc	ZBH	209.85	127.50	26,756	0.10%	0.75%	0.00%	5.50%	0.01%
Camden Property Trust	CPT	106.53	111.88	11,918	0.04%	3.36%	0.00%	3.50%	0.00%
CBRE Group Inc	CBRE	315.95	76.96	24,315	0.09%			8.50%	0.01%
Mastercard Inc	MA	953.80	347.73	331,666	1.22%	0.66%	0.01%	18.50%	0.23%
CarMax Inc	KMX	158.02	60.89	9,622	0.04%			4.00%	0.00%
Intercontinental Exchange Inc	ICE	558.55	102.59	57,302	0.21%	1.48%	0.00%	7.00%	0.01%
Fidelity National Information Services Inc	FIS	593.38	67.85	40,261		2.77%		52.00%	

Exhibit 1404/MARKET RETURN CALCULATION

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[2] Estimated Weighted Average Long-Term Growth Rate	**10.72%**
[3] S&P 500 Estimated Required Market Return	**12.63%**

		[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Name	Ticker	Shares Outst'g	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.
Chipotle Mexican Grill Inc	CMG	27.72	1,387.49	38,463				23.00%	
Wynn Resorts Ltd	WYNN	113.31	82.47	9,345				27.00%	
Live Nation Entertainment Inc	LYV	230.88	69.74	16,102					
Assurant Inc	AIZ	52.83	125.06	6,607	0.02%	2.24%	0.00%	15.50%	0.00%
NRG Energy Inc	NRG	213.39	31.82	6,790		4.40%		-10.50%	
Monster Beverage Corp	MNST	521.74	101.53	52,973	0.19%			10.50%	0.02%
Regions Financial Corp	RF	934.45	21.56	20,147	0.07%	3.71%	0.00%	11.50%	0.01%
Baker Hughes Co	BKR	1,001.47	29.53	29,573		2.57%			
Mosaic Co/The	MOS	340.48	43.87	14,937		1.82%		38.00%	
Expedia Group Inc	EXPE	150.57	87.60	13,190					
CF Industries Holdings Inc	CF	196.19	85.20	16,715		1.88%		32.00%	
APA Corp	APA	321.51	46.68	15,008		2.14%			
Leidos Holdings Inc	LDOS	136.69	105.19	14,378	0.05%	1.37%	0.00%	8.50%	0.00%
Alphabet Inc	GOOG	6,086.00	88.73	540,011	1.99%			18.50%	0.37%
First Solar Inc	FSLR	106.61	149.79	15,969				20.50%	
Cooper Cos Inc/The	COO	49.35	330.67	16,320	0.06%	0.02%	0.00%	14.00%	0.01%
TE Connectivity Ltd	TEL	317.23	114.80	36,418	0.13%	1.95%	0.00%	10.50%	0.01%
Discover Financial Services	DFS	273.23	97.83	26,730	0.10%	2.45%	0.00%	16.00%	0.02%
Visa Inc	V	1,627.85	207.76	338,203	1.24%	0.87%	0.01%	13.50%	0.17%
Mid-America Apartment Communities Inc	MAA	115.48	156.99	18,129		3.57%		-14.50%	
Xylem Inc/NY	XYL	180.22	110.57	19,927	0.07%	1.09%	0.00%	9.00%	0.01%
Marathon Petroleum Corp	MPC	468.66	116.39	54,547		2.58%			
Advanced Micro Devices Inc	AMD	1,612.36	64.77	104,432				25.50%	
Tractor Supply Co	TSCO	110.46	224.97	24,851	0.09%	1.64%	0.00%	13.00%	0.01%
ResMed Inc	RMD	146.48	208.13	30,488	0.11%	0.85%	0.00%	8.50%	0.01%
Mettler-Toledo International Inc	MTD	22.29	1,445.45	32,225	0.12%			13.50%	0.02%
Jacobs Solutions Inc	J	126.61	120.07	15,202	0.06%	0.77%	0.00%	12.00%	0.01%
Copart Inc	CPRT	476.30	60.89	29,002	0.11%			7.00%	0.01%
VICI Properties Inc	VICI	997.37	32.40	32,315	0.12%	4.81%	0.01%	8.50%	0.01%
Fortinet Inc	FTNT	781.24	48.89	38,195				21.50%	
Albemarle Corp	ALB	117.15	216.86	25,406		0.73%		21.50%	
Moderna Inc	MRNA	384.18	179.62	69,006				-2.50%	
Essex Property Trust Inc	ESS	64.75	211.92	13,723		4.15%		-4.00%	
CoStar Group Inc	CSGP	406.69	77.28	31,429	0.12%			13.00%	0.02%
Realty Income Corp	O	627.15	63.43	39,780	0.15%	4.70%	0.01%	6.00%	0.01%
Westrock Co	WRK	254.52	35.16	8,949	0.03%	3.13%	0.00%	15.00%	0.00%
Westinghouse Air Brake Technologies Corp	WAB	181.87	99.81	18,152	0.07%	0.60%	0.00%	9.50%	0.01%
Pool Corp	POOL	39.05	302.33	11,806	0.04%	1.32%	0.00%	14.00%	0.01%
Western Digital Corp	WDC	317.65	31.55	10,022	0.04%			6.50%	0.00%
PepsiCo Inc	PEP	1,377.71	180.66	248,897	0.92%	2.55%	0.02%	6.00%	0.05%
Diamondback Energy Inc	FANG	181.86	136.78	24,875		6.61%			
ServiceNow Inc	NOW	202.00	388.27	78,431				45.50%	
Church & Dwight Co Inc	CHD	243.87	80.61	19,658	0.07%	1.30%	0.00%	6.00%	0.00%
Federal Realty Investment Trust	FRT	81.21	101.04	8,205	0.03%	4.28%	0.00%	2.50%	0.00%
MGM Resorts International	MGM	384.02	33.53	12,876		0.03%		25.00%	
American Electric Power Co Inc	AEP	513.86	94.95	48,791	0.18%	3.50%	0.01%	6.50%	0.01%
SolarEdge Technologies Inc	SEDG	55.90	283.27	15,833				22.00%	
Invitation Homes Inc	INVH	611.41	29.64	18,122		2.97%			
PTC Inc	PTC	118.15	120.04	14,183				29.00%	
JB Hunt Transport Services Inc	JBHT	103.54	174.36	18,053	0.07%	0.92%	0.00%	11.50%	0.01%
Lam Research Corp	LRCX	136.38	420.30	57,320	0.21%	1.64%	0.00%	14.00%	0.03%
Mohawk Industries Inc	MHK	63.53	102.22	6,494	0.02%			10.00%	0.00%
Pentair PLC	PNR	164.50	44.98	7,399	0.03%	1.96%	0.00%	12.00%	0.00%
Vertex Pharmaceuticals Inc	VRTX	256.69	288.78	74,127	0.27%			12.50%	0.03%
Amcor PLC	AMCR	1,489.02	11.91	17,734	0.07%	4.11%	0.00%	14.50%	0.01%
Meta Platforms Inc	META	2,255.32	120.34	271,405	1.00%			13.00%	0.13%
T-Mobile US Inc	TMUS	1,244.15	140.00	174,182	0.64%			16.50%	0.11%
United Rentals Inc	URI	69.31	355.42	24,633	0.09%			18.00%	0.02%
Alexandria Real Estate Equities Inc	ARE	164.09	145.67	23,903	0.09%	3.32%	0.00%	10.00%	0.01%
Honeywell International Inc	HON	672.32	214.30	144,079	0.53%	1.92%	0.01%	12.00%	0.06%
Delta Air Lines Inc	DAL	641.19	32.86	21,069					
United Airlines Holdings Inc	UAL	326.73	37.70	12,318					
Seagate Technology Holdings PLC	STX	206.45	52.61	10,862	0.04%	5.32%	0.00%	11.50%	0.00%
News Corp	NWS	193.28	18.44	3,564		1.08%			
Centene Corp	CNC	566.26	82.01	46,439	0.17%			10.00%	0.02%
Martin Marietta Materials Inc	MLM	62.09	337.97	20,985	0.08%	0.78%	0.00%	4.50%	0.00%
Teradyne Inc	TER	155.76	87.35	13,605	0.05%	0.50%	0.00%	11.50%	0.01%
PayPal Holdings Inc	PYPL	1,140.03	71.22	81,193	0.30%			12.00%	0.04%
Tesla Inc	TSLA	3,157.75	123.18	388,972				51.50%	

Exhibit 1404/MARKET RETURN CALCULATION

[1] Estimated Weighted Average Dividend Yield	**1.81%**
[2] Estimated Weighted Average Long-Term Growth Rate	**10.72%**
[3] S&P 500 Estimated Required Market Return	**12.63%**

		[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Name	Ticker	Shares Outst'g	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.
Arch Capital Group Ltd	ACGL	369.87	62.78	23,221	0.09%			19.50%	0.02%
DISH Network Corp	DISH	292.27	14.04	4,103				-1.50%	
Dow Inc	DOW	703.76	50.39	35,462	0.13%	5.56%	0.01%	15.00%	0.02%
Everest Re Group Ltd	RE	39.17	331.27	12,974	0.05%	1.99%	0.00%	9.50%	0.00%
Teledyne Technologies Inc	TDY	46.87	399.91	18,744	0.07%			11.50%	0.01%
News Corp	NWSA	382.35	18.20	6,959		1.10%			
Exelon Corp	EXC	991.76	43.23	42,874		3.12%			
Global Payments Inc	GPN	270.40	99.32	26,856	0.10%	1.01%	0.00%	17.00%	0.02%
Crown Castle Inc	CCI	433.05	135.64	58,739	0.22%	4.62%	0.01%	12.00%	0.03%
Aptiv PLC	APTV	270.95	93.13	25,234				26.00%	
Advance Auto Parts Inc	AAP	59.25	147.03	8,712	0.03%	4.08%	0.00%	15.50%	0.00%
Align Technology Inc	ALGN	78.11	210.90	16,474	0.06%			17.00%	0.01%
Illumina Inc	ILMN	157.30	202.20	31,806	0.12%			6.50%	0.01%
Targa Resources Corp	TRGP	226.38	73.50	16,639		1.90%			
LKQ Corp	LKQ	267.18	53.41	14,270	0.05%	2.06%	0.00%	13.00%	0.01%
Zoetis Inc	ZTS	466.07	146.55	68,303	0.25%	1.02%	0.00%	11.00%	0.03%
Digital Realty Trust Inc	DLR	287.52	100.27	28,830		4.87%		-3.50%	
Equinix Inc	EQIX	92.54	655.03	60,615	0.22%	1.89%	0.00%	15.00%	0.03%
Molina Healthcare Inc	MOH	58.40	330.22	19,285	0.07%			11.00%	0.01%
Las Vegas Sands Corp	LVS	764.17	48.07	36,733	0.14%			13.50%	0.02%

Notes:
[1] Equals sum of Col. [9] or [14]
[2] Equals sum of Col. [11] or [16]
[3] Equals ([1] x (1 + (0.5 x [2]))) + [2]
[4] Source: Bloomberg Professional as of December 31, 2022
[5] Source: Bloomberg Professional as of December 31, 2022
[6] Equals [4] x [5]
[7] Equals weight in S&P 500 based on market capitalization [6] if Growth Rate >0% and ≤20%
[8] Source: Bloomberg Professional and Value Line, as of December 31, 2022
[9] Equals [7] x [8]
[10] Source: Value Line, as of December 31, 2022
[11] Equals [7] x [10]

Application No. 22-05-006
Exhibit PAC/1405
Witness: Ann E. Bulkley

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

PACIFICORP

Exhibit Accompanying Rebuttal Testimony of

Ann E. Bulkley

Long-Term Historical Beta – 2013-2021

February 2023

Exhibit 1405/LONG-TERM HISTORICAL BETA - 2013 - 2021

Company	Ticker	[1] 12/31/2013	[2] 12/31/2014	[3] 12/31/2015	[4] 12/31/2016	[5] 12/31/2017	[6] 12/31/2018	[7] 12/31/2019	[8] 12/31/2020	[9] 12/31/2021	[10] 12/31/2022	[11] 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
Evergy, Inc.	EVRG						NMF	NMF	1.00	0.95	0.90	0.98
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
Otter Tail Corporation	OTTR	0.95	0.90	0.85	0.85	0.90	0.75	0.70	0.85	0.90	0.85	0.85
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	0.74
Southern Company	SO	0.55	0.55	0.60	0.55	0.55	0.50	0.50	0.90	0.95	0.90	0.63
Xcel Energy Inc.	XEL	0.65	0.65	0.65	0.60	0.60	0.50	0.50	0.80	0.80	0.80	0.64
Mean		**0.73**	**0.74**	**0.75**	**0.69**	**0.70**	**0.59**	**0.58**	**0.88**	**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])

Application No. 22-05-006
Exhibit PAC/1406
Witness: Ann E. Bulkley

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

PACIFICORP

Exhibit Accompanying Rebuttal Testimony of

Ann E. Bulkley

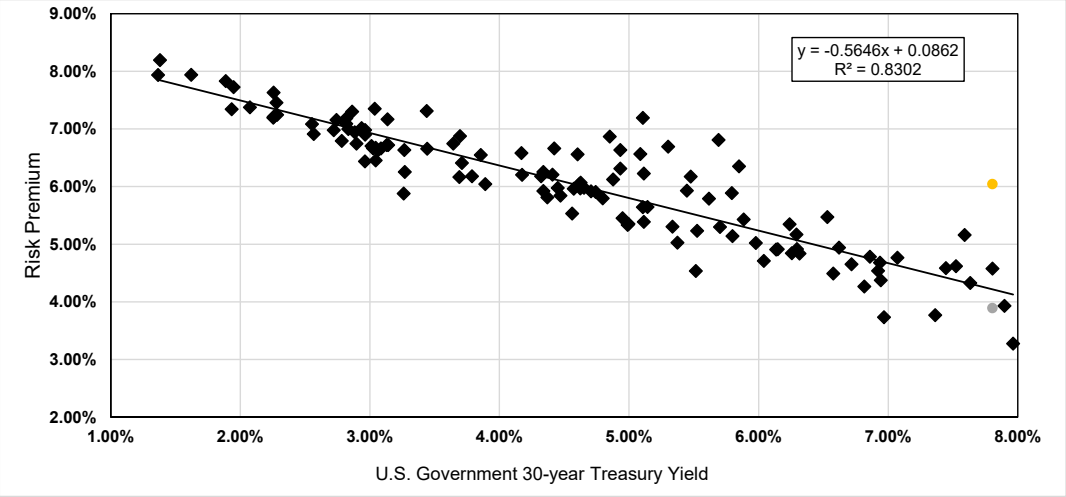
30-Year Treasury Bond Yield Plus Risk Premium (National)

February 2023

BOND YIELD PLUS RISK PREMIUM

Quarter	[1] Average Authorized VI Electric ROE	[2] U.S. Govt. 30-year Treasury	[3] 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	9.67%	1.95%	7.73%
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	9.93%	3.89%	6.04%
AVERAGE	10.61%	4.56%	6.05%
MEDIAN	10.58%	4.61%	6.18%



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.911140
R Square	0.830176
Adjusted R Square	0.828784
Standard Error	0.004252
Observations	124.000000

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1.000000	0.010781	0.010781	596.389576	0.000000
Residual	122.000000	0.002205	0.000018		
Total	123.000000	0.012986			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.0862	0.0011	76.9714	0.0000	0.0840	0.0884	0.0840	0.0884
U.S. Govt. 30-year Treasury	(0.5646)	0.0231	(24.4211)	0.0000	(0.6103)	(0.5188)	(0.6103)	(0.5188)

	[7] U.S. Govt. 30-year Treasury	[8] Risk Premium	[9] ROE
Current 30-day average of 30-year U.S. Treasury bond yield [4]	3.71%	6.53%	10.24%
Blue Chip Near-Term Projected Forecast (Q1 2023 - Q1 2024) [5]	3.88%	6.43%	10.31%
Blue Chip Long-Term Projected Forecast (2024-2028) [6]	3.90%	6.42%	10.32%
AVERAGE			10.29%

Notes:
[1] Regulatory Research Associates, rate cases through December 31, 2022
[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 December 31, 2022
[5] Blue Chip Financial Forecasts, Vol. 42, No. 1, January 1, 2023, at 2
[6] Blue Chip Financial Forecasts, Vol. 41, No. 12, December 2, 2022, at 14
[7] See notes [4], [5] & [6]
[8] Equals 0.086227 + (-0.564583 x Column [7])
[9] Equals Column [7] + Column [8]

Application No. 22-05-006
Exhibit PAC/1407
Witness: Ann E. Bulkley

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

PACIFICORP

Exhibit Accompanying Rebuttal Testimony of

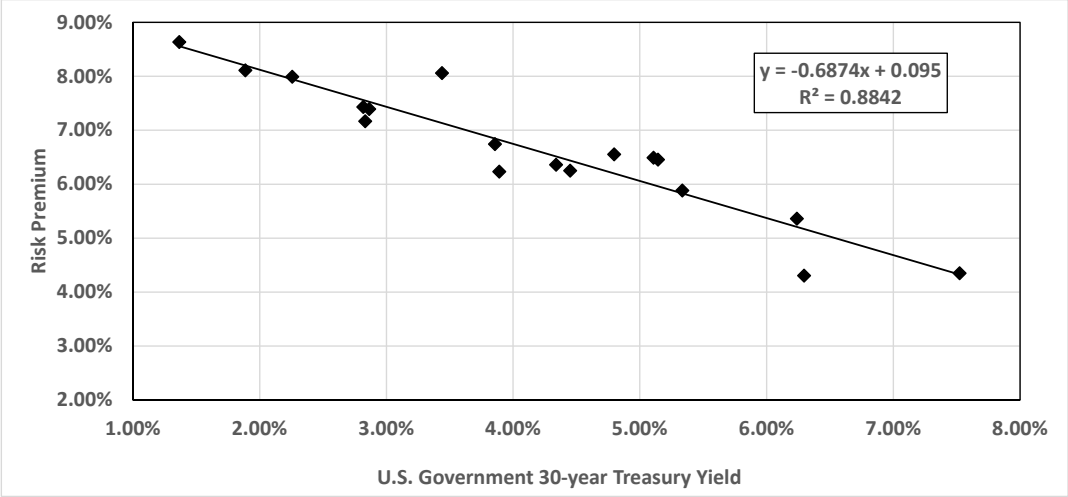
Ann E. Bulkley

30-Year Treasury Bond Yield Plus Risk Premium (California)

February 2023

BOND YIELD PLUS RISK PREMIUM- CALIFORNIA

		X	Y
	[1]	[2]	[3]
Quarter	Average Authorized VI Electric ROE	U.S. Govt. 30-year Treasury	Risk Premium
1992.4	11.88%	7.52%	4.35%
1995.4	11.60%	6.24%	5.36%
2000.1	10.60%	6.30%	4.30%
2004.2	11.22%	5.34%	5.88%
2004.3	11.60%	5.11%	6.49%
2006.2	11.60%	5.14%	6.46%
2007.1	11.35%	4.80%	6.55%
2008.3	10.70%	4.45%	6.25%
2009.1	11.50%	3.44%	8.06%
2009.4	10.70%	4.34%	6.36%
2010.3	10.60%	3.86%	6.74%
2012.4	10.26%	2.86%	7.39%
2016.4	10.00%	2.83%	7.17%
2017.4	10.25%	2.82%	7.43%
2019.4	10.25%	2.26%	7.99%
2020.1	10.00%	1.89%	8.11%
2020.3	10.00%	1.37%	8.63%
2022.4	10.13%	3.89%	6.23%
AVERAGE	10.79%	4.14%	6.65%
MEDIAN	10.65%	4.12%	6.52%



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.940330625
R Square	0.884221685
Adjusted R Square	0.87698554
Standard Error	0.004239121
Observations	18

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.002195865	0.002195865	122.1951358	6.69462E-09
Residual	16	0.000287522	1.79701E-05		
Total	17	0.002483387			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.094974556	0.002758926	34.42447129	1.95963E-16	0.089125894	0.100823217	0.089125894	0.100823217
U.S. Govt. 30-year Treasury	-0.68736586	0.062181472	-11.05419087	6.69462E-09	-0.819184692	-0.555547028	-0.819184692	-0.555547028

	[7] U.S. Govt. 30-year Treasury	[8] Risk Premium	[9] ROE
Current 30-day average of 30-year U.S. Treasury bond yield [4]	3.71%	6.95%	10.66%
Blue Chip Near-Term Projected Forecast (Q3 2022 - Q3 2023) [5]	3.88%	6.83%	10.71%
Blue Chip Long-Term Projected Forecast (2023-2027) [6]	3.90%	6.82%	10.72%
AVERAGE			10.69%

Notes:
[1] Regulatory Research Associates, rate cases through December 31, 2022
[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 December 31, 2022
[5] Blue Chip Financial Forecasts, Vol. 42, No. 1, January 1, 2023, at 2
[6] Blue Chip Financial Forecasts, Vol. 41, No. 12, December 2, 2022, at 14
[7] See notes [4], [5] & [6]
[8] Equals 0.094975 + (-0.687366 x Column [7])
[9] Equals Column [7] + Column [8]

Application No. 22-05-006
Exhibit PAC/1408
Witness: Ann E. Bulkley

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

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Exhibit Accompanying Rebuttal Testimony of

Ann E. Bulkley

Comparison of Dr. Woolridge DCF Analysis

February 2023

Exhibit 1408/Comparison of Dr. Woolridge DCF Analysis

As-Filed v. As-Updated

	Notes	Dr. Woolridge As-Filed	As-Updated Dividend Yield	As-Updated Div. Yield & Low Gwth Rate	As-Updated Div. Yield & High Gwth Rate
Panel A - Dr. Woolridge Proxy Group					
Dividend Yield	[1]	3.65%	3.75%	3.75%	3.75%
Adjustment Factor	[2]	1.0269	1.0269	1.0265	1.0280
Adjusted Dividend Yield	[3]	3.75%	3.85%	3.85%	3.86%
Growth Rate	[4]	5.38%	5.38%	5.30%	5.60%
Cost of Equity	[5]	**9.10%**	**9.23%**	**9.15%**	**9.46%**
Increase from As-Filed:			0.13%	0.05%	0.36%
Panel B - Ms. Bulkley Proxy Group					
Dividend Yield	[1]	3.70%	3.87%	3.87%	3.87%
Adjustment Factor	[2]	1.0288	1.0288	1.0290	1.0300
Adjusted Dividend Yield	[3]	3.81%	3.98%	3.98%	3.98%
Growth Rate	[4]	5.75%	5.75%	5.80%	6.00%
Cost of Equity	[5]	**9.55%**	**9.73%**	**9.78%**	**9.98%**
Increase from As-Filed:			0.18%	0.23%	0.44%

Notes:
[1] *As-Filed*: Exh. JRW-5; *As-Updated*: median of 30-day average stock price
[2] Equals 1+(0.5 x [4])
[3] [1] x [2]
[4] *As-Filed*: Based on data from Exh. JRW-5, pp. 3-6; *As-Updated*: low and high EPS growth rate from Exh. JRW-5, p. 6
[5] Equals [3] + [4]; note, Dr. Woolridge rounds the Panel B result down.

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Exhibit Accompanying Rebuttal Testimony of

Ann E. Bulkley

Comparison of Dr. Woolridge CAPM Amalysis

February 2023

Exhibit 1409/Comparison of Dr. Woolridge CAPM Analysis

As-Filed v. As-Updated

	Notes	Dr. Woolridge As-Filed	As-Updated Risk-Free Rate	As-Updated Risk-Free Rate & MRP
Panel A - Dr. Woolridge Proxy Group				
Risk-Free Rate	[1]	3.60%	4.00%	4.00%
Beta	[2]	0.85	0.85	0.85
Market Risk Premium	[3]	6.00%	6.00%	8.63%
Cost of Equity	[4]	**8.70%**	**9.10%**	**11.34%**
Increase from As-Filed:			0.40%	2.64%
Panel B - Ms. Bulkley Proxy Group				
Risk-Free Rate	[1]	3.60%	4.00%	4.00%
Beta	[2]	0.85	0.85	0.85
Market Risk Premium	[3]	6.00%	6.00%	8.63%
Cost of Equity	[4]	**8.70%**	**9.10%**	**11.34%**
Increase from As-Filed:			0.40%	2.64%

Notes:
[1] *As-Filed*: Exh. JRW-6, p. 1; *As-Updated*: Dr. Woolridge risk-free rate in CMP 2022 Rate Case
[2] Exh. JRW-6
[3] *As-Filed*: Exh. JRW-6; *As-Updated*: equals market return on PAC/1404 minus risk-free rate in [1]
[4] Equals [1] + ([2] x [3])

Application No. 22-05-006
Exhibit PAC/1410
Witness: Ann E. Bulkley

BEFORE THE PUBLIC UTILITIES COMMISSION

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Exhibit Accompanying Rebuttal Testimony of

Ann E. Bulkley

Updated Results – Woolridge Analyses

February 2023

Exhibit 1410/Updated Results - Woolridge Analyses

	Range of Results		
	Low	**High**	**Notes**
Panel A			
DCF	9.15%	9.46%	[1]
CAPM	11.34%	11.34%	[2]
Midpoint	10.25%	10.40%	[3]
Panel B			
DCF	9.78%	9.98%	[4]
CAPM	11.34%	11.34%	[5]
Midpoint	10.56%	10.66%	[6]

Sources:
[1] PAC/1408
[2] PAC/1409
[3] Average [1]+ [2]
[4] PAC/1408
[5] PAC/1409
[6] Average [4]+ [5]