

Application No. 22-05-____
Exhibit PAC/200
Witness: Ann E. Bulkley

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

PACIFICORP

Direct Testimony of Ann E. Bulkley

Return on Equity

May 2022

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ATTACHED EXHIBITS

Exhibit PAC/201—Resume and Testimony Listing of Ann E. Bulkley

Exhibit PAC/202—Summary of Results

Direct Testimony of Ann E. Bulkley

Exhibit PAC/203— Constant Growth Discounted Cash Flow Model

Exhibit PAC/204—Capital Asset Pricing Model

Exhibit PAC/205— CAPM –Long-Term Beta

Exhibit PAC/206— Market Return

Exhibit PAC/207—Risk Premium Approach- National

Exhibit PAC/208—Risk Premium Approach- California

Exhibit PAC/209—Capital Expenditures Analysis

Exhibit PAC/210—Regulatory Risk Analysis

Exhibit PAC/211—Capital Structure Analysis

1 **Q. Have you previously testified before the Commission or other regulatory**
2 **authorities?**

3 A. Yes. A list of proceedings in which I have provided testimony is provided in Exhibit
4 PAC/201 to this testimony.

5 **II. PURPOSE AND OVERVIEW OF TESTIMONY**

6 **Q. What is the purpose of your direct testimony?**

7 A. The purpose of my direct testimony is to present evidence and provide a recommendation
8 regarding the appropriate Return on Equity (ROE)¹ for PacifiCorp's electric utility
9 operations in California and to provide an assessment of its proposed capital structure to
10 be used for ratemaking purposes. A summary of my ROE analyses and results is
11 provided in Exhibit PAC/202. My analysis and recommendations are supported by the
12 data presented in Exhibit PAC/203 through Exhibit PAC/211, which were prepared by
13 me or under my direction.

14 **Q. Please provide a brief overview of the analyses that led to your ROE**
15 **recommendation.**

16 A. As discussed in more detail in Section VII, I applied the Constant Growth DCF the
17 Capital Asset Pricing Model (CAPM), the Empirical CAPM (ECAPM), and the Bond
18 Yield Plus Risk Premium approach. My recommendation also takes into consideration:
19 (1) PacifiCorp's capital expenditure requirements; (2) the regulatory environment in
20 which PacifiCorp operates; (3) PacifiCorp's adjustment mechanisms; and (4) the fuel
21 sources of PacifiCorp's generation portfolio.

¹ Throughout my direct testimony, I interchangeably use the terms "ROE" and "cost of equity."

1 Finally, I considered PacifiCorp's proposed capital structure as compared to the capital
2 structures of the proxy companies.² While I did not make any specific adjustments to my
3 ROE estimates for any of these factors, I did take them into consideration in aggregate
4 when determining where PacifiCorp's ROE falls within the range of analytical results.

5 **Q. How is the remainder of your direct testimony organized?**

6 A. Section III provides a summary of my analyses and conclusions. Section IV reviews the
7 regulatory guidelines pertinent to the development of the cost of capital. Section V
8 discusses current and prospective capital market conditions and the effect of those
9 conditions on PacifiCorp's cost of equity. Section VI explains my selection of a proxy
10 group of electric utilities. Section VII describes my analyses and the analytical basis for
11 the recommendation of the appropriate ROE for PacifiCorp. Section VIII provides a
12 discussion of specific business and financial risks that have a direct bearing on the ROE
13 to be authorized for PacifiCorp in this case, including capital expenditures, wildfire risk
14 mitigation, regulatory risks, generation ownership and transition, and climate change
15 initiatives. Section IX discusses PacifiCorp's capital structure as compared with the
16 capital structures of the utility operating company subsidiaries of the proxy group
17 companies. Section X presents my conclusions and recommendations.

18 **III. SUMMARY OF ANALYSES AND CONCLUSIONS**

19 **Q. What is your recommended ROE for PacifiCorp?**

20 A. Based on the analytical results in Figure 1 below, I believe a range from 9.90 percent to
21 10.75 percent is reasonable. The Company is requesting a return of 10.50 percent, a

² The selection and purpose of developing a group of comparable companies is discussed in detail in Section VI of my direct testimony.

1 modest increase relative to its current 10.00 percent ROE. This request considers the
2 range of results for the proxy group companies, the relative business, financial, and
3 regulatory risks of PacifiCorp's electric operations in California as compared to the proxy
4 group, and current capital market conditions and balances the interests of customers and
5 shareholders.

6 **Q. Please summarize the key factors considered in your analyses and upon which you**
7 **base your recommended ROE.**

8 A. My analyses and recommendations considered the following:

- 9 • The United States (U.S.) Supreme Court's *Hope* and *Bluefield* decisions,³ which
10 established the standards for determining a fair and reasonable authorized ROE,
11 including consistency of the authorized return with other businesses having
12 similar risk, adequacy of the return to ensure access to capital and support credit
13 quality, and the necessity for the end result to lead to just and reasonable rates.
- 14 • The required ROE should be a forward-looking estimate; therefore, the analyses
15 supporting my recommendation rely on forward-looking inputs and assumptions
16 (e.g., forecasted growth rates in the DCF model, projected interest rates and a
17 forward-looking market risk premium in the CAPM.).
- 18 • The effect of current and prospective capital market conditions on the ROE
19 estimation models and on investors' return requirements.
- 20 • PacifiCorp's business risks relative to the proxy group companies and the
21 implications of those risks in arriving at the appropriate ROE.

22 **Q. Please explain how you considered those factors.**

23 A. I relied on the results of several analytical approaches to estimate PacifiCorp's cost of
24 equity based on a proxy group of publicly traded companies. As shown in Figure 1, those
25 ROE estimation models produce a wide range of results. My conclusion about where
26 within that range of results PacifiCorp's ROE should be placed is based on PacifiCorp's

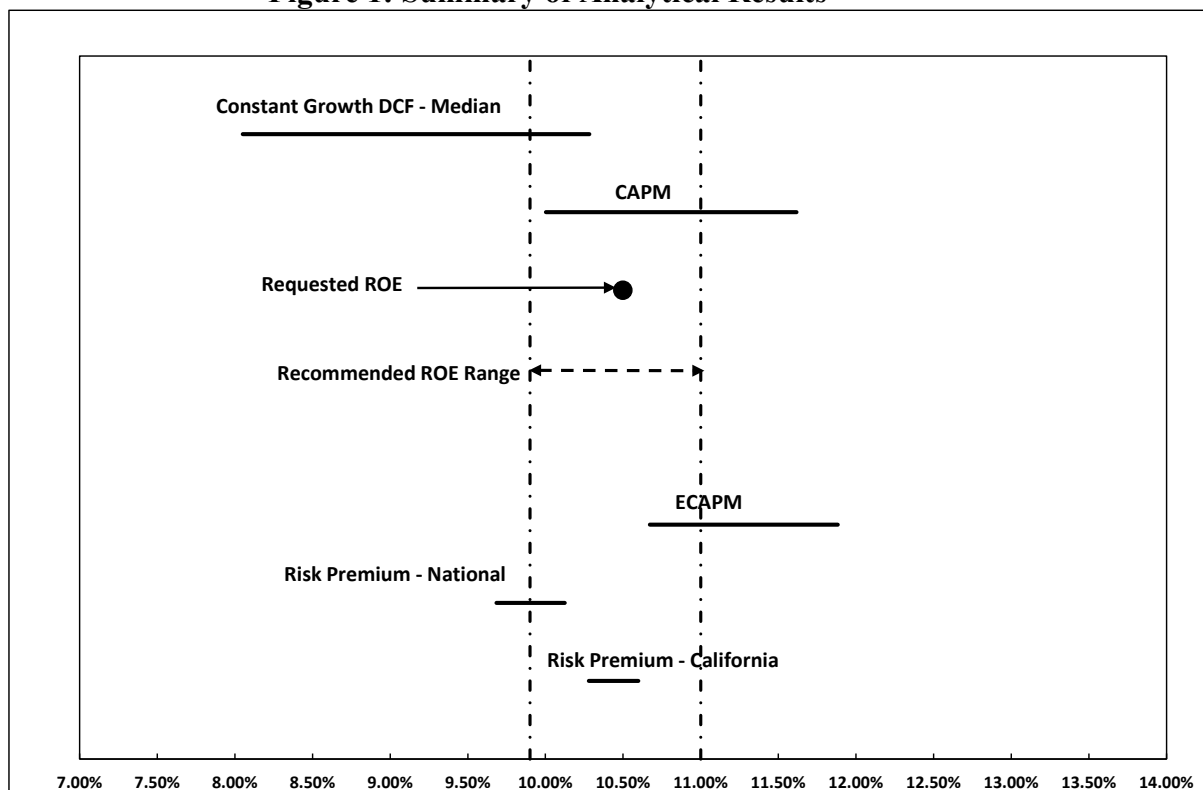
³ *Bluefield Waterworks & Improvement Co. v. Pub. Serv. Comm'n of West Virginia*, 262 U.S. 679, 692-93 (1923); *Fed. Power Comm'n v. Hope Natural Gas Co.*, 320 U.S. 591, 603 (1944).

1 business and financial risk relative to the proxy group. Although the companies in my
2 proxy group are generally comparable to PacifiCorp, each company is unique and no two
3 companies have the exact same business and financial risk profiles. Accordingly, I
4 selected a proxy group with similar, but not identical risk profiles, and I adjusted the
5 results of my analysis either upward or downward within the reasonable range of results
6 to account for any residual differences in risk.

7 **Q. Please summarize the ROE estimation models that you considered to establish the**
8 **range of ROE for PacifiCorp's California operations.**

9 A. I considered the results of the Constant Growth DCF. In addition, I considered the results
10 of the CAPM, and Risk Premium. The results of these analyses are summarized in Figure
11 1 below.

Figure 1: Summary of Analytical Results



1 As shown in Figure 1, the range of results produced by the Constant
2 Growth DCF estimation model is relatively wide, particularly in relation to the results of
3 the other methodologies. While it is common to consider multiple models to estimate the
4 cost of equity, it is particularly important when the range of results varies considerably
5 across methodologies.

6 Furthermore, as shown in Exhibit PAC/202, the median results of the Constant
7 Growth DCF analyses using the earnings lowest growth rates for each of the proxy group
8 companies produce results that are below recently authorized ROEs for electric utilities in
9 the U.S. that are relying on traditional original cost ratemaking. Therefore, I conclude
10 that these results do not provide a sufficient risk premium to compensate equity investors
11 for the residual risks of ownership, including the risk that they have the lowest claim on
12 the assets and income of PacifiCorp.

13 Although I have concerns about the results produced by the DCF models, my
14 ROE recommendation considers the range between the median and median-high results
15 of the DCF models. In addition, I consider the results of forward-looking CAPM and a
16 Bond Yield Plus Risk Premium analysis. I also consider company-specific risk factors,
17 and current and prospective capital market conditions.

18 As I will discuss, expected changes in capital market conditions will affect the
19 results of the ROE estimation models, making it important to review results based on
20 historical or current data recognizing that these conditions may not represent the forward-
21 looking cost of equity. The assumptions in each of the models are affected differently.
22 In determining the appropriate forward-looking ROE, it is important to recognize these
23 limitations in the static models and consider how the results may differ during the period

1 over which the rates in this proceeding will be in effect. For example, dividend yields in
2 the DCF model are affected by the recent historical high stock prices. As accommodative
3 monetary policies begin to be reversed, it is reasonable to expect that utility stocks will
4 underperform the broader market. Lower stock prices increasing dividend yields on
5 utility stocks and all else equal would increase the ROE resulting from the DCF model.
6 Further, the Federal Reserve has signaled its intention to increase interest rates. Increases
7 in interest rates are likely to affect the bond yields used in the CAPM. Therefore, it
8 would be reasonable to consider scenarios of this model that reflect changes in bond
9 yields.

10 **Q. Please summarize the analysis you conducted in determining that PacifiCorp's**
11 **requested capital structure is reasonable and appropriate.**

12 A. Based on the analysis presented in Section IX of my direct testimony, I conclude that
13 PacifiCorp's proposed common equity ratio of 52.25 percent is reasonable. To make this
14 determination, I reviewed the capital structures of the utility operating subsidiaries of the
15 proxy companies. As shown in Exhibit PAC/211, the results of that analysis demonstrate
16 that the equity ratios for the utility operating companies held by the proxy group range
17 from 46.85 percent to 61.11 percent with a median of 52.81 percent. PacifiCorp's
18 proposed common equity ratio of 52.25 percent is well within the range established for
19 the utility operating subsidiaries of the proxy group companies and is reasonable.

20 IV. REGULATORY GUIDELINES

21 **Q. Please describe the principles that guide the establishment of the cost of capital for a**
22 **regulated utility.**

23 A. The U.S. Supreme Court's precedent-setting *Hope* and *Bluefield* cases established the

1 standards for determining the fairness or reasonableness of a utility's authorized ROE.

2 According to the *Bluefield* decision:

3 A public utility is entitled to such rates as will permit it to earn a return
4 upon the value of the property which it employs for the convenience of the
5 public equal to that generally being made at the same time and in the same
6 general part of the country on investments in other business undertakings
7 which are attended by corresponding risks and uncertainties... The return
8 should be reasonably sufficient to assure confidence in the financial
9 soundness of the utility, and should be adequate, under efficient and
10 economical management, to maintain and support its credit, and enable it
11 to raise the money necessary for the proper discharge of its public duties.⁴

12 The *Hope* decision supports the principles outlined in *Bluefield*.

13 From the investor or company point of view it is important that there be
14 enough revenue not only for operating expenses but also for the capital
15 costs of the business. These include service on the debt and dividends on
16 the stock... By that standard, the return to the equity holder should be
17 commensurate with the returns on investments in other enterprises having
18 corresponding risks. That return, moreover, should be sufficient to assure
19 confidence in the financial integrity of the enterprise, so as to maintain its
20 credit and attract capital.⁵

21 **Q. Has the Commission provided similar guidance in establishing the appropriate**
22 **return on common equity?**

23 A. Yes. The Commission has summarized Supreme Court precedent as follows:

24 The legal standard for setting the fair rate of return has been established by
25 the United States Supreme Court in the *Bluefield*, *Hope* and *Duquesne*
26 cases. *Bluefield* stands for the proposition that a utility's overall return
27 should be comparable to the overall return earned at the same time and in
28 the same general part of the country on investments in other business
29 undertakings attended by corresponding risks and uncertainties. *Hope*
30 states that authorized rates will not be judged invalid as long as they
31 enable a utility to maintain financial integrity, to attract capital, and to
32 compensate investors for the risks they assume. In *Duquesne*, the Court

⁴ *Bluefield*, 262 U.S. at 679, 692-93.

⁵ *Hope*, 320 U.S. at 591, 603.

1 concludes that rates must not be so low as to be confiscatory.⁶

2 Further, in 2012, the Commission summarized its intentions regarding the fair return
3 standard in the cost of capital proceeding for the large investor-owned utilities:

4 We attempt to set the ROE at a level of return commensurate with market
5 returns on investments having corresponding risks, and adequate to enable
6 a utility to attract investors to finance the replacement and expansion of a
7 utility's facilities to fulfill its public utility service obligation. To
8 accomplish this objective, we have consistently evaluated analytical
9 financial models as a starting point to arrive at a fair ROE.⁷

10 **Q. Why is it important for a utility to be allowed the opportunity to earn a return that**
11 **is adequate to attract capital at reasonable terms?**

12 A. An ROE that is adequate to attract capital at reasonable terms enables a utility to continue
13 to provide safe, reliable service while maintaining its financial integrity. To the extent
14 that the utility is provided the opportunity to earn its market-based cost of capital, neither
15 customers nor shareholders are disadvantaged.

16 **Q. Is a utility's ability to attract capital also affected by the ROEs that are authorized**
17 **for other utilities?**

18 A. Yes. Utilities compete directly for capital with other investments of similar risk, which
19 include other water, natural gas and electric utilities. Therefore, the ROE awarded to a
20 utility sends an important signal to investors regarding whether there is regulatory
21 support for that utility's financial integrity, dividends, growth, and fair compensation for

⁶ *In the Matter of the Application of San Jose Water Company (U168W) for the Authority to Adjust Its Cost of Capital and to Reflect That Cost of Capital in Its Rates for the Period from January 1, 2018 through December 31, 2020 and Related Matters*, Applications (A.) 17-05-001, 17-04-002, 17-04-003, and 17-04-006 (cons.), Decision (D.) 18-03-035, at 6 (Mar. 22, 2018) (citations omitted).

⁷ *Application of Southern California Edison Company (U338E) for Authority to Establish Its Authorized Cost of Capital for Utility Operations for 2013 and to Reset the Annual Cost of Capital Adjustment Mechanism and Related Matters*, A,12-04-015, 12-04-016, 12-04-017, 12-04-018 (cons.), D.12-12-034 at 18 (Dec. 20, 2012).

1 business and financial risk. The cost of capital represents an opportunity cost to
2 investors. If higher returns are available for other investments of comparable risk,
3 investors have an incentive to direct their capital to those investments. Thus, an
4 authorized ROE for the Company that is significantly below authorized ROEs for other
5 utilities can inhibit PacifiCorp's ability to attract capital for investment.

6 **Q. What are your conclusions regarding regulatory guidelines?**

7 A. The ratemaking process is premised on the principle that, in order for investors and
8 companies to commit the capital needed to provide safe and reliable utility services, a
9 utility must have the opportunity to recover the return of, and the market-required return
10 on, its invested capital. Because utility operations are capital-intensive, regulatory
11 decisions should enable the utility to attract capital at reasonable terms; doing so balances
12 the long-term interests of the utility and its customers.

13 The financial community carefully monitors the current and expected financial
14 condition of utility companies and the regulatory framework in which they operate. In
15 that respect, the regulatory framework is one of the most important factors in both debt
16 and equity investors' assessments of risk. The Commission's order in this proceeding,
17 therefore, should establish rates that provide PacifiCorp with the opportunity to earn an
18 ROE that is: (1) adequate to attract capital at reasonable terms; (2) sufficient to ensure its
19 financial integrity; and (3) commensurate with returns on investments in enterprises with
20 similar risk. To the extent that PacifiCorp is authorized the opportunity to earn its
21 market-based cost of capital, the proper balance is achieved between customers' and
22 shareholders' interests.

1 **V. CAPITAL MARKET CONDITIONS**

2 **Q. Why is it important to analyze capital market conditions?**

3 A. The ROE estimation models rely on market data that are either specific to the proxy
4 group, in the case of the DCF model, or to the expectations of market risk, in the case of
5 the CAPM. The results of the ROE estimation models can be affected by prevailing
6 market conditions at the time the analysis is performed. While the ROE that is
7 established in a rate proceeding is intended to be forward-looking, the analyst uses
8 current and projected market data, specifically stock prices, dividends, growth rates and
9 interest rates, in the ROE estimation models to estimate the required return for the subject
10 company.

11 As discussed in the remainder of this section, analysts and regulatory
12 commissions have concluded that current market conditions have affected the results of
13 the ROE estimation models. As a result, it is important to consider the effect of these
14 conditions on the ROE estimation models when determining the appropriate range and
15 recommended ROE for a future period. If investors do not expect current market
16 conditions to be sustained in the future, it is possible that the ROE estimation models will
17 not provide an accurate estimate of investors' required return during that rate period.
18 Therefore, it is important to consider projected market data to estimate the return for that
19 forward-looking period.

20 **Q. What factors are affecting the cost of equity for regulated utilities in the current and**
21 **prospective capital markets?**

22 A. The cost of equity for regulated utility companies is being affected by several factors in
23 the current and prospective capital markets, including: 1) changes in monetary policy,

1 2) currently high inflation and continued inflation in 2022, 3) increasing interest rates,
2 and 4) volatile market conditions. These factors affect the assumptions used in the ROE
3 estimation models. In this section, I discuss each of these factors and how it affects the
4 models used to estimate the cost of equity for regulated utilities.

5 **Q. What effect do current and prospective market conditions have on the cost of equity**
6 **for PacifiCorp?**

7 A. As is discussed in more detail in the remainder of this section, the combination of
8 persistently high inflation, the Federal Reserve's changes in monetary policy, and the
9 dramatic shifts in market conditions resulting from political influences all contribute to an
10 expectation of increased market risk and an increase in the cost of the investor-required
11 return on equity. It is essential that these factors be considered in setting a forward-
12 looking cost of equity. Inflation is currently at its highest level seen in approximately
13 40 years. Interest rates, which have increased from the pandemic lows seen in 2020 are
14 expected to continue to increase in direct response to the Federal Reserve's use of
15 monetary policy. Further, utilities, which are a defensive sector, have historically
16 underperformed the market during periods of economic expansion, such as is currently
17 being experienced. Therefore, investors are currently expecting utilities to underperform
18 over the near-term, which means the share prices of utilities will likely decline. A
19 decline in share prices will increase the dividend yields of utilities and thus the cost of
20 equity utilities are expected to increase over the near-term. This is important because the
21 cost of equity in this proceeding is being estimated for the period that the Company's
22 rates will be in effect. Since the cost of equity is expected to increase over the near-term
23 for utilities, ROE estimates based on current market conditions will understate the ROE

1 during the period that the Company's rates will be in effect. For example, the DCF
2 model, which relies on historical averages of share prices, is likely to understate the cost
3 of equity for the Company over the near term.

4 **A. The Effect of Monetary Policy on Market Dynamics**

5 **Q. Please summarize the monetary policy actions of the Federal Reserve in response to**
6 **the economic effects of COVID-19.**

7 A. In response to the COVID-19 pandemic, the Federal Reserve:

- 8 • decreased the Federal Funds rate twice in March 2020, resulting in a target range
9 of 0.00 percent to 0.25 percent;
- 10 • increased its holdings of both Treasury and mortgaged-back securities;
- 11 • started expansive programs to support credit to large employers – the Primary
12 Market Corporate Credit Facility to provide liquidity for new issuances of
13 corporate bonds; and the Secondary Market Corporate Credit Facility to provide
14 liquidity for outstanding corporate debt issuances; and
- 15 • supported the flow of credit to consumers and businesses through the Term Asset-
16 Backed Securities Loan Facility.

17 In addition, Congress also passed the Coronavirus Aid, Relief, and Economic Security
18 (“CARES”) Act in March 2020, the Consolidated Appropriations Act, 2021 in
19 December 2020, and the American Rescue Plan Act in March 2021, which included
20 \$2.2 trillion, \$900 billion, and \$1.9 trillion, respectively, in fiscal stimulus aimed at also
21 mitigating the economic effects of COVID-19. These expansive monetary and fiscal
22 programs mitigated the economic effects of the COVID-19 pandemic and provided
23 additional support as the economy recovers from the COVID-19 recession.

24 **Q. How did the accommodative monetary and fiscal policy affect the U.S. economy?**

25 A. The expansive monetary and fiscal policy programs resulted in a strong economic
26 recovery in 2021 from the COVID-19 induced recessionary period in 2020. In fact,
27 according to the Bureau of Economic Analysis, real gross domestic product (“GDP”)

1 grew by 5.7 percent in 2021 driven primarily by a 7.9 percent increase in personal
2 consumption expenditures.⁸ Moreover, the unemployment rate decreased from a high of
3 14.7 percent in April 2020 to 3.9 percent as of December 2021.⁹ Finally, as I will discuss
4 in more detail below, the economic recovery has also included a substantial increase in
5 inflation with the year-over-year (“YOY”) change in the Consumer Price Index (“CPI”)
6 at 7.91 percent in February 2022. The strong economic recovery along with the increase
7 in inflation has resulted in the Federal Reserve normalizing monetary policy and
8 removing the accommodative policy programs that it used to mitigate the effect of
9 COVID-19.

10 **Q. How has the Federal Reserve recently normalized monetary policy?**

11 A. The Federal Reserve began the process of policy normalization at the November 2, 2021
12 meeting where the Federal Reserve decided to reduce asset purchases of Treasuries by
13 \$10 billion and mortgage-backed securities by \$5 billion on a monthly basis.¹⁰ Given
14 consistent continued high inflation, the Federal Reserve increased the pace of its taper of
15 bond purchases at the December 15, 2021 meeting, reducing asset purchases of
16 Treasuries by \$20 billion and mortgage-backed securities by \$10 billion on a monthly
17 basis.¹¹ The Federal Reserve completed its taper of bond purchases in March 2022.¹²

18 At the March 16, 2022 meeting with the tapering of assets purchases complete,
19 the Federal Reserve announced the next step in policy normalization which was an

⁸ Source: Bureau of Economic Analysis, News Release, (Feb. 24, 2022) at 8.

⁹ Source: Bureau of Labor Statistics. <https://data.bls.gov/timeseries/LNS14000000>

¹⁰ Federal Reserve, Press Release (Nov. 3, 2021).

¹¹ Federal Reserve, Press Release, (Dec. 15, 2021).

¹² Source: Federal Reserve Bank of New York, <https://www.newyorkfed.org/markets/domestic-market-operations/monetary-policy-implementation/treasury-securities/treasury-securities-operational-details#monthly-details>.

1 increase in the target federal funds rate from 0.00 – 0.25 percent to 0.25 – 0.50 percent.¹³
2 Additionally, the Federal Reserve’s Federal Open Market Committee (“FOMC”)
3 forecasted an additional six rate increases in 2022 and four rate increases in 2023 which
4 resulted a median forecast of the federal funds rate of 1.9 percent and 2.8 percent,
5 respectively.¹⁴ Moreover, the Federal Reserve announced plans to reduce the size of its
6 balance sheet at an upcoming meeting in 2020. Federal Reserve Chairman Jerome
7 Powell noted that substantial progress had been regarding developing a plan for the
8 reduction in the Federal Reserve’s balance sheet and thus the reduction could start as
9 soon as the FOMC’s next meeting in May.¹⁵ According to Chairman Powell, the balance
10 sheet reduction’s effect on the economy could be the equivalent of another rate
11 increase.¹⁶ Therefore, the combination of the balance sheet reduction and the projected
12 interest rate increases would represent the equivalent of eight interest rates increases in
13 2022.

14 **Q. Why has the Federal Reserve decided to normalize monetary policy?**

15 A. The Federal Reserve has accelerated plans to normalize monetary policy in response to
16 increasing inflation. While the Federal Reserve initially viewed inflation as transitory, it
17 has been higher and more persistent than the target levels and is expected to continue in
18 2022. At the March 16, 2022 meeting, Federal Reserve Chairman Powell stated that:

19 Inflation remains well above our longer-run goal of 2 percent. Aggregate
20 demand is strong, and bottlenecks and supply constraints are limiting
21 how quickly production can respond. These supply disruptions have been
22 larger and longer lasting than anticipated, exacerbated by waves of the
23 virus here and abroad, and price pressures have spread to a broader range

¹³ Federal Reserve, Press Release, (Mar. 16, 2022).

¹⁴ Federal Reserve, Summary of Economic Projections, March 16, 2022, at 2.

¹⁵ Federal Reserve, Transcript of Chairman Powell’s Press Conference, March 16, 2022, at 18.

¹⁶ Federal Reserve, Transcript of Chairman Powell’s Press Conference, March 16, 2022, at 10.

1 of goods and services. Additionally, higher energy prices are driving up
2 overall inflation. The surge in prices of crude oil and other commodities
3 that resulted from Russia's invasion of Ukraine will put additional
4 upward pressure on near-term inflation here at home.

5 We understand that high inflation imposes significant hardship,
6 especially on those least able to meet the higher costs of essentials like
7 food, housing, and transportation. We know that the best thing we can do
8 to support a strong labor market is to promote a long expansion, and that
9 is only possible in an environment of price stability. As we emphasize in
10 our policy statement, with appropriate firming in the stance of monetary
11 policy, we expect inflation to return to 2 percent while the labor market
12 remains strong. That said, inflation is likely to take longer to return to
13 our price stability goal than previously expected. The median inflation
14 projection of FOMC participants is 4.3 percent this year and falls to 2.7
15 percent next year and 2.3 percent in 2024; this trajectory is notably
16 higher than projected in December, and participants continue to see risks
17 as weighted to the upside.¹⁷

18 **Q. What is the market response to the FOMC meeting?**

19 A. The market response is an expectation that interest rates will increase to address inflation.
20 The CME Group calculates investors' views regarding the probability of the target
21 federal funds rate range at upcoming Federal Reserve meetings based on federal funds
22 rate futures contracts. Figure 2 below contains investors' expectations regarding the level
23 of the federal funds rate at each of the next eleven meetings as of April 4, 2022. As
24 shown in Figure 2, investors expect the Federal Reserve to increase the federal funds rate
25 at a faster pace than what was indicated at the Federal Reserve's March 16, 2022
26 meeting. For example, according to the CME Group, there is a 74.7 percent probability¹⁸
27 that the target federal funds rate range is 2.50 percent to 2.75 percent as of
28 December 2022 which is greater than the Federal Reserve's median forecast of

¹⁷ Federal Reserve, Transcript of Chairman Powell's Press Conference, March 16, 2022, at 2-3.

¹⁸ The probability of a rate hike is calculated by adding the probabilities of all target rate levels above the current target rate.

1 1.90 percent. Thus, investors expect that the Federal Reserve will pursue more
2 aggressive monetary policy than indicated to combat persistent high levels of inflation.
3 Federal Reserve Chairman Powell recently provided support for investors' expectations
4 when he indicated that the Federal Reserve could pursue more aggressive increases in
5 interest rates at upcoming Federal Reserve meetings in order to reduce inflation and
6 restore price stability. Specifically, on March 21, 2022 in prepared remarks before the
7 National Association for Business Economics, Federal Reserve Chairman Powell noted
8 the following:

9 "We will take the necessary steps to ensure a return to price stability," he
10 said. "In particular, if we conclude that it is appropriate to move more
11 aggressively by raising the federal funds rate by more than 25 basis
12 points at a meeting or meetings, we will do so. And if we determine that
13 we need to tighten beyond common measures of neutral and into a more
14 restrictive stance, we will do that as well.¹⁹

¹⁹ Jeff Cox, *Powell says "inflation is much too high" and the Fed will take "necessary steps" to address*, CNBC (Mar. 21, 2022). <https://www.cnbc.com/2022/03/21/powell-says-inflation-is-much-too-high-and-the-fed-will-take-necessary-steps-to-address.html>.

Figure 2: Investor Expectation of Future Federal Funds Rate Increases²⁰

MEETING DATE	MEETING PROBABILITIES															
	50-75	75-100	100-125	125-150	150-175	175-200	200-225	225-250	250-275	275-300	300-325	325-350	350-375	375-400	400-425	425-450
5/4/2022	25.6%	74.4%	0.0%	0.0%	0.0%											
6/15/2022	0.0%	0.0%	19.8%	63.2%	17.0%	0.0%	0.0%	0.0%	0.0%	0.0%						
7/27/2022	0.0%	0.0%	0.0%	8.0%	37.3%	44.6%	10.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
9/21/2022	0.0%	0.0%	0.0%	0.0%	5.9%	29.6%	42.7%	19.1%	2.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11/2/2022	0.0%	0.0%	0.0%	0.0%	0.0%	5.6%	28.3%	42.0%	20.4%	3.6%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
12/14/2022	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.4%	27.7%	41.6%	21.0%	4.0%	0.2%	0.0%	0.0%	0.0%	0.0%
2/1/2023	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.6%	12.1%	31.9%	35.4%	15.9%	2.9%	0.2%	0.0%	0.0%	0.0%
3/15/2023	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	2.4%	13.5%	32.2%	34.1%	15.0%	2.7%	0.2%	0.0%	0.0%
5/3/2023	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	1.3%	8.1%	23.2%	33.2%	24.2%	8.6%	1.4%	0.1%	0.0%
6/14/2023	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	5.3%	16.9%	29.0%	27.9%	15.1%	4.4%	0.6%	0.0%
7/26/2023	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	4.3%	14.3%	26.3%	28.1%	17.9%	6.7%	1.4%	0.2%

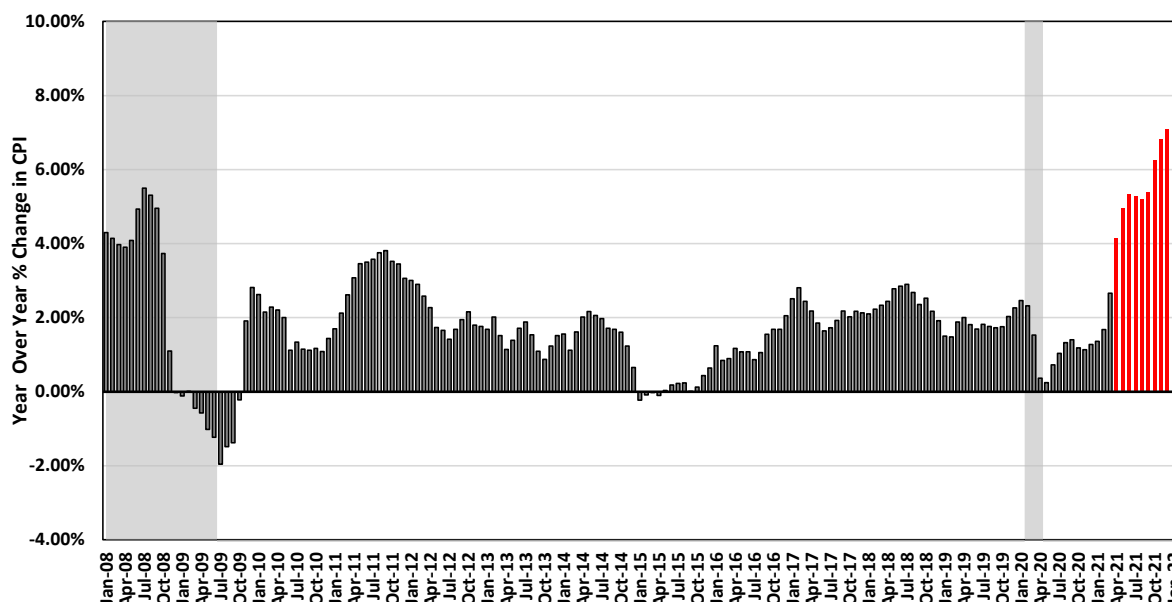
1 **B. Inflationary Expectations in Current and Projected Market Conditions**

2 **Q. Is the increase in inflation significant?**

3 A. Yes. As shown in Figure 3 below, the YOY change in the Consumer Price Index (“CPI”)
 4 published by the Bureau of Labor statistics has increased steadily over the past year rising
 5 from 1.37 percent in January 2021 to 7.91 percent in February 2022. The 7.91 percent
 6 YOY in the CPI in February 2022 is the largest 12-month increase since 1982 and
 7 significantly greater than any level seen since January 2008.

²⁰ CME Group; FedWatch tool as of March 21, 2022.

Figure 3: CPI – YOY Percent Change – January 2008 – February 2022²¹



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

2 A. In prepared remarks to the National Association for Business Economics, Chairman
 3 Powell noted that inflation was “much too high” and that the Federal Reserve “widely
 4 underestimated” how long increased inflation would last and as a result, stated that the
 5 Federal Reserve is prepared to “more aggressively” normalize monetary policy to achieve
 6 price stability.²² Therefore, investors expect inflation to remain elevated over the near-
 7 term. One measure of investors’ expectations regarding inflation is the breakeven
 8 inflation rate calculated as the spread between the yield on a Treasury bond and the yield
 9 on a Treasury Inflation-Protected bond, since a Treasury Inflation-Protected bond
 10 account for the effect of inflation. The maturity of the bond selected would then reflect
 11 investors’ views of inflation during the holding period of the bond. For example, the 10-

²¹ Source: Bureau of Labor Statistics, shaded area indicates a recession.

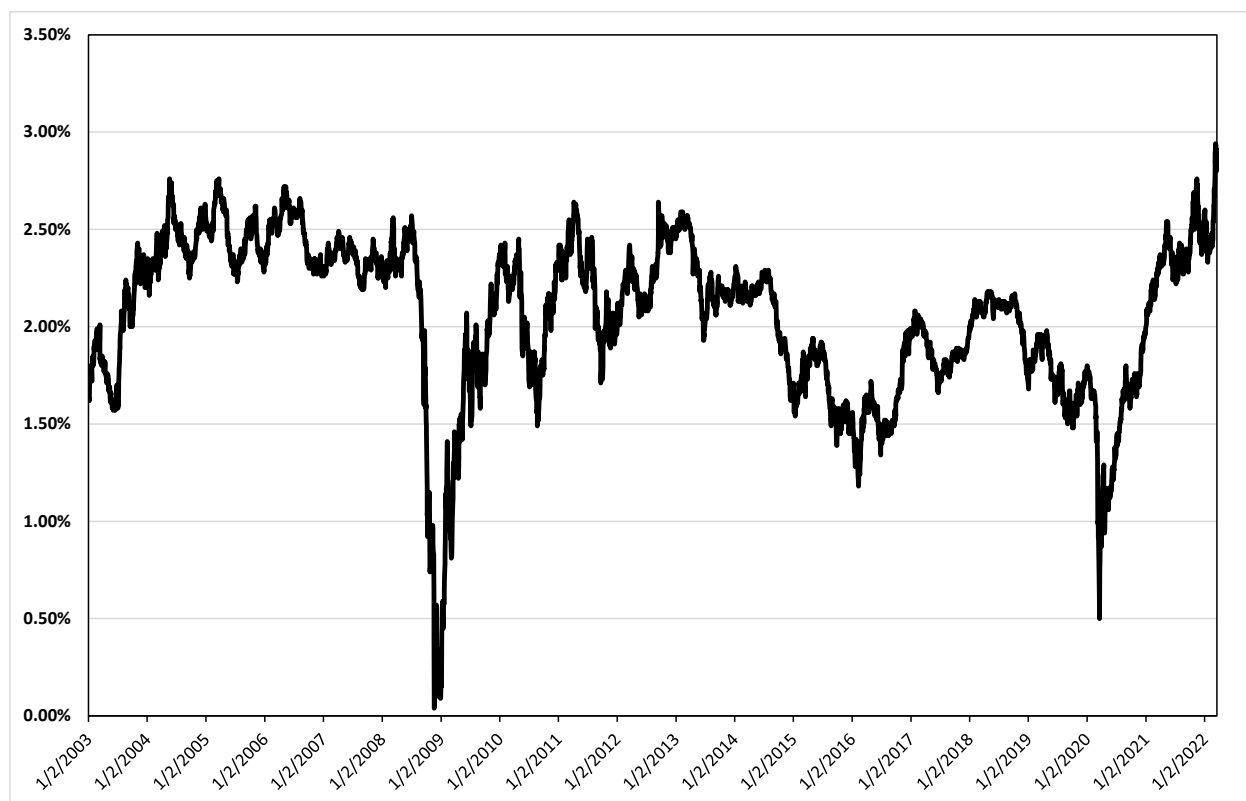
²² Jeff Cox, *Powell says “inflation is much too high” and the Fed will take “necessary steps” to address*, CNBC (Mar. 21, 2022). <https://www.cnbc.com/2022/03/21/powell-says-inflation-is-much-too-high-and-the-fed-will-take-necessary-steps-to-address.html>.

1 year breakeven inflation rate calculated as the spread between the 10-year Treasury bond
2 yield and the 10-year Treasury Inflation-Protected bond yield would reflect investors'
3 expectations of inflation over the next 10 years. As shown in Figure 4 below, the 10-year
4 breakeven inflation rate is currently greater than any level seen since January 2003.
5 Furthermore, the 10-year breakeven inflation rate as of March 31, 2022 was 2.84 percent
6 indicating that investors expect inflation will remain well above the Federal Reserve's 2
7 percent target over the next 10 years. There are many factors as to why inflation is
8 expected to remain elevated. Kiplinger recently noted a few factors including supply
9 shortages due to COVID-19 and Russia's war in Ukraine which led them to forecast an
10 inflation rate of 6.5 percent for 2022:

11 The surge in gasoline prices this month will boost March inflation to
12 near 10% when the figures are released next month. The inflation rate
13 will likely remain high for the rest of the year, ending at 6.5% or so in
14 December. Russia's war in Ukraine will keep gasoline prices elevated
15 for much of the year. Even if the war ends, a Western embargo on
16 Russian energy will likely continue for quite a while. Food prices are
17 also likely to see a jump in next month's report, as wheat prices have
18 surged 35%, given that Ukraine is a major producer. Plus, there are
19 expectations of continued upward price pressures on rent, housing costs,
20 and prices of many services, as the pandemic eases and demand
21 rebounds.²³

²³ David Payne, *Inflation Will Spike Close to 10%*, Kiplinger (Mar. 10, 2022).

Figure 4: 10-year Breakeven Inflation Rate – January 2003 – March 2022²⁴



1 **C. The Effect of Inflation on Interest Rates and the Investor-Required Return**

2 **Q. What effect will inflation have on long-term interest rates?**

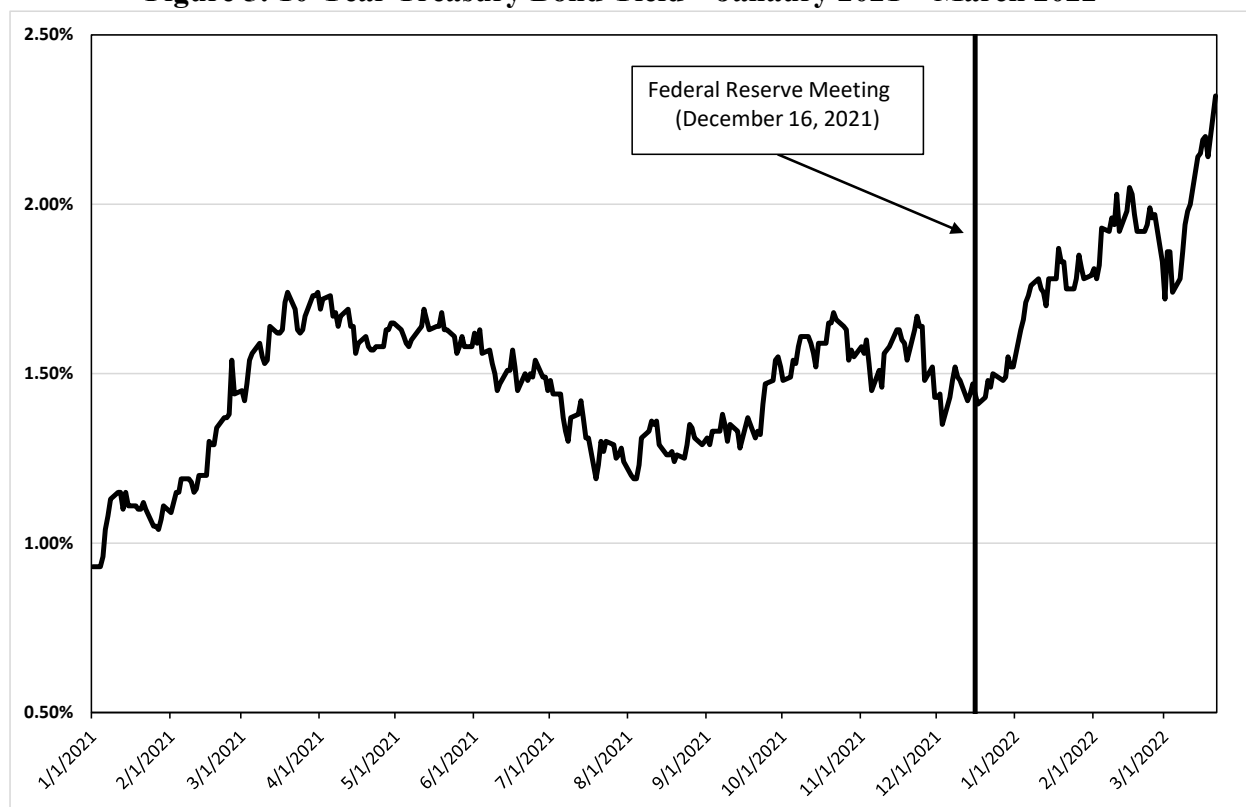
3 A. Inflation and the Federal Reserve’s normalization of monetary policy will likely result in
4 increases in long-term interest rates. Specifically, inflation reduces the purchasing power
5 of the future interest payments an investor expects to receive over the duration of the
6 bond. This risk increases the longer the duration of the bond. As a result, if investors
7 expect increased levels of inflation, they will require higher yields to compensate for the
8 increased risk of inflation, which means interest rates will increase.

²⁴ Federal Reserve Bank of St. Louis, 10-Year Breakeven Inflation Rate [T10YIE], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/T10YIE>, March 20, 2022.

1 **Q. Have the yields on long-term government bonds increased in response to inflation**
2 **and the Federal Reserve’s normalization of monetary policy?**

3 A. Yes, they have. As noted above, at the December 2021, January 2022 and March 2022
4 meetings, the Federal Reserve has noted its continued concerns over the sustained
5 increased levels of inflation. In addition, starting at the December 2021 meeting and
6 continuing through the March 2022 meeting, the Federal Reserve accelerated the process
7 of normalizing monetary policy to respond to inflation. As of the March 2022 meeting,
8 the Federal Reserve has: 1) completed the tapering of bond purchases; 2) increased the
9 federal funds rate once with six additional rate increases projected for the remainder of
10 2022; and 3) projected a reduction in its balance sheet that could begin at the May 2022
11 meeting. As shown in Figure 5, since the Federal Reserve’s December 2021, the yield on
12 the 10-year Treasury bond has increased close to 85 basis points from 1.47 percent on
13 December 15, 2021 to 2.32 percent on March 31, 2022. The increase is due to the Federal
14 Reserve’s announcements at the December 2021, January 2022 and March 2022 meetings
15 and the continued increased levels of inflation that are now expected to persist much
16 longer than the Federal Reserve and investors had originally projected.

Figure 5: 10-Year Treasury Bond Yield – January 2021 – March 2022²⁵



- 1 **Q. What have equity analysts said about long-term government bond yields?**
- 2 A. Several equity analysts have noted that they expect the yields on long-term government
- 3 bonds to continue to increase through the end of 2022. As shown in Figure 6, according
- 4 to six different equity analysts, the yield on the 10-year Treasury Bond is expected to
- 5 range from 2.70 percent to 2.80 percent by the end of 2022, which is 62 to 72 basis points
- 6 greater than the current 30-day average yield on the 10-year Treasury Bond as of March
- 7 31, 2022 of 2.08 percent.

²⁵ S&P Capital IQ Pro.

Figure 6: Equity Analysts Forecast of the 10-year Treasury Yield

Bank	10-year U.S. Treasury Yield	
	30-day Average as of March 31, 2022	2022 Forecast
Credit Suisse ²⁶	2.08%	2.70%
Goldman Sachs ²⁷	2.08%	2.70%
Blue Chip Financial Forecasts (Consensus Estimate) ²⁸	2.08%	2.80%
BMO Economics ²⁹	2.08%	2.70%

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

3 A. Yes, I have. I considered the net position of commercials (i.e., banks) in U.S. Treasury
4 Bond futures contracts as reported in the Commitment of Traders (“COT”) Report
5 produced by the Commodity Futures Trading Commission (“CFTC”). A net position is
6 defined as the total number of long positions in a futures contract minus the total number
7 of short positions in a futures contract. A long position means that an investor agrees to
8 purchase an asset in the future at a specified price today and therefore profits if the price
9 of the underlying asset increases. Conversely, a short position is when an investor agrees
10 to sell an asset at a time in the future at a specified price today and profits if the price of
11 the asset declines. Therefore, if banks are increasing the number of short positions and
12 thus have a declining net position, the banks are assuming that the price of the asset will
13 decline. As shown in Figure 7, the net position of banks in U.S. Treasury Bonds has been
14 decreasing since the end of 2020. Therefore, banks are forecasting a decrease in the price

²⁶ Reuters, “U.S. 10-year yield to hit 2.7% this year - Credit Suisse,” February 16, 2022.

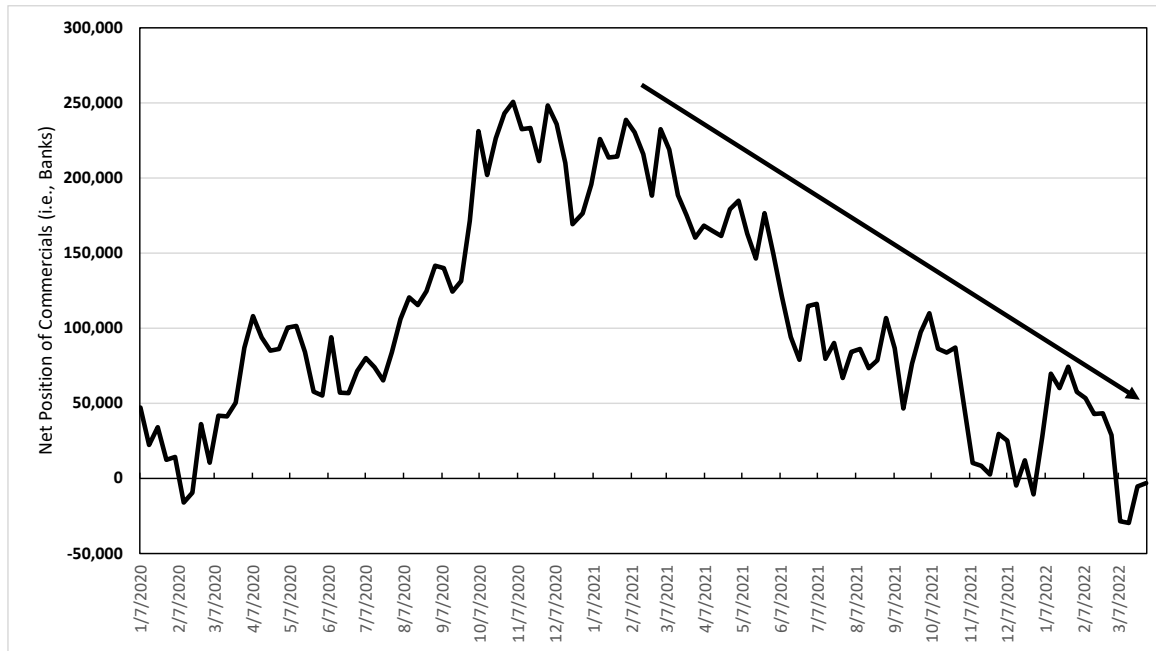
²⁷ Worrachate, Anchalee. “Goldman Sees Higher U.S. Treasury Yields, Curve Inversion.” Bloomberg.com, 25 Mar. 2022, <https://www.bloomberg.com/news/articles/2022-03-25/goldman-sees-half-point-fed-hikes-in-may-and-june-higher-yields#:~:text=Its%202022%20forecast%20on%2010,yield%20was%20around%202.49%25%20Friday>

²⁸ Blue Chip Financial Forecasts, Vol. 41, No. 4, April 1, 2022, at 2.

²⁹ BMO Economics, “North American Outlook: Out of the Pandemic and Into the Fire,” March 31, 2022.

1 of long-term government bonds and thus the yields (which are inversely related to the
2 price) to increase over the near-term.

Figure 7: Commitment of Traders Report – Net Position of Commercials (i.e., Banks) in U.S. Treasury Bond Futures Contracts³⁰



3 **D. Expected Performance of Utility Stocks and the Investor-Required ROE on Utility**
4 **Investments**

5 **Q. Are utility share prices correlated to changes in the yields on long-term government**
6 **bonds?**

7 A. Yes; interest rates and utility share prices are inversely correlated which means that an
8 increase in interest rates will result in a decline in the share prices of utilities. For
9 example, Goldman Sachs and Deutsche Bank recently examined the sensitivity of share
10 prices of different industries to changes in interest rates over the past five years. Both
11 Goldman Sachs and Deutsche Bank found that utilities had one of the strongest negative

³⁰ Commitment of Traders Report, as of March 31, 2022 - <https://www.cftc.gov/MarketReports/CommitmentsofTraders/HistoricalCompressed/index.htm>

1 relationships with bond yields (i.e., increases in bond yields resulted in the decline of
2 utility share prices).³¹

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

5 A. Equity analysts project that utilities are expected to continue to underperform the broader
6 market as interest rates increase. For example, in a recent article, Barron's conducted its
7 Big Money poll of professional investors regarding the outlook for the next twelve
8 months. The professional investors surveyed by Barron's selected the utility sector as the
9 sector that will perform the worst over the next twelve months, indicating they are
10 projecting that utilities will underperform the broader market in 2022.³²

11 Other equity analysts concur with this conclusion. Fidelity recently
12 recommended underweighting the utility sector and noted that “[a] combination of poor
13 fundamentals and high valuations may continue to present headwinds for real estate and
14 utilities, especially if interest rates rise.”³³ In its 2022 Outlook, Wells Fargo classified
15 the utility sector as “most unfavorable” as economic growth continues to rebound and
16 interest rates increase.³⁴

³¹ Lee, Justina. “Wall Street Is Rethinking the Treasury Threat to Big Tech Stocks.” Bloomberg.com, 11 Mar. 2021, www.bloomberg.com/news/articles/2021-03-11/wall-street-is-rethinking-the-treasury-threat-to-big-tech-stocks.

³² Jasinski, Nicholas. Stocks Are Still the Place to Be, Our Exclusive Big Money Poll Finds. Barron's, 16 Oct. 2021, <https://www.barrons.com/articles/stock-market-covid-economy-outlook-51634312012?mod=hpsubnav&tesla=y>.

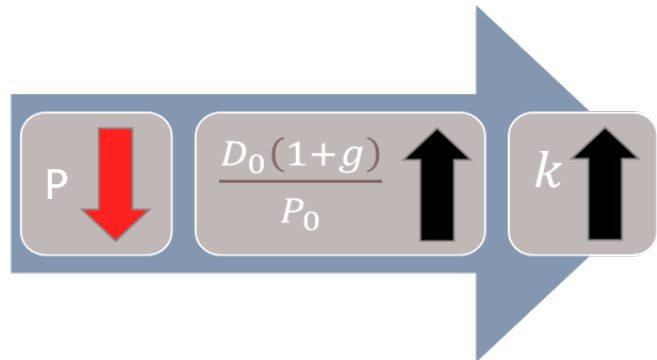
³³ Fidelity, “Which sectors may lead the pack this year?,” January 28, 2022.

³⁴ Wells Fargo Investment Institute, 2022 Outlook, December 2021.

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

3 As discussed above, the Federal Reserve is currently normalizing monetary policy in
4 response to inflation which is expected to increase long-term government bond yields. If
5 long-term government bond yields increase as expected, then the share prices of utilities
6 will decline. If the prices of utility stocks decline, then the DCF model, which relies on
7 historical averages of share prices, is likely to understate the cost of equity. For example,
8 Figure 8, below summarizes the effect of price on the dividend yield in the Constant
9 Growth DCF model.

Figure 8: The Effect of a Decline in Stock Prices on the Constant Growth DCF Model



10 A decline in stock prices will increase the dividend yields and thus the estimate of the
11 ROE produced by the Constant Growth DCF model. Therefore, this expected change in
12 market conditions supports consideration of the range of ROE results produced by the
13 mean to mean-high DCF results since the mean DCF results would likely understate the
14 cost of equity during the period that the Company's rates will be in effect. Moreover,
15 prospective market conditions warrant consideration of other ROE estimation models
16 such as the CAPM and ECAPM, which may better reflect expected market conditions.
17 For example, two out of three inputs to the CAPM (i.e., the market risk premium and
18 risk-free rate) are forward-looking.

1 **E. Conclusion**

2 **Q. What are your conclusions regarding the effect of current market conditions on the**
3 **cost of equity for the Company?**

4 A. Over the near-term, investors expect long-term interest rates to increase in response to
5 continued elevated levels of inflation and the Federal Reserve's normalization of
6 monetary policy. Because the share prices of utilities are inversely correlated to interest
7 rates, an increase in long-term government bond yields will likely result in a decline in
8 utility share prices, which is the reason a number of equity analysts expect the utility
9 sector to underperform over the near-term. The expected underperformance of utilities
10 means that DCF models using recent historical data likely underestimate investors'
11 required return over the period that rates will be in effect. This change in market
12 conditions also supports the use of other ROE estimation models such as the CAPM and
13 the ECAPM, which may better reflect expected market conditions.

14 **VI. PROXY GROUP SELECTION**

15 **Q. Why have you used groups of proxy companies to estimate the Cost of Equity for**
16 **PacifiCorp?**

17 A. In this proceeding, I am estimating the cost of equity for PacifiCorp, a rate-regulated
18 subsidiary of BHE. Since the ROE is a market-based concept and given the fact
19 PacifiCorp's operations in California do not make up the entirety of a publicly traded
20 entity, it is necessary to establish a group of companies that is both publicly-traded and
21 comparable to PacifiCorp in certain fundamental business and financial respects to serve
22 as its "proxy" for purposes of estimating the cost of equity.

1 Even if PacifiCorp's California electric utility operations made up the entirety of a
2 publicly traded entity, it is possible that transitory events could bias its market value over
3 a given time period. A significant benefit of using a proxy group is that it mitigates the
4 effects of anomalous events that may be associated with any one company. The proxy
5 companies used in my analyses all possess a set of operating and financial risk
6 characteristics that are substantially comparable to PacifiCorp, and, therefore, provide a
7 reasonable basis to derive and estimate the appropriate ROE for the Company.

8 **Q. Please provide a brief profile of PacifiCorp.**

9 A. PacifiCorp is an indirect, wholly owned subsidiary of BHE. PacifiCorp provides electric
10 utility service to approximately 2.0 million residential, commercial and industrial
11 customers in California, Idaho, Oregon, Utah, Washington, and Wyoming.³⁵ In
12 California, PacifiCorp provides electric service to approximately 47,800 customers in
13 four rural counties in northern California which include Del Norte, Modoc, Shasta and
14 Siskiyou counties. Retail sales in California in 2021 were approximately
15 776,000 megawatt-hours (MWh).³⁶ As of December 31, 2021, PacifiCorp owned net
16 utility electric plant of approximately \$22.4 billion.³⁷ PacifiCorp's electric operations in
17 California represented approximately 1 percent of PacifiCorp's electric sales in 2020.³⁸
18 PacifiCorp currently has an investment grade long-term rating of A(Outlook: Stable)
19 from Standard & Poor's (S&P) and A3 (Outlook: Stable) from Moody's.³⁹

³⁵ Berkshire Hathaway Energy Co, 2020 Form 10-K at 3.

³⁶ PacifiCorp 2021 IRP at 8,18, Appendix L p. 40, *available at*
<https://www.pacificorp.com/energy/integrated-resource-plan.html>.

³⁷ Company provided data.

³⁸ Berkshire Hathaway Energy Co, 2020 Form 10-K at 3.

³⁹ S&P Capital IQ accessed Jan. 18, 2022, and Moody's Investor Service Credit Opinion, PacifiCorp, June 25, 2020.

1 PacifiCorp’s current long-term issuer credit ratings are shown in Figure 9:

Figure 9: PacifiCorp Credit Ratings⁴⁰

Credit Rating Agency	Rating	Outlook
Standard & Poor’s	A	Stable
Moody’s Investors Service	A3	Stable

2 **Q. How did you select the companies in your proxy group?**

3 A. I began with the group of 36 companies that Value Line classifies as Electric Utilities and
4 applied the following screening criteria to select companies that:

- 5 • pay consistent quarterly cash dividends, because companies that do not cannot be
- 6 analyzed using the Constant Growth DCF model;
- 7 • have investment grade long-term issuer ratings from S&P and/or Moody’s;
- 8 • are covered by at least two utility industry analysts;
- 9 • have positive long-term earnings growth forecasts from at least two utility
- 10 industry equity analysts;
- 11 • own regulated generation assets that are in rate base;
- 12 • generate at least 20.00 percent of MWh delivered to customers;
- 13 • derive more than 60.00 percent of their total operating income from regulated
- 14 operations;
- 15 • derive more than 60.00 percent of regulated operating income from electric
- 16 operations; and;
- 17 • were not parties to a merger or transformative transaction during the analytical
- 18 periods relied on.

19 **Q. Did you exclude any other companies from the proxy group?**

20 A. Yes. I also excluded Pinnacle West Capital Corporation from the proxy group. The
21 stock price of Pinnacle West Capital Corporation decreased approximately 24 percent
22 over a two-month period from October through November 2021 resulting from a negative
23 regulatory decision for its largest operating company, Arizona Public Service Company.

⁴⁰ S&P GLOBAL RATINGS, RATINGS DIRECT, PacifiCorp (April 5, 2021) at 5, MOODY’S INVESTORS SERVICE, *Credit Opinion*, PacifiCorp, (June 25, 2020).

1 Because stock prices can be affected by one-time events, I have excluded this company
2 from the proxy group.

3 **Q. What is the composition of your proxy group?**

4 A. The screening criteria just discussed results in a proxy group consisting of the companies
5 shown in Figure 10 (and also in Exhibit PAC/203).

Figure 10: Proxy Group

Company	Ticker
ALLETE, Inc.	ALE
Alliant Energy Corporation	LNT
Ameren Corporation	AEE
American Electric Power Company, Inc.	AEP
Avista Corporation	AVA
CMS Energy Corporation	CMS
Duke Energy Corporation	DUK
Entergy Corporation	ETR
Evergy, Inc.	EVRG
IDACORP, Inc.	IDA
NextEra Energy, Inc.	NEE
NorthWestern Corporation	NWE
OGE Energy Corporation	OGE
Otter Tail Corporation	OTTR
Portland General Electric Company	POR
Southern Company	SO
Xcel Energy Inc.	XEL

1 ensure that the methodologies employed reasonably reflect investors' views of the
2 financial markets in general and of the subject company (in the context of the proxy
3 group) in particular.

4 **Q. What methods did you use to estimate PacifiCorp's cost of equity?**

5 A. I considered the results of the Constant Growth DCF model, the CAPM, and the Bond
6 Yield Plus Risk Premium approach. As discussed in more detail below, a reasonable
7 ROE estimate considers alternative methodologies, observable market data, and the
8 reasonableness of their individual and collective results.

9 A. **Importance of Multiple Analytical Approaches**

10 **Q. Why is it important to use more than one analytical approach?**

11 A. Because the cost of equity is not directly observable, it must be estimated based on both
12 quantitative and qualitative information. When faced with the task of estimating the cost
13 of equity, analysts and investors are inclined to gather and evaluate as much relevant data
14 as reasonably can be analyzed. Several models have been developed to estimate the cost
15 of equity, and I use multiple approaches to estimate the cost of equity. As a practical
16 matter, however, all of the models available for estimating the cost of equity are subject
17 to limiting assumptions or other methodological constraints. Consequently, many well-
18 regarded finance texts recommend using multiple approaches when estimating the cost of
19 equity. For example, Copeland, Koller, and Murrin⁴¹ suggest using the CAPM and
20 Arbitrage Pricing Theory model, while Brigham and Gapenski⁴² recommend the CAPM,
21 DCF, and Bond Yield Plus Risk Premium approaches. Consistent with the *Hope*

⁴¹ Tom Copeland, Tim Koller and Jack Murrin, *Valuation: Measuring and Managing the Value of Companies*, at 214 (3rd Ed 2000).

⁴² Eugene Brigham, Louis Gapenski, *Financial Management: Theory and Practice*, at 341 (7th Ed 1994).

1 decision, it is the analytical result, not the methodology employed, which is controlling in
2 arriving at ROE determinations.

3 **Q. Is it important given the current market conditions to use more than one analytical**
4 **approach?**

5 A. Yes. Low interest rates and the effects of the investor “flight to quality” associated with
6 the pandemic can be seen in relatively high utility share valuations compared to historical
7 levels and to the broader market. Higher utility stock valuations produce lower dividend
8 yields and result in lower cost of equity estimates from a DCF analysis. Lower interest
9 rates also affect the CAPM in two ways: (1) the risk-free rate is lower than it is expected
10 to be going forward; and (2) because the market risk premium is a function of interest
11 rates (*i.e.*, it is the return on the broad stock market less the risk-free interest rate), the
12 market risk premium is expected to be higher when interest rates are lower. Therefore, it
13 is important to use multiple analytical approaches to moderate the effect of the current
14 low interest rate environment on the ROE estimates for the proxy group, and where
15 possible, consider using projected market data in the models to estimate the return for the
16 forward-looking period.

17 **Q. Has the Commission recognized that it is important to consider the results of**
18 **multiple ROE estimation models?**

19 A. Yes. In previous cases, the Commission has considered the results of many ROE
20 estimation models and determined, based on the results of those models and informed
21 judgment, whether or not to place any weight on the model in its final determination.⁴³

⁴³ *Application of Pacific Gas and Electric Company for Authority to Establish Its Authorized Rate of*

1 Specifically, the Commission has held and the California Court of Appeals has affirmed
2 that the financial models are the “starting point” and “should not be used rigidly or as
3 definitive proxies for the determination of the investor-required return on equity. . . . The
4 models are only helpful as rough gauges of the range of reasonable outcomes.”⁴⁴

5 Similarly, in 2012, the Commission, in approving fair returns for the large investor-
6 owned utilities in California, articulated this standard as follows:

7 We attempt to set the ROE at a level of return commensurate with market
8 returns on investments having corresponding risks, and adequate to enable
9 a utility to attract investors to finance the replacement and expansion of a
10 utility’s facilities to fulfill its public utility service obligation. To
11 accomplish this objective, we have consistently evaluated analytical
12 financial models as a starting point to arrive at a fair ROE.⁴⁵

13 B. Constant Growth DCF Model

14 Q. Please describe the DCF approach.

15 A. The DCF approach is based on the theory that a stock’s current price represents the
16 present value of all expected future cash flows. In its most general form, the DCF model
17 is expressed as follows:

$$18 P_0 = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \dots + \frac{D_\infty}{(1+k)^\infty} \quad [1]$$

19 Where P_0 represents the current stock price, $D_1 \dots D_\infty$ are all expected future

Return on Common Equity for Electric Utility Generation and Distribution Operations and Gas Distribution for Test Year 2006 (U 39 M) and Related Matters, A.05-05-006, 05-05-011, and 05-05012 (cons.), D. 05-12-043 at 21-26, 29-34, and 36-39. (Dec. 15, 2005).

⁴⁴ *SFPP, L.P. v. Pub. Utilities Comm’n*, 217 Cal.App.4th 784, 802 (Cal. App. 2013) (affirming the Commission’s ROE determination) (citing *Application of California Water Serv. Co.*, 272 P.U.R. 4th 512, 524 (Cal. P.U.C. 2009)).

⁴⁵ *Application of Southern California Edison Company (U338E) for Authority to Establish Its Authorized Cost of Capital for Utility Operations for 2013 and to Reset the Annual Cost of Capital Adjustment Mechanism and Related Matters*, A,12-04-015, 12-04-016, 12-04-017, 12-04-018 (cons.), D.12-12-034 at 18 (Dec. 20, 2012).

1 dividends, and k is the discount rate, or required ROE. Equation [1] is a standard present
2 value calculation that can be simplified and rearranged into the following form:

$$k = \frac{D_0(1+g)}{P_0} + g \quad [2]$$

3
4 Equation [2] is often referred to as the Constant Growth DCF model in which the
5 first term is the expected dividend yield and the second term is the expected long-term
6 growth rate.

7 **Q. What assumptions are required for the Constant Growth DCF model?**

8 A. The Constant Growth DCF model requires the following assumptions: (1) a constant
9 growth rate for earnings and dividends; (2) a stable dividend payout ratio; (3) a constant
10 price-to-earnings (P/E) ratio; and (4) a discount rate greater than the expected growth
11 rate. To the extent any of these assumptions is violated, considered judgment and/or
12 specific adjustments should be applied to the results.

13 **Q. What market data did you use to calculate the dividend yield in your Constant
14 Growth DCF model?**

15 A. The dividend yield in my Constant Growth DCF model is based on the proxy group
16 companies' current annual dividend and average closing stock prices over the 30-, 90-,
17 and 180-trading days ended March 31, 2022.

18 **Q. Did you make any adjustments to the dividend yield to account for periodic growth
19 in dividends?**

20 A. Yes. Since utility companies tend to increase their quarterly dividends at different times
21 throughout the year, it is reasonable to assume that dividend increases will be evenly
22 distributed over calendar quarters. Given that assumption, it is reasonable to apply one-

1 half of the expected annual dividend growth rate for purposes of calculating the expected
2 dividend yield component of the DCF model. This adjustment ensures that the expected
3 first year dividend yield is, on average, representative of the coming 12-month period,
4 and does not overstate the aggregated dividends to be paid during that time.

5 **Q. Why is it important to select appropriate measures of long-term growth in applying**
6 **the DCF model?**

7 A. In its Constant Growth form, the DCF model (*i.e.*, Equation [2]) assumes a single long-
8 term growth rate in perpetuity. In order to reduce the long-term growth rate to a single
9 measure, one must assume that the dividend payout ratio remains constant and that
10 Earnings Per Share (EPS), dividends per share, and book value per share all grow at the
11 same constant rate. Over the long run, however, dividend growth can only be sustained
12 by earnings growth. Therefore, it is important to incorporate a variety of sources of long-
13 term earnings growth rates into the Constant Growth DCF model.

14 **Q. What sources of long-term growth rates did you rely on in your Constant Growth**
15 **DCF model?**

16 A. As shown in Exhibit PAC/203, my Constant Growth DCF model incorporates three
17 sources of long-term growth rates: (1) consensus long-term earnings growth estimates
18 from Zacks Investment Research; (2) consensus long-term earnings growth estimates
19 from Thomson First Call (provided by Yahoo! Finance); and (3) long-term earnings
20 growth estimates from Value Line Investment Survey (Value Line).

21 **Q. How did you calculate the range of results for the Constant Growth DCF model?**

22 A. I calculated the low-end result for the Constant Growth DCF model using the lowest
23 projected earnings growth rate (*i.e.*, the lowest of First Call, Zacks, and Value Line) for

1 each of the proxy group companies. I applied a similar approach to calculate the high-
2 end result for the Constant Growth DCF model by using the highest projected earnings
3 growth rate of the three sources for each proxy group company. The median results of
4 the Constant Growth DCF model were calculated using the mean growth rate of the three
5 sources for each proxy group company as well as the low and high growth rate scenarios.
6 Once the results for each proxy group company were calculated, I then relied on the
7 median of the results as the measure of central tendency for purposes of my analysis,
8 referring to each of the results as the “median low,” “median” and “median high” results.

9 **C. Discounted Cash Flow Model Results**

10 **Q. How did you calculate the range of results for the Constant Growth DCF model?**

11 A. I calculated the low result for the DCF model using the minimum growth rate (*i.e.*, the
12 lowest of the First Call, Zacks, and Value Line earnings growth rates) for each of the
13 proxy group companies. Thus, the low result reflects the minimum DCF result for the
14 proxy group. I used a similar approach to calculate the high results, using the highest
15 growth rate for each proxy group company. The mean results were calculated using the
16 average growth rates from all sources.

17 **Q. What are the results of your DCF analyses?**

18 A. Figure 11 summarizes the results of my DCF analyses. As shown in Figure 11, the
19 median Constant Growth DCF results range from 9.50 percent to 9.70 percent and the
20 median high results range from 10.22 percent to 10.36 percent.

Figure 11: Discounted Cash Flow Results

<i>Constant Growth- Median DCF</i>			
	Median Low	Median	Median High
30-Day Average	7.98%	9.50%	10.22%
90-Day Average	8.02%	9.61%	10.27%
180-Day Average	8.15%	9.70%	10.36%
Constant Growth Median	7.98%	9.50%	10.22%

1 **Q. What are your conclusions about the results of the DCF models?**

2 A. As discussed previously, one primary assumption of the DCF models is a constant P/E
 3 ratio. That assumption is heavily influenced by the market price of utility stocks. Since
 4 utility stocks are expected to underperform the broader market over the near-term as
 5 interest rates increases, it is important to consider the results of the DCF models with
 6 caution. This means that the results of the DCF models, which rely on historical stock
 7 prices, are below where they would be expected to be going forward during the period in
 8 which the rates for the Company will be in effect. Therefore, while I have given weight
 9 to the results of the DCF models, my recommendation also gives weight to the results of
 10 other ROE estimation models.

11 **D. CAPM Analysis**

12 **Q. Please briefly describe the Capital Asset Pricing Model.**

13 A. The CAPM is a risk premium approach that estimates the cost of equity for a given
 14 security as a function of a risk-free return plus a risk premium to compensate investors
 15 for the non-diversifiable or “systematic” risk of that security.⁴⁶ This second component

⁴⁶ Systematic risk is the risk inherent in the entire market or market segment. This form of risk cannot be diversified away using a portfolio of assets. Non-systematic risk is the risk of a specific company that can be mitigated through portfolio optimization.

1 is the product of the market risk premium and the Beta coefficient, which measures the
2 relative riskiness of the security being evaluated.

3 The CAPM is defined by four components, each of which must theoretically be a
4 forward-looking estimate:

5 A.
$$K_e = r_f + \beta(r_m - r_f) \quad [3]$$

6 Where:

7 K_e = the required market ROE;

8 β = Beta coefficient of an individual security;

9 r_f = the risk-free ROR; and

10 r_m = the required return on the market as a whole.

11 In this specification, the term ($r_m - r_f$) represents the Market Risk
12 Premium. According to the theory underlying the CAPM, since unsystematic risk can be
13 diversified away, investors should only be concerned with systematic risk. Systematic
14 risk is measured by Beta, which is a measure of the volatility of a security as compared to
15 the overall market. Beta is defined as:

$$\beta = \frac{\text{Covariance}(r_e, r_m)}{\text{Variance}(r_m)} \quad [4]$$

16 The variance of the market return (i.e., Variance (r_m)) is a measure of the uncertainty of
17 the general market. The covariance between the return on a specific security and the
18 general market (i.e., Covariance (r_e, r_m)) reflects the extent to which the return on that
19 security will respond to a given change in the general market return. Thus, Beta
20 represents the risk of the security relative to the general market.

1 **Q. What risk-free rate did you use in your CAPM analysis?**

2 A. I relied on three sources for my estimate of the risk-free rate: (1) the current 30-day
3 average yield on 30-year Treasury bonds of 2.37 percent;⁴⁷ (2) the projected 30-year
4 Treasury yield for Q3 2022–Q3 2023 of 3.12 percent;⁴⁸ and (3) the average projected 30-
5 year Treasury bond yield for the period 2022 through 2026 of 3.40 percent.⁴⁹

6 **Q. Would you place more weight on one of these scenarios?**

7 A. Yes. Based on current market conditions, I place more weight on the results of the
8 projected yields on the 30-year Treasury bonds. As discussed previously, the estimation
9 of the cost of equity in this case should be forward-looking because it is the return that
10 investors would receive over the future rate period. Therefore, the inputs and
11 assumptions used in the CAPM analysis should reflect the expectations of the market at
12 that time. While I have included the results of a CAPM analysis that relies on a current
13 30-day average risk-free rate, this analysis fails to take into consideration the effect of the
14 market's expectations for interest rate increases on the cost of equity.

15 **Q. What Beta coefficients did you use in your CAPM analysis?**

16 A. As shown in Exhibit PAC/204, I used the Beta coefficients for the proxy group
17 companies as reported by Bloomberg and Value Line. The Beta coefficients reported by
18 Bloomberg are calculated using 10 years of weekly returns relative to the S&P 500 Index.
19 The Beta coefficients reported by Value Line are calculated based on five years of
20 weekly returns relative to the New York Stock Exchange Composite Index. Additionally,
21 as shown in Exhibit PAC/205, I also considered an additional CAPM analysis that relies

⁴⁷ Bloomberg Professional as of Mar. 31, 2022.

⁴⁸ Blue Chip Financial Forecasts, Vol. 41, No. 4, Apr. 1, 2022, at 2.

⁴⁹ Blue Chip Financial Forecasts, Vol. 40, No. 12, Dec. 1, 2021, at 14.

1 on the long-term average Beta coefficient reported by Value Line for the companies in
2 my proxy group from 2011 through 2021.

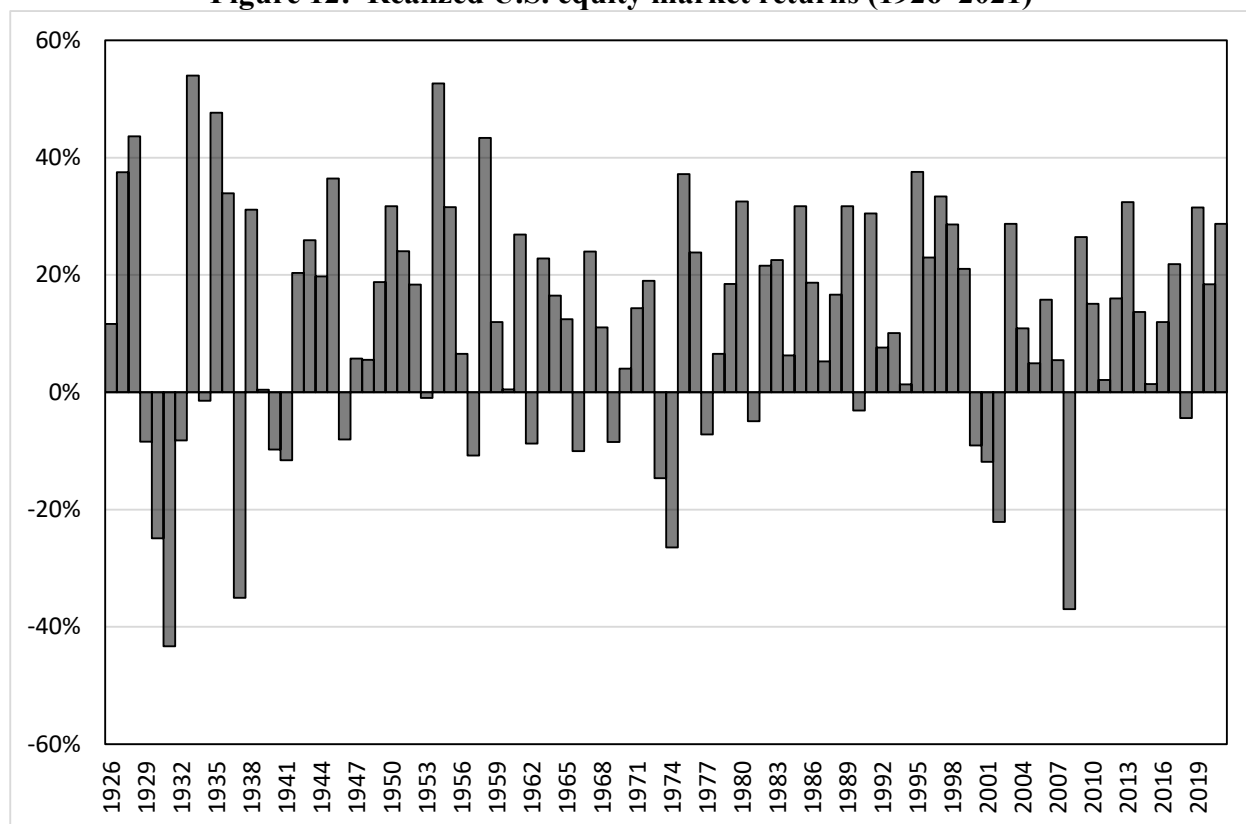
3 **Q. How did you estimate the Market Risk Premium in the CAPM?**

4 A. I estimated the market risk premium as the difference between the implied expected
5 equity market return and the risk-free rate. The expected return on the S&P 500 Index is
6 calculated using the Constant Growth DCF model discussed earlier in my testimony for
7 the companies in the S&P 500 Index for which dividend yields and Value Line long-term
8 earnings projections are available. In addition, I exclude those companies whose
9 earnings projections are either greater than 20.00 percent or lower than 0.00 percent. As
10 shown in Exhibit PAC/206, based on an estimated market capitalization-weighted
11 dividend yield of 1.61 percent and a weighted long-term growth rate of 10.99 percent, the
12 estimated required market return for the S&P 500 Index is 12.68 percent. The implied
13 market risk premium over the risk-free rates evaluated (*i.e.*, the current, near-term
14 projected and longer-term projected 30-year U.S. Treasury bond yield) ranges from
15 9.28 percent to 10.31 percent.

16 **Q. How does the expected market return you have calculated compare to observed
17 historical market returns?**

18 A. Given the range of annual equity returns that have been observed over the past century as
19 shown in Figure 12, a current expected market return of 12.68 percent is consistent with
20 the historical returns. In fact, in 50 out of the past 96 years (or approximately 52 percent
21 of the observations), the realized equity return was at least 12.68 percent or greater.

Figure 12: Realized U.S. equity market returns (1926–2021)⁵⁰



1 **Q. Did you consider another form of the CAPM in your analysis?**

2 A. Yes. I have also considered the results of an Empirical CAPM (ECAPM)⁵¹ in estimating
 3 the cost of equity for CMP. The ECAPM calculates the product of the adjusted Beta
 4 coefficient and the market risk premium and applies a weight of 75.00 percent to that
 5 result. The model then applies a 25.00 percent weight to the market risk premium,
 6 without any effect from the Beta coefficient. The results of the two calculations are
 7 summed, along with the risk-free rate, to produce the ECAPM result, as noted in
 8 Equation [4] below:

⁵⁰ Depicts total annual returns on large company stocks, as reported in the 2022 Duff & Phelps SBBI Yearbook.

⁵¹ See e.g., Roger A. Morin, New Regulatory Finance, Public Utilities Reports, Inc., 2006, at 189.

1 $k_e = r_f + 0.75\beta(r_m - r_f) + 0.25(r_m - r_f)$ [5]

2 where:

3 k_e = the required market ROE

4 β = Adjusted Beta coefficient of an individual security

5 r_f = the risk-free rate of return

6 r_m = the required return on the market as a whole

7 In essence, the Empirical form of the CAPM addresses the tendency of the
8 “traditional” CAPM to underestimate the cost of equity for companies with low Beta
9 coefficients such as regulated utilities. In that regard, the ECAPM is not redundant to the
10 use of adjusted Betas; rather, it recognizes the results of academic research indicating that
11 the risk-return relationship is different (in essence, flatter) than estimated by the CAPM,
12 and that the CAPM underestimates the “alpha,” or the constant return term.⁵²

13 As with the CAPM, my application of the ECAPM uses the forward-looking
14 market risk premium estimates, the three yields on 30-year Treasury securities noted
15 earlier as the risk-free rate, and the Bloomberg, Value Line and long-term average Beta
16 coefficients.

17 **Q. What are the results of your CAPM analyses?**

18 A. As shown in Figure 13, my traditional CAPM analysis produces a range of returns from
19 10.00 percent to 11.62 percent. The ECAPM analysis results range from 10.67 percent to
20 11.88 percent.

⁵² *Id.* at 191.

Figure 13: CAPM Results

<i>CAPM</i>			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Value Line Beta	11.50%	11.58%	11.62%
Bloomberg Beta	10.64%	10.79%	10.84%
Long-Term Avg. Beta	10.00%	10.20%	10.27%
<i>ECAPM</i>			
Value Line Beta	11.79%	11.86%	11.88%
Bloomberg Beta	11.15%	11.26%	11.30%
Long-Term Avg. Beta	10.67%	10.82%	10.87%

E. Bond Yield Plus Risk Premium Analysis

Q. Please describe the Bond Yield Plus Risk Premium approach.

A. In general terms, this approach is based on the fundamental principle that equity investors bear the residual risk associated with equity ownership and therefore require a premium over the return they would have earned as a bondholder. That is, because returns to equity holders have greater risk than returns to bondholders, equity investors must be compensated to bear that risk. Risk premium approaches, therefore, estimate the cost of equity as the sum of the equity risk premium and the yield on a particular class of bonds. In my analysis, I used actual authorized returns for electric utility companies as the historical measure of the cost of equity to determine the risk premium.

Q. Are there other considerations that should be addressed in conducting this analysis?

A. Yes. It is important to recognize both academic literature and market evidence indicating that the equity risk premium (as used in this approach) is inversely related to the level of interest rates. That is, as interest rates increase (decrease), the equity risk premium decreases (increases). Consequently, it is important to develop an analysis that: (1) reflects the inverse relationship between interest rates and the equity risk premium; and

1 (2) relies on recent and expected market conditions. Such an analysis can be developed
2 based on a regression of the risk premium as a function of U.S. Treasury bond yields. If
3 authorized ROEs for electric utilities serve as the measure of required equity returns and
4 define the yield on the long-term U.S. Treasury bond as the relevant measure of interest
5 rates, the risk premium simply would be the difference between those two points.⁵³

6 **Q. Is the Bond Yield Plus Risk Premium analysis relevant to investors?**

7 A. Yes. Investors are aware of ROE awards in other jurisdictions, and they consider those
8 awards as a benchmark for a reasonable level of equity returns for utilities of comparable
9 risk operating in other jurisdictions. Because my Bond Yield Plus Risk Premium analysis
10 is based on authorized ROEs for utility companies relative to corresponding Treasury
11 yields, it provides relevant information to assess the return expectations of investors.

12 **Q. What did your Bond Yield Plus Risk Premium analysis reveal?**

13 A. As shown in Figure 14, from 1992 through March 2022, there was a strong negative
14 relationship between risk premia and interest rates. To estimate that relationship, I
15 conducted a regression analysis using the following equation:

16
$$RP = a + b(T) [6]$$

17 Where:

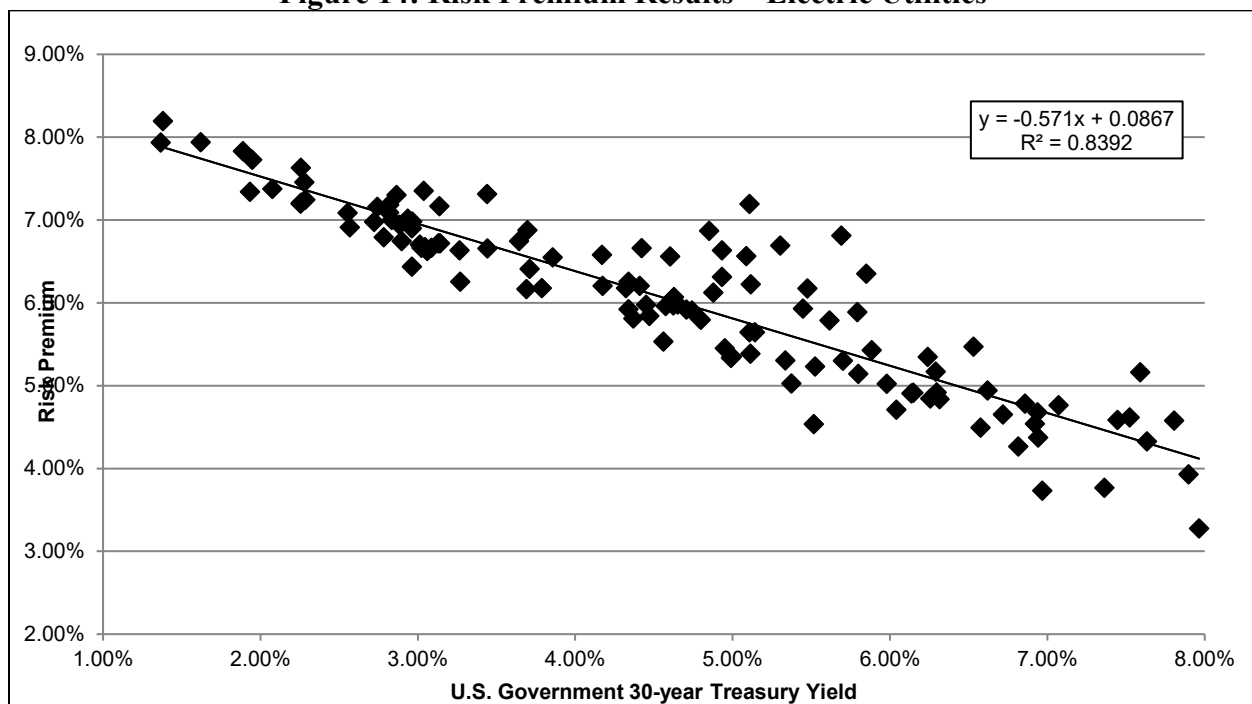
18 RP = Risk Premium (difference between authorized ROEs and the yield on 30-
19 year U.S. Treasury bonds)

⁵³ See e.g., S. Keith Berry, *Interest Rate Risk and Utility Risk Premia during 1982-93*, Managerial and Decision Economics, Vol. 19, No. 2 (Mar. 1998), in which the author used a methodology similar to the regression approach described below, including using allowed ROEs as the relevant data source, and came to similar conclusions regarding the inverse relationship between risk premia and interest rates. See also Robert S. Harris, *Using Analysts' Growth Forecasts to Estimate Shareholders Required Rates of Return*, Financial Management, Spring 1986, at 66.

1 a = intercept term
2 b = slope term
3 T = 30-year U.S. Treasury bond yield

4 Data regarding allowed ROEs were derived from vertically integrated electric
5 utility rate cases from 1992 through March 2022 as reported by Regulatory Research
6 Associates (RRA). The equation's coefficients were statistically significant.

Figure 14: Risk Premium Results – Electric Utilities



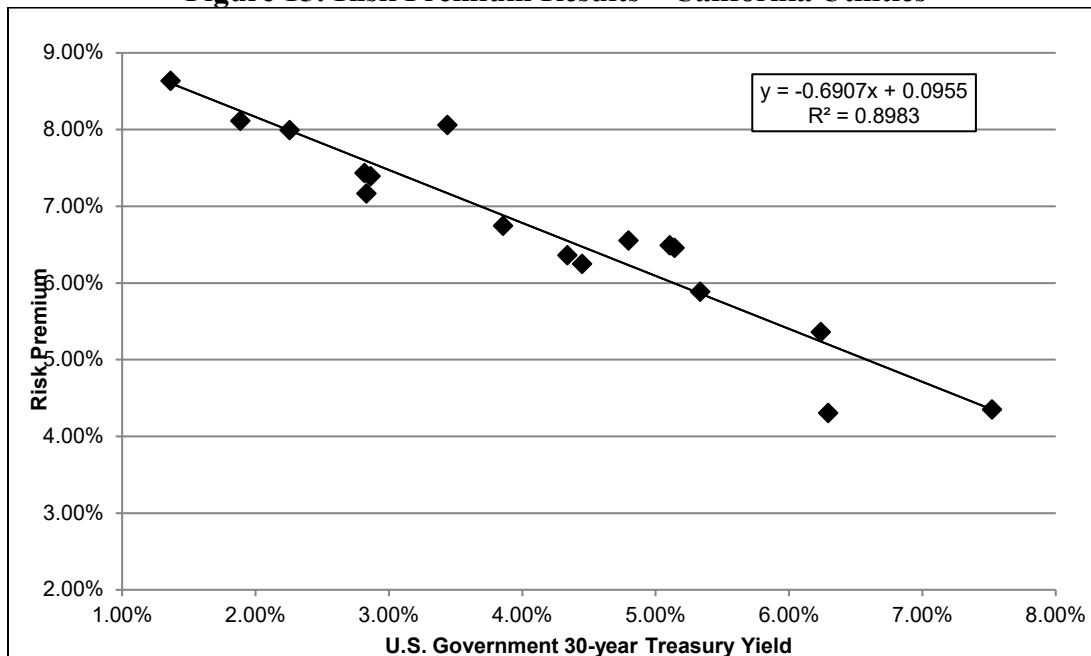
7 As shown on Exhibit PAC/207, based on the current 30-day average of the 30-year U.S.
8 Treasury bond yield (i.e., 2.37 percent), the risk premium would be 7.31 percent,
9 resulting in an estimated ROE of 9.68 percent. Based on the near-term (Q3 2022–Q3
10 2023) projected 30-year U.S. Treasury bond yield (i.e., 3.12 percent), the risk premium
11 would be 6.88 percent, resulting in an estimated ROE of 10.00 percent for all electric
12 utilities. Using the long-term projected yield on the 30-year U.S. Treasury bond (i.e.

1 3.40 percent), the risk premium would be 6.73 percent and the estimated ROE would be
2 10.13 percent.

3 **Q. Have you considered any other Risk Premium analyses?**

4 A. Yes. I have also considered a Bond Yield Risk Premium analysis that is based on
5 authorized ROEs in California. As shown in Figure 15 and Exhibit PAC/208, the ROE
6 results of that analysis are 10.28 percent using the current yield on the 30-year Treasury
7 bond, 10.51 percent using the near-term forecast (Q3 2022- Q3- 2023) and 10.60 percent
8 using the long-term projection of the yield on the 30-year Treasury bond (2023-2027).

Figure 15: Risk Premium Results – California Utilities



9 **Q. How do the results of the Bond Yield Risk Premium analysis inform your**
10 **recommended ROE for PacifiCorp?**

11 A. In conjunction with the other ROE models that I have discussed, I have considered the
12 results of the Bond Yield Risk Premium analysis in setting my recommended ROE for
13 PacifiCorp. As noted above, investors consider the ROE award of a company when
14 assessing the risk of that company as compared to utilities of comparable risk operating

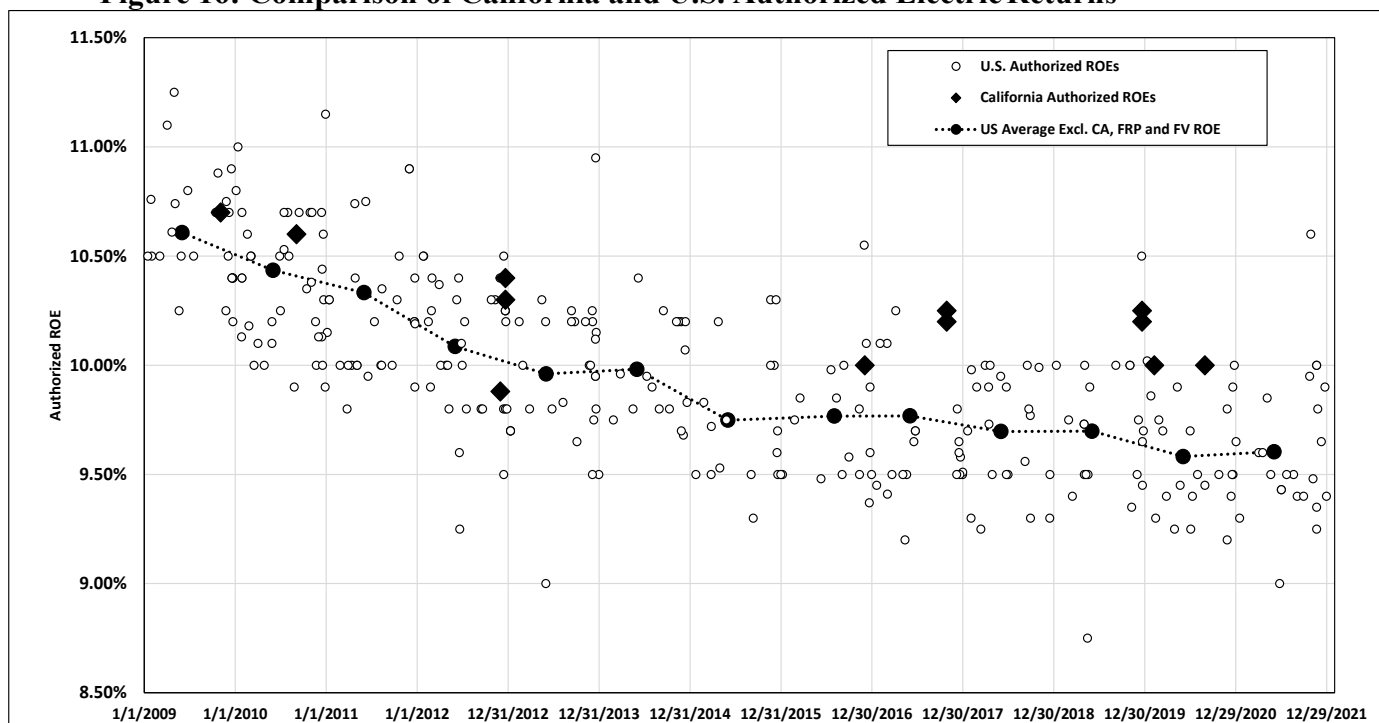
1 in other jurisdictions. The risk premium analysis accounts for this comparison by
2 estimating the return expectations of investors based on the current and past ROE awards
3 of electric utilities across the U.S.

4 **F. Authorized Return on Equity Analysis**

5 **Q. How do recent returns in California compare to the authorized returns in other**
6 **jurisdictions?**

7 A. Figure 16 below shows the authorized returns for vertically integrated electric utilities
8 since January 2009, the average authorized ROEs for vertically integrated electric utilities
9 in other jurisdictions and the returns authorized in California for electric companies. As
10 shown in Figure 16, the authorized returns for electric utilities in California have
11 consistently been above the average authorized ROEs in other jurisdictions,
12 demonstrating a higher degree of financial support for the regulated utilities in California.

Figure 16: Comparison of California and U.S. Authorized Electric Returns⁵⁴



1 This is consistent with the results of the Bond Yield Risk Premium analysis discussed in
 2 Section E. As discussed previously, I relied on the historical relationship between
 3 authorized ROEs in California and the yields on Treasury bonds to estimate the investor-
 4 required ROE using current and projected Treasury bond yields. Analyzing the results of
 5 this analysis for California authorized ROEs as compared with national average
 6 authorized ROEs demonstrates that the authorized ROE in California would be above the
 7 average authorized across the nation.

8 **Q. Has California been viewed as a supportive regulatory jurisdiction?**

9 Yes. S&P conducts a ranking of regulatory jurisdictions, using a scale of 9 steps ranging
 10 from a low of Below Average to Above Average, which each ranking having three

⁵⁴ Source: Capital IQ. Data excludes states where ROE is established based on a formula (Illinois and Vermont) and Arizona which relies on a fair value ROE.

1 notches, “3” being the low end of the ranking and “1” being the high end of the ranking.
2 These rankings are assigned from an investor perspective and are intended to indicate the
3 relative regulatory risk associated with the ownership of securities issued by the utilities
4 in the jurisdiction. The evaluation is intended to assess the level and quality of earnings
5 realized by the state utilities as a result of regulatory, legislative and court actions. S&P
6 ranks California Average 2. This ranking has declined twice since 2017 when S&P
7 ranked California Above Average 3. S&P notes however that authorized ROEs have
8 historically been above the industry average at the time authorized.

9 **Q. How should the Commission use the information regarding authorized ROEs in**
10 **other jurisdictions in determining the ROE for PacifiCorp?**

11 A. As discussed above, the companies in the proxy group operate in multiple jurisdictions
12 across the U.S. Since PacifiCorp must compete directly for capital with investments of
13 similar risk, it is appropriate to review the authorized ROEs in other jurisdictions. The
14 comparison is important because investors are considering the authorized returns across
15 the U.S. and are likely to invest equity in those utilities with the highest returns.
16 Furthermore, investors are also likely to consider business and financial risks for a
17 company like PacifiCorp which faces increased risk as a result of the Company’s capital
18 expenditure plan and limited cost recovery mechanisms. Therefore, authorizing an ROE
19 for PacifiCorp that is equivalent to the average authorized ROE for other vertically
20 integrated electric utilities is not sufficient to compensate investors for the added risk
21 faced by PacifiCorp. As such, it is important that the Commission consider, as I have in
22 my recommendation, the additional risk of PacifiCorp and place the authorized ROE for

1 PacifiCorp towards the high end of authorized ROEs for other vertically integrated
2 electric utilities.

3 **VIII. REGULATORY AND BUSINESS RISKS**

4 **Q. Do the median and mean results of the DCF, CAPM, and Risk Premium analyses**
5 **for the proxy group provide an appropriate estimate of the cost of equity for**
6 **PacifiCorp?**

7 A. No. These results provide only a range of the appropriate estimate of PacifiCorp's cost of
8 equity. Several additional factors must be considered when determining where the
9 Company's cost of equity falls within the range of analytical results. These risk factors,
10 discussed below, should be considered with respect to their overall effect on PacifiCorp's
11 risk profile relative to the proxy group.

12 **A. Capital Expenditures**

13 **Q. Please summarize PacifiCorp's capital expenditure requirements.**

14 A. PacifiCorp's current projections for 2022 through 2026 include approximately \$12.04
15 billion in capital investments for the period.⁵⁵ Based on PacifiCorp's net utility plant of
16 approximately \$22.4 billion as of December 31, 2021, the ratio of projected capital
17 expenditures to net utility plant is approximately 53.68 percent. These investments
18 include significant investment in a wildfire mitigation plan as well as ongoing
19 investments to achieve the environmental requirements to reduce Greenhouse Gas
20 Emissions over time, through the retirement of coal-fired generation and the replacement
21 of those assets with renewable resources.

⁵⁵ Source: Company provided data.

1 **Q. How is PacifiCorp's risk profile affected by its capital expenditure requirements?**

2 A. As with any utility facing increased capital expenditure requirements, the Company's risk
3 profile may be adversely affected in two significant and related ways: (1) the heightened
4 level of investment increases the risk of under recovery or delayed recovery of the
5 invested capital; and (2) an inadequate return would put downward pressure on key credit
6 metrics.

7 **Q. Do credit rating agencies recognize the risks associated with elevated levels of**
8 **capital expenditures?**

9 A. Yes. From a credit perspective, the additional pressure on cash flows associated with
10 higher levels of capital expenditures exerts corresponding pressure on credit metrics and,
11 therefore, credit ratings. To that point, S&P explains the importance of regulatory
12 support for large capital projects:

13 When applicable, a jurisdiction's willingness to support large capital
14 projects with cash during construction is an important aspect of our
15 analysis. This is especially true when the project represents a major
16 addition to rate base and entails long lead times and technological risks
17 that make it susceptible to construction delays. Broad support for all
18 capital spending is the most credit- sustaining. Support for only specific
19 types of capital spending, such as specific environmental projects or
20 system integrity plans, is less so, but still favorable for creditors.
21 Allowance of a cash return on construction work-in-progress or similar
22 ratemaking methods historically were extraordinary measures for use in
23 unusual circumstances, but when construction costs are rising, cash flow
24 support could be crucial to maintain credit quality through the spending
25 program. Even more favorable are those jurisdictions that present an
26 opportunity for a higher return on capital projects as an incentive to
27 investors.⁵⁶

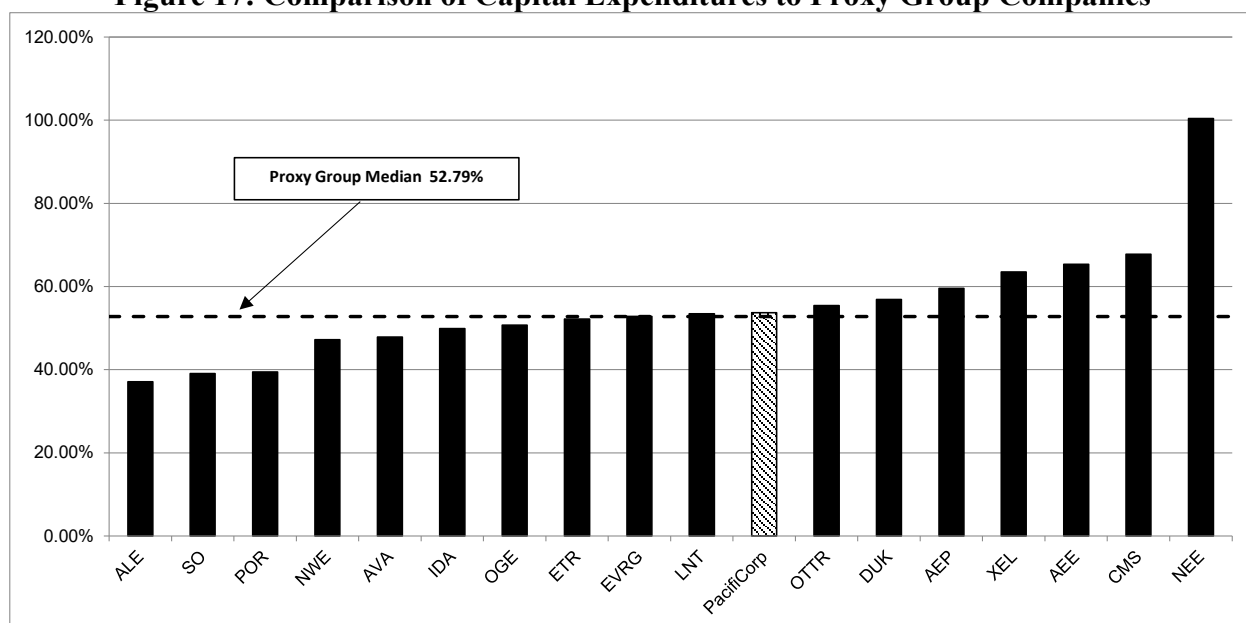
⁵⁶ S&P GLOBAL RATINGS, Assessing U.S. Investor-Owned Utility Regulatory Environments, at 7 (Aug. 10, 2016).

1 Therefore, to the extent that PacifiCorp’s rates do not permit the opportunity to
2 recover its full cost of doing business, the Company will face increased recovery risk and
3 thus increased pressure on its credit metrics.

4 **Q. How do PacifiCorp’s capital expenditure requirements compare to those of the**
5 **proxy group companies?**

6 A. As shown in Exhibit PAC/209 CapEx 1, I calculated the ratio of expected capital
7 expenditures to net utility plant for PacifiCorp and each of the companies in the proxy
8 group by dividing each company’s projected capital expenditures for the period from
9 2022-2026 by its total net utility plant as of December 31, 2020. As shown in Exhibit
10 PAC/209 CapEx 2 (see also Figure 17 below), PacifiCorp’s ratio of capital expenditures
11 as a percentage of net utility plant of 53.68 percent is similar to the median of the proxy
12 group companies of 52.79 percent.

Figure 17: Comparison of Capital Expenditures to Proxy Group Companies



1 **Q. Does PacifiCorp have a capital tracking mechanism to recover the costs associated**
2 **with capital expenditures between rate cases?**

3 A. Yes. PacifiCorp is authorized to recover costs of major capital additions, defined as plant
4 additions greater than \$50 million on a total-company basis, through its Post Test-Year
5 Adjustment Mechanism (PTAM). As shown in Exhibit PAC/210, 53.49 percent of the
6 proxy group utilities recover costs through capital tracking mechanisms.

7 **Q. What are your conclusions regarding the effect of the Company's capital spending**
8 **requirements on its risk profile and cost of capital?**

9 A. PacifiCorp's capital expenditure requirements as a percentage of net utility plant are
10 significant over the next few years, and these investments create additional risk for the
11 Company, as noted by the Commission in the Company's last rate proceeding.

12 **B. Wildfire Mitigation Risks**

13 **Q. Please summarize the Company's risk related to wildfires.**

14 A. As discussed in the testimony of Mr. Allen Berreth, the risk of wildfires has been an
15 ongoing operational risk that the Company has actively worked with the Commission to
16 address. Senate Bill 901, which was passed in September 2018 required the development
17 and implementation of Wildfire Mitigation Plans (WMPs) for all electric utilities in
18 California. These plans were required to address the mitigation of wildfires, prevention
19 programs, and a demonstration that the program balances the costs of the program with
20 the reduction in risk resulting from implementation of the program.

21 **Q. Has the Company developed a WMP?**

22 A. Yes. The Company is adopting accelerated and enhanced wildfire mitigation measures in
23 response to this legislation which are outlined in Company witness Mr. Berreth's

1 testimony.

2 **Q. Is the WMP included in the Company's capital investment plans in this proceeding?**

3 A. Yes. As discussed by Mr. Berreth, the Company's program includes approximately \$36
4 million per year in 2022 and 2023 in capital investment that targets hardening the
5 distribution system to mitigate the risk of wildfires. In addition, the Company's WMP
6 includes approximately \$6 million in vegetation management and other wildfire-related
7 expenses in 2023.

8 **Q. Does the financial community recognize this risk?**

9 A. Yes. In a recent review of PacifiCorp's overall operating risk, Moody's noted the risk
10 related to wildfire and weather-related events in several of PacifiCorp's service
11 territories, including California. Further, Moody's noted that PacifiCorp was engaged in
12 the development of a WMP and that there was a need to support these efforts with
13 mechanisms to track and recovery the costs of such programs.⁵⁷

14 **Q. Is the risk of wildfires unique to PacifiCorp?**

15 A. As noted earlier in my testimony, the estimation of the appropriate ROE is based on a
16 proxy group of companies that are comparable to the subject company. While the goal is
17 to establish comparability, there are differences in the overall risk factors between the
18 subject company and the proxy group. The requirement to develop a WMP is specific to
19 California in response to SB 901. Reviewing the utility operating companies owned by
20 the proxy group companies, there are no other operating companies that operate in
21 California. Therefore, considering PacifiCorp's risk as compared to the proxy group
22 companies with respect to wildfire risk and the capital required for mitigation planning

⁵⁷ MOODY'S INVESTOR SERVICE, *PacifiCorp: Update to credit analysis*, June 30, 2021 at 7.

1 demonstrates that PacifiCorp has greater risk than the proxy group companies.

2 **C. Regulatory Risks**

3 **Q. Please explain how the regulatory environment affects investors' risk assessments.**

4 A. The ratemaking process is premised on the principle that, for investors and companies to
5 commit the capital needed to provide safe and reliable utility service, the subject utility
6 must have the opportunity to recover the return of, and the market-required return on,
7 invested capital. Regulatory authorities recognize that because utility operations are
8 capital intensive, regulatory decisions should enable the utility to attract capital at
9 reasonable terms, and that doing so balances the long-term interests of investors and
10 customers. Utilities must finance their operations and thus require the opportunity to earn
11 a reasonable return on their invested capital to maintain their financial profiles.

12 PacifiCorp is no exception, and in that respect, the regulatory environment is one of the
13 most important factors considered in both debt and equity investors' risk assessments.

14 From the perspective of debt investors, the authorized return should enable the
15 utility to generate the cash flow needed to meet its near-term financial obligations, make
16 the capital investments needed to maintain and expand its systems, and maintain the
17 necessary levels of liquidity to fund unexpected events. This financial liquidity must be
18 derived not only from internally generated funds, but also by efficient access to capital
19 markets. Moreover, because fixed income investors have many investment alternatives,
20 even within a given market sector, a utility's financial profile must be adequate on a
21 relative basis to ensure its ability to attract capital under a variety of economic and
22 financial market conditions.

1 Equity investors require that the authorized return be adequate to provide a risk-
2 comparable return on the equity portion of the utility's capital investments. Because
3 equity investors are the residual claimants on the utility's cash flows (*i.e.*, the equity
4 return is subordinate to interest payments), they are particularly concerned with the
5 strength of regulatory support and its effect on future cash flows.

6 **Q. Please explain how credit rating agencies consider regulatory risk in establishing a**
7 **company's credit rating.**

8 A. Both S&P and Moody's consider the overall regulatory framework in establishing credit
9 ratings. Moody's establishes credit ratings based on four key factors: (1) regulatory
10 framework; (2) the ability to recover costs and earn returns; (3) diversification; and (4)
11 financial strength, liquidity and key financial metrics. Of these criteria, regulatory
12 framework and the ability to recover costs and earn returns are each given a broad rating
13 factor of 25.00 percent. Therefore, Moody's assigns regulatory risk a 50.00 percent
14 weighting in the overall assessment of business and financial risk for regulated utilities.⁵⁸

15 S&P also identifies the regulatory framework as an important factor in credit
16 ratings for regulated utilities, stating: "One significant aspect of regulatory risk that
17 influences credit quality is the regulatory environment in the jurisdictions in which a
18 utility operates."⁵⁹ S&P identifies four specific factors that it uses to assess the credit
19 implications of the regulatory jurisdictions of investor-owned regulated utilities: (1)
20 regulatory stability; (2) tariff-setting procedures and design; (3) financial stability; and

⁵⁸ MOODY'S INVESTORS SERVICE, Rating Methodology: Regulated Electric and Gas Utilities at 4 (June 23, 2017).

⁵⁹ S&P GLOBAL RATINGS, Ratings Direct, U.S. and Canadian Regulatory Jurisdictions Support Utilities' Credit Quality—But Some More So Than Others at 2 (June 25, 2018).

1 (4) regulatory independence and insulation.⁶⁰

2 **Q. How does the regulatory environment in which a utility operates affect its access to**
3 **and cost of capital?**

4 A. The regulatory environment can significantly affect both the access to and cost of capital
5 in several ways. First, the proportion and cost of debt capital available to utility
6 companies are influenced by the rating agencies' assessment of the regulatory
7 environment. As noted by Moody's, "[f]or rate regulated utilities, which typically
8 operate as a monopoly, the regulatory environment and how the utility adapts to that
9 environment are the most important credit considerations."⁶¹ Moody's further
10 highlighted the relevance of a stable and predictable regulatory environment to a utility's
11 credit quality, noting: "[b]roadly speaking, the Regulatory Framework is the foundation
12 for how all the decisions that affect utilities are made (including the setting of rates), as
13 well as the predictability and consistency of decision-making provided by that
14 foundation."⁶²

15 **Q. Have you conducted an analysis of the regulatory framework in California for**
16 **PacifiCorp's business relative to the jurisdictions in which the companies in your**
17 **proxy group operate?**

18 A. Yes. I have evaluated the regulatory framework in California based on five factors that
19 are important in terms of providing a regulated utility an opportunity to earn its
20 authorized ROE. These factors are: (1) fuel cost recovery; (2) the test year convention

⁶⁰ *Id.*, at 1.

⁶¹ MOODY'S INVESTORS SERVICE, Rating Methodology: Regulated Electric and Gas Utilities at 6 (June 23, 2017).

⁶² *Id.*

1 for ratemaking (*i.e.*, forecast vs. historical test year); (3) method for determining rate base
2 for ratemaking (*i.e.*, average vs. year-end rate base); (4) use of revenue decoupling or
3 other clauses that mitigate volumetric risk; and (5) prevalence of capital cost recovery
4 between rate cases. The results of my regulatory risk assessment are shown in Exhibit
5 PAC/210 and are summarized below.

6 1. Fuel Cost Recovery: PacifiCorp has an Energy Cost Adjustment Clause
7 (ECAC) which fully recovers power costs. This is important to investors because fuel
8 and purchased power costs typically account for 50–60 percent of the total operating
9 costs for a regulated utility. This is consistent with the majority of the proxy group
10 companies since 41 states either have restructured and the electric utilities do not own
11 generation or have fuel cost recovery mechanisms with a true-up between actual and
12 forecasted fuel costs. In addition, approximately 88.37 percent of the operating
13 companies held by the proxy group are allowed to pass through fuel costs and purchased
14 power costs directly to customers, without deadbands, sharing bands and earnings tests.

15 2. Test Year Convention: PacifiCorp is relying on a fully forecasted test year
16 ending 2023. As shown in Exhibit PAC/210, 48.84 percent of the operating companies
17 held by the proxy group provide service in jurisdictions use a fully or partially forecast
18 test year.

19 3. Rate Base: The Company's rate base in this proceeding is established using a
20 13-month average rate base ending December 31, 2023 that includes plant additions in
21 the test year. Approximately 45.35 percent of the operating subsidiaries held by the
22 proxy group use year-end rate base, meaning that the rate base includes capital additions

1 that occurred in the second half of the test year and is more reflective of net utility plant
2 going forward.

3 4. Volumetric Risk/Decoupling: PacifiCorp does not have protection against
4 volumetric risk in California. However, PacifiCorp does have an annual filing to adjust
5 rates for inflation, as measured by CPI with an offsetting productivity factor of 0.5
6 percent, which provides support on the recovery of actual costs. Approximately 56.98
7 percent of the operating companies held by the proxy group have some form of protection
8 against volumetric risk through either a partial or full revenue decoupling mechanism that
9 mitigates the effect of fluctuations in volume on revenues. The ability to adjust revenues
10 and costs to provide stability both contribute to stability of earnings. Therefore,
11 PacifiCorp's mechanisms are similar to the proxy group companies.

12 5. Capital Cost Recovery: The (PTAM) allows PacifiCorp to recover the
13 California allocated share of plant additions greater than \$50 million on a total company
14 basis outside of a rate case. Approximately 53.49 percent of the operating companies held
15 by the proxy group also have some form of capital cost recovery mechanism in place that
16 allows for recovery of capital costs between rate cases.

17 **Q. What are your conclusions regarding the perceived risks related to the California**
18 **regulatory environment?**

19 A. As discussed throughout this section of my testimony, both Moody's and S&P have
20 identified the supportiveness of the regulatory environment as an important consideration
21 in developing their overall credit ratings for regulated utilities. Considering the
22 regulatory adjustment mechanisms, many of the companies in the proxy group have
23 similar cost recovery through fuel cost recovery mechanisms, fully forecasted test years,

1 and capital cost recovery trackers. While PacifiCorp does not have volumetric
2 stabilization or decoupling, the Company does have an inflation adjustment mechanism
3 through the PTAM Attrition Factor. For these reasons, I conclude that the Company's
4 overall business risk is similar to the proxy group, on average.

5 **D. Generation Ownership**

6 **Q. How does the business risk of vertically integrated electric utilities compare to the**
7 **business risk of other regulated utilities?**

8 A. According to Moody's, generation ownership causes vertically integrated electric utilities
9 to have higher business risk than either electric transmission and distribution companies,
10 or natural gas distribution or transportation companies.⁶³ As a result of this higher
11 business risk, integrated electric utilities typically require a higher ROE or percentage of
12 equity in the capital structure than other electric or gas utilities.

13 **Q. Are there other risk factors specific to vertically integrated electric utilities that the**
14 **credit rating agencies consider when determining the credit rating of a company**
15 **that owns generation?**

16 A. Yes. As discussed above, Moody's establishes credit ratings based on four key factors:
17 (1) regulatory framework; (2) the ability to recover costs and earn returns; (3)
18 diversification; and (4) financial strength, liquidity and key financial metrics. The third
19 factor diversification, which Moody's assigns a 10.00 percent weighting in the overall
20 assessments of a company's business risk, considers the fuel source diversity of a utility
21 with generation. Moody's notes:

⁶³ MOODY'S INVESTORS SERVICE, *Rating Methodology: Regulated Electric and Gas Utilities* at 21-22 (June 23, 2017).

1 For utilities with electric generation, fuel source diversity can
2 mitigate the impact (to the utility and to its rate-payers) of
3 changes in commodity prices, hydrology and water flow, and
4 environmental or other regulations affecting plant operations and
5 economics. We have observed that utilities' regulatory
6 environments are most likely to become unfavorable during
7 periods of rapid rate increases (which are more important than
8 absolute rate levels) and that fuel diversity leads to more stable
9 rates over time.

10 For that reason, fuel diversity can be important even if fuel and
11 purchased power expenses are an automatic pass-through to the
12 utility's ratepayers. Changes in environmental, safety and other
13 regulations have caused vulnerabilities for certain technologies
14 and fuel sources during the past five years. These vulnerabilities
15 have varied widely in different countries and have changed over
16 time.⁶⁴

17 **Q. Have you conducted an analysis to compare the fuel sources for the generation**
18 **portfolio of PacifiCorp to the companies in your proxy group?**

19 A. Yes, I have. Specifically, I calculated for PacifiCorp, and each company in the proxy
20 group, the percentage of regulated owned generation capacity that was derived from one
21 of the following fuel sources: oil/natural gas, coal, nuclear, hydro, and other. As shown
22 in Figure 18, approximately 46.45 percent of PacifiCorp's regulated, owned generation
23 came from coal-fired power plants with approximately 70.73 percent coming from either
24 oil, natural gas, or coal-fired power plants. Therefore, PacifiCorp is more reliant on a
25 limited number of fuel sources for its regulated generation and overall slightly less
26 diversified than the companies in the proxy group.

⁶⁴ *Id.* at 16.

Figure 18: Regulated Owned Generation Capacity - Fuel Mix for PacifiCorp and Proxy Group⁶⁵

Company	Ticker	Coal	Gas & Oil	Nuclear	Hydro	Solar	Wind	Other
ALLETE, Inc.	ALE	50.94%	5.92%	0.00%	7.55%	0.65%	31.34%	3.60%
Alliant Energy Corporation	LNT	27.39%	49.81%	0.00%	0.70%	0.13%	21.93%	0.03%
Ameren Corporation	AEE	47.91%	28.69%	10.68%	6.77%	0.06%	5.76%	0.12%
American Electric Power Company, Inc.	AEP	51.18%	29.61%	9.33%	3.54%	0.24%	6.08%	0.02%
Avista Corporation	AVA	10.38%	33.44%	0.00%	53.80%	0.00%	0.00%	2.37%
CMS Energy Corporation	CMS	21.78%	48.93%	0.00%	19.09%	0.11%	10.07%	0.02%
Duke Energy Corporation	DUK	27.96%	46.49%	17.20%	6.52%	1.75%	0.00%	0.07%
Entergy Corporation	ETR	11.06%	72.48%	15.67%	0.29%	0.51%	0.00%	0.00%
Evergy, Inc.	EVRG	49.78%	34.89%	10.22%	0.05%	0.03%	5.01%	0.02%
IDACORP, Inc.	IDA	22.71%	22.38%	0.00%	54.91%	0.00%	0.00%	0.00%
NextEra Energy, Inc.	NEE	3.99%	74.95%	10.32%	0.00%	10.70%	0.00%	0.04%
NorthWestern Corporation	NWE	32.38%	24.22%	0.00%	33.70%	0.00%	9.71%	0.00%
OGE Energy Corporation	OGE	18.98%	74.33%	0.00%	0.00%	0.39%	6.30%	0.00%
Otter Tail Corporation	OTTR	37.92%	34.77%	0.00%	0.39%	0.00%	26.92%	0.00%
<i>PacifiCorp</i>	<i>PacifiCorp</i>	<i>46.45%</i>	<i>24.28%</i>	<i>0.00%</i>	<i>9.73%</i>	<i>0.19%</i>	<i>19.06%</i>	<i>0.29%</i>
Portland General Electric Company	POR	8.36%	55.38%	0.00%	13.03%	0.05%	23.05%	0.14%
Southern Company	SO	29.41%	48.80%	11.56%	9.06%	1.18%	0.00%	0.00%
Xcel Energy Inc.	XEL	29.10%	40.40%	7.82%	2.46%	0.01%	19.98%	0.24%

1 **Q. Is PacifiCorp’s generation portfolio currently in a state of transition?**

2 A. Yes. As further discussed in the testimony of Company witness Mr. Matthew McVee,
3 PacifiCorp is responding to changing market conditions and, as indicated by the 2019 and
4 2021 Integrated Resource Plans (IRP) action plans, taking near term actions to retire
5 certain coal units, invest in new renewable generation, and invest in associated
6 transmission.

7 **Q. Are there additional risks related to this transition?**

8 A. Yes. As discussed in the testimony of Company witness Mr. James Owen, consistent with
9 the Commission’s direction, PacifiCorp has outlined is plans for the retirement or

⁶⁵ Source: S&P Capital IQ Pro.

1 conversion of each of its coal-fired generation assets. Conversions begin in 2024 with the
2 Jim Bridger Units 1-2 being converted to natural gas as a fuel source. In addition, the
3 retirement of the Craig Units 1 and 2, Hayden Units 1 and 2, Naughton Units 1 and 2 and
4 Dave Johnston Unit 3 are planned as a result of environmental requirements. These assets
5 are being retired before the end of their expected lives and therefore result in incremental
6 cost recovery risk. While the Company has requested accelerated depreciation for certain
7 coal units in California, the risk related to the potential under-recovery of the investments
8 in the coal-fired generation assets is a significant financial risk for the Company.

9 **Q. What are your conclusions regarding the perceived risks related to the fuel mix of**
10 **PacifiCorp's generation portfolio?**

11 A. PacifiCorp's fossil-fuel generation is subject to increased environmental regulations
12 aimed at cutting power plant emissions. The environmental regulations pose additional
13 business risk as sizable future capital expenditures may be required to comply with
14 regulations. Furthermore, in the 2021 IRP, the Company recently outlined plans for
15 reshaping its generation portfolio.⁶⁶ While the Company intends to improve fuel
16 diversity over the long-run, the plans will require continued access to capital markets to
17 finance the new investments. Finally, the Company faces significant cost recovery risk
18 for the coal-fired assets that are being retired early to meet environmental requirements.
19 Therefore, the Company's existing generation portfolio and proposed transmission and
20 generation investment plans increase the overall risk profile as compared with the proxy
21 group.

⁶⁶ PacifiCorp 2021 Integrated Resource Plan, Appendix B summarized the Company's regulatory compliance by state and provides references to where, within the IRP, compliance is addressed.

1 **E. Impact of Climate Change Initiatives**

2 **Q. Please summarize the California legislation that addresses climate change initiatives**
3 **as they relate to the production and transmission of electricity.**

4 A. California passed SB 32 in 2016 which establishes timelines for the reduction of
5 greenhouse gas (GHG) emissions to 40 percent below 1990 levels by 2030. In addition,
6 SB 350 was passed in 2015 and SB 100 was passed in 2018, both of which established
7 requirements related to the procurement of electricity from renewable resources; 60
8 percent of all electricity by 2030 and 100 percent from carbon-free resources by 2045.

9 **Q. Has PacifiCorp established a plan with respect to the reduction of GHG emissions?**

10 A. Yes. Over time, through the 2017, 2019 and 2021 IRPs, PacifiCorp has outlined its plans
11 to reduce GHG emissions by substantially increasing renewable energy capacity and
12 upgrading the transmission network connecting supply with demand. The Company's
13 2021 IRP identifies critical investments in transmission, renewable energy, storage,
14 demand response and advanced nuclear resources necessary to meet these environmental
15 goals. Over the period from 2021 through 2040, the Company plans to reduce demand
16 by 4,290 megawatts (MW) through energy efficiency programs, increase solar resources
17 by 5,628 MW, increase wind resources by 3,628 MW and add 6,181 MW of storage
18 resources. Further, the Company has plans for 2,448 MW of direct load control programs
19 and 500-1500 MW of advanced nuclear technology.⁶⁷

⁶⁷ PacifiCorp 2021 IRP at 2.

1 **Q. Has the Company identified plans to retire coal-fired generation to meet GHG**
2 **reduction requirements?**

3 A. Yes. As discussed previously, and further detailed in the testimony of Company witness
4 Mr. James Owen, PacifiCorp's 2021 IRP outline plans to retire several coal-fired
5 generating assets to reduce GHG emission and meet environmental standards. The
6 Company recently completed a coal-to-gas peaking generation conversion of Naughton
7 Unit 3 in Wyoming and retired the Cholla Unit 4 generator in Arizona. In addition, over
8 the next four years, the Company plans to begin the retirement or divestiture of Colstrip
9 Units 3 and 4 in Montana, and Naughton Units 1 and 2. Further, the Company plans a
10 coal-to-gas peaking conversion for Jim Bridger Units 1 and 2 in Wyoming.⁶⁸

11 **Q. How much conservation and demand response is planned over the near-term, when**
12 **the rates set in this proceeding are likely to be in effect?**

13 A. The Company is planning an additional 144 MW of energy efficiency⁶⁹ and
14 approximately 242 MW of incremental demand response⁷⁰ resources in 2023.

15 **Q. Has the Company identified replacement resources for the retiring assets?**

16 A. No, not entirely. As discussed in the testimony of Mr. James Owen, the Company's 2021
17 IRP outlines plans for the retirement or conversion of its coal-fired generation assets over
18 a period from 2024 through 2042 in order to comply with environmental regulations.
19 While these retirements have been identified, the replacement resources have not been
20 selected at this time. Therefore, the Company's compliance with environmental
21 regulations results in increased recontracting risk, as well as increased capital investments

⁶⁸ *Id.* at 4.

⁶⁹ PacifiCorp 2021 IRP, at 28.

⁷⁰ PacifiCorp 2021 IRP, Vol II, p. 109.

1 as the Company seeks to replace or convert its existing generation portfolio to meet new
2 environmental requirements. Further, it is important to recognize that environmental
3 legislation is not static. Legislation and regulation continue to evolve to address climate
4 initiatives. This increases the overall business risk for the Company as it works to
5 modify its existing portfolio of resources to meet changing policy initiatives.

6 **Q. Have the credit rating agencies commented on PacifiCorp's capital spending plans?**

7 A. Yes. S&P has noted that continued regulatory support will be important to sustain credit
8 quality as the company implements its ever increasing renewable and transmission plan.
9 Further S&P noted that the Company's metrics have been impacted by negative cash
10 flow impacts of federal tax reform and the associated loss of bonus depreciation as well
11 as regulatory lag and other events. Further, S&P expects that heightened capital
12 expenditures will maintain downward pressure on credit metrics and to be funded with a
13 mixture of debt and retained cash flow that will continue to support credit quality.⁷¹

14 **Q. Do Climate Change plans create additional risk for the Company?**

15 A. Yes. While the Company has demonstrated its commitment to meeting the requirements
16 of all current legislation, the potential for future legislation and additional requirements to
17 meet increasing environmental compliance obligations create uncertainty in the
18 operations of the business and additional overall risk. Regulatory uncertainty surrounding
19 cost recovery has been identified as a significant risk factor by credit rating agencies.
20 Credit rating agencies have noted that continued regulatory support will be important to
21 sustain credit quality throughout the energy transformation.⁷² Therefore, as new

⁷¹ MOODY'S INVESTORS SERVICE, *Credit Opinion, PacifiCorp Update to credit analysis* (June 30, 2021).

⁷² MOODY'S INVESTOR SERVICE, *PacifiCorp: Update to credit analysis*, June 30, 2021 at 6.

1 legislative initiatives are enacted, it will be necessary for the Commission to provide
2 stable regulatory policies that support the recovery on and of investments that have
3 previously been approved and deemed prudent to meet customer demand.

4 **Q. What are your overall conclusions regarding the Company's business risks related**
5 **to GHG emission reduction requirements?**

6 A. The Company is embarking on plans to meet the GHG emissions requirements that
7 include significant demand reduction, retirements of generating assets and capital
8 investment plans that include renewable resources and transmission investment that
9 continue to provide customers with safe and reliable service. In order to meet these
10 objectives in a manner that is least cost and lowest risk, which benefits customers, it is
11 necessary that the ROE and equity ratio that are authorized in this proceeding support the
12 Company's core financial metrics. The Company's proposed ROE and equity ratio
13 would provide that necessary support.

14 **IX. CAPITAL STRUCTURE**

15 **Q. Is the capital structure of the Company an important consideration in the**
16 **determination of the appropriate ROE?**

17 A. Yes. All else equal, a higher debt ratio increases the risk to investors. For debt holders,
18 higher debt ratios result in a greater portion of the available cash flow being required to
19 meet debt service, thereby increasing the risk associated with the payments on debt. The
20 result of increased risk is a higher interest rate. The incremental risk of a higher debt
21 ratio is more significant for common equity shareholders, who are the residual claimants
22 on the cash flow of the Company. Therefore, the greater the debt service requirement,
23 the less cash flow there is available for common equity holders.

1 **Q. What is PacifiCorp's proposed capital structure?**

2 A. As discussed in the direct testimony of Company witness Nikki L. Kobliha (Exhibit
3 PAC/300), PacifiCorp is proposing a capital structure that is composed of 52.25 percent
4 common equity, 0.01 percent preferred stock and 47.74 percent long-term debt.

5 **Q. Have you analyzed the capital structures of the proxy group companies?**

6 A. Yes. I calculated the percentages of common equity, long-term debt and short-term debt
7 over the most recent two years for each of the utility operating subsidiaries of the proxy
8 group companies. Because the cost of equity is established based on the return that is
9 derived from the risk-comparable proxy group, it is reasonable to look to the proxy group
10 average capital structure to benchmark the equity ratio for the Company. As shown in
11 Exhibit PAC/211, the equity ratios for the utility operating subsidiaries of the proxy
12 group range from 46.85 percent to 61.11 percent, with a median of 52.81 percent in the
13 most recent year. PacifiCorp's proposed equity ratio of 52.25 percent is within the range
14 of equity ratios of the proxy group. Accordingly, I consider the proposed equity ratios to
15 be reasonable.

16 **Q. Will the capital structure and ROE authorized in this proceeding affect the
17 Company's access to capital at reasonable rates?**

18 A. Yes. The level of earnings authorized by the Commission directly affects the Company's
19 ability to fund its operations with internally generated funds. Both bond investors and
20 rating agencies expect a significant portion of ongoing capital investments to be financed
21 with internally generated funds. In addition, it is important to recognize that because a
22 utility's investment horizon is very long, investors require the assurance of a sufficiently
23 high return to satisfy the long-run financing requirements of the assets placed into

1 service. Those assurances, which often are measured by the relationship between
2 internally generated cash flows and debt (or interest expense), depend quite heavily on
3 the capital structure. As a consequence, both the ROE and capital structure are very
4 important to debt and equity investors. Furthermore, considering the capital market
5 conditions discussed in Section V, the authorized ROE and capital structure take on even
6 greater significance.

7 **X. CONCLUSIONS AND RECOMMENDATION**

8 **Q. What is your conclusion regarding a fair ROE for PacifiCorp?**

9 A. As discussed throughout my testimony, the authorized ROE should be a forward-looking
10 estimate; therefore, the analyses supporting my recommendation rely on forward-looking
11 inputs and assumptions (*e.g.*, projected earnings growth rates in the DCF model,
12 forecasted risk-free rate and market risk premium in the CAPM analyses) and take into
13 consideration capital market conditions, including the expected increasing interest rate
14 environment and the underperformance of utility stocks as the economy emerges from the
15 pandemic. The authorized ROE should also consider the relative regulatory, business,
16 and financial risks of PacifiCorp compared to the proxy group.

17 As discussed previously, the cost of equity ranges from 9.90 percent to
18 10.75 percent considering the results of all the models presented in Figure 19. Within
19 this range, taking into consideration current and projected capital market conditions, as
20 well as the specific risk factors discussed for PacifiCorp, I conclude that the Company's
21 requested ROE of 10.50 percent is reasonable. Additionally, the Company is embarking
22 on a capital investment plan that is structured to comply with regulatory guidelines on
23 GHG emissions, the implementation of renewable portfolio standards, and WMP

1 requirements. Credit rating agencies have identified the need for continued regulatory
 2 support, including cost recovery mechanisms that ensure the Company’s financial metrics
 3 can be maintained in light of these risks. California has historically been a jurisdiction
 4 that has provided regulatory support through recognizing the risks inherent in providing
 5 electric utility service by authorizing ROEs that are above the national average.
 6 Considering the financial challenges that PacifiCorp faces in meeting clean energy goals,
 7 it will be important that the Commission continue its support of the Company’s financial
 8 metrics through its decisions in this rate proceeding.

Figure 19: Summary of Results

<i>Constant Growth- Median DCF</i>			
	Median Low	Median	Median High
30-Day Average	7.98%	9.50%	10.22%
90-Day Average	8.02%	9.61%	10.27%
180-Day Average	8.15%	9.70%	10.36%
Constant Growth Median	8.05%	9.60%	10.28%
<i>CAPM</i>			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Value Line Beta	11.50%	11.58%	11.62%
Bloomberg Beta	10.64%	10.79%	10.84%
Long-Term Avg. Beta	10.00%	10.20%	10.27%
<i>ECAPM</i>			
Value Line Beta	11.79%	11.86%	11.88%
Bloomberg Beta	11.15%	11.26%	11.30%
Long-Term Avg. Beta	10.67%	10.82%	10.87%
<i>Risk Premium</i>			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Risk Premium Results-National	9.68%	10.00%	10.13%
Risk Premium Results-California	10.28%	10.51%	10.60%

- 1 **Q. What is your conclusion with respect to PacifiCorp's requested capital structure?**
- 2 A. My conclusion is that PacifiCorp's requested capital structure consisting of 52.25 percent
- 3 common equity, 47.74 percent long-term debt and 0.01 preferred equity is reasonable.
- 4 **Q. Does this conclude your direct testimony?**
- 5 A. Yes.

Application No. 22-05-____
Exhibit PAC/201
Witness: Ann E. Bulkley

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

PACIFICORP

Exhibit Accompanying Direct Testimony of
Ann E. Bulkley
Resume and Testimony Listing of Ann E. Bulkley

May 2022



Ann E. Bulkley

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With more than 25 years of experience in the energy industry, Ms. Bulkley specializes in regulatory economics for the electric and natural gas sectors, including rate of return, cost of equity, and capital structure issues.

Ms. Bulkley has extensive state and federal regulatory experience, and she has provided expert testimony on the cost of capital in nearly 100 regulatory proceedings before 32 state regulatory commissions and the Federal Energy Regulatory Commission (FERC).

In addition to her regulatory experience, Ms. Bulkley has provided valuation and appraisal services for a variety of purposes, including the sale or acquisition of utility assets, regulated ratemaking, ad valorem tax disputes, and other litigation purposes. In addition, she has experience in the areas of contract and business unit valuation, strategic alliances, market restructuring, and regulatory and litigation support.

Ms. Bulkley is a Certified General Appraiser licensed in the Commonwealth of Massachusetts and the State of New Hampshire.

Prior to joining Brattle, Ms. Bulkley was a Senior Vice President at an economic consultancy and held senior positions at several other consulting firms.

AREAS OF EXPERTISE

- Regulatory Economics, Finance & Rates
- Regulatory Investigations & Enforcement
- Tax Controversy & Transfer Pricing
- Electricity Litigation & Regulatory Disputes
- M&A Litigation





EDUCATION

- **Boston University**
MA in Economics
- **Simmons College**
BA in Economics and Finance

PROFESSIONAL EXPERIENCE

- **The Brattle Group (2022–Present)**
Principal
- **Concentric Energy Advisors, Inc. (2002–2021)**
Senior Vice President
Vice President
Assistant Vice President
Project Manager
- **Navigant Consulting, Inc. (1997–2002)**
Project Manager
- **Reed Consulting Group (1995-1997)**
Consultant- Project Manager
- **Cahners Publishing Company (1995)**
Economist

SELECTED CONSULTING EXPERIENCE & EXPERT TESTIMONY

REGULATORY ANALYSIS AND RATEMAKING

Have provided a range of advisory services relating to regulatory policy analysis and many aspects of utility ratemaking, with specific services including:

- Cost of capital and return on equity testimony, cost of service and rate design analysis and testimony, development of ratemaking strategies
- Development of merchant function exit strategies



- Analysis and program development to address residual energy supply and/or provider of last resort obligations
- Stranded costs assessment and recovery
Performance-based ratemaking analysis and design
- Many aspects of traditional utility ratemaking (e.g., rate design, rate base valuation)

COST OF CAPITAL

Have provided expert testimony on the cost of capital and capital structure in nearly 100 regulatory proceedings before state and federal regulatory commissions in the United States.

RATEMAKING

Have assisted several clients with analysis to support investor-owned and municipal utility clients in the preparation of rate cases. Sample engagements include:

- Assisted several investor-owned and municipal clients on cost allocation and rate design issues including the development of expert testimony supporting recommended rate alternatives.
- Worked with Canadian regulatory staff to establish filing requirements for a rate review of a newly regulated electric utility. Along with analyzing and evaluating rate application, attended hearings and conducted investigation of rate application for regulatory staff. And prepared, supported, and defended recommendations for revenue requirements and rates for the company. Additionally, developed rates for gas utility for transportation program and ancillary services.

VALUATION

Have provided valuation services to utility clients, unregulated generators, and private equity clients for a variety of purposes, including ratemaking, fair value, ad valorem tax, litigation and damages, and acquisition. Appraisal practices are consistent with the national standards established by the Uniform Standards of Professional Appraisal Practice.

Representative projects/clients have included:

- Prepared appraisals of electric utility transmission and distribution assets for ad valorem tax purposes.
- Prepared appraisals of several hydroelectric generating facilities for ad valorem tax purposes.
- Conducted appraisals of fossil fuel generating facilities for ad valorem tax purposes.
- Conducted appraisals of generating assets for the purposes of unwinding sale-leaseback agreements.
- For a confidential utility client, prepared valuation of fossil and nuclear generation assets for financing purposes for regulated utility client.



- Prepared a valuation of a portfolio of generation assets for a large energy utility to be used for strategic planning purposes. Valuation approach included an income approach, a real options analysis, and a risk analysis.
- Assisted clients in the restructuring of NUG contracts through the valuation of the underlying assets. Performed analysis to determine the option value of a plant in a competitively priced electricity market following the settlement of the NUG contract.
- Prepared market valuations of several purchase power contracts for large electric utilities in the sale of purchase power contracts. Assignment included an assessment of the regional power market, analysis of the underlying purchase power contracts, and a traditional discounted cash flow valuation approach, as well as a risk analysis. Analyzed bids from potential acquirers using income and risk analysis approaches. Prepared an assessment of the credit issues and value at risk for the selling utility.
- Prepared appraisal of a portfolio of generating facilities for a large electric utility to be used for financing purposes.
- Prepared fair value rate base analyses for Northern Indiana Public Service Company for several electric rate proceedings. Valuation approaches used in this project included income, cost, and comparable sales approaches.
- Prepared an appraisal of a fleet of fossil generating assets for a large electric utility to establish the value of assets transferred from utility property.
- Conducted due diligence on an electric transmission and distribution system as part of a buy-side due diligence team.
- Provided analytical support for and prepared appraisal reports of generation assets to be used in ad valorem tax disputes.
- Provided analytical support and prepared testimony regarding the valuation of electric distribution system assets in five communities in a condemnation proceeding.
- Prepared feasibility reports analyzing the expected net benefits resulting from municipal ownership of investor-owned utility operations.
- Prepared independent analyses of proposal for the proposed government condemnation of the investor-owned utilities in Maine and the formation of a public power district.
- Valued purchase power agreements in the transfer of assets to a deregulated electric market.

STRATEGIC AND FINANCIAL ADVISORY SERVICES

Have assisted several clients across North America with analytically-based strategic planning, due diligence, and financial advisory services.

Representative projects include:





- Preparation of feasibility studies for bond issuances for municipal and district steam clients.
- Assisted in the development of a generation strategy for an electric utility. Analyzed various NERC regions to identify potential market entry points. Evaluated potential competitors and alliance partners. Assisted in the development of gas and electric price forecasts. Developed a framework for the implementation of a risk management program.
- Assisted clients in identifying potential joint venture opportunities and alliance partners. Contacted interviewed and evaluated potential alliance candidates based on company-established criteria for several LDCs and marketing companies. Worked with several LDCs and unregulated marketing companies to establish alliances to enter into the retail energy market. Prepared testimony in support of several merger cases and participated in the regulatory process to obtain approval for these mergers.
- Assisted clients in several buy-side due diligence efforts, providing regulatory insight and developing valuation recommendations for acquisitions of both electric and gas properties.

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Arizona Corporation Commission				
Southwest Gas Corporation	12/21	Southwest Gas Corporation	Docket No. G-01551A-21-0368	Return on Equity
Arizona Public Service Company	10/19	Arizona Public Service Company	Docket No. E-01345A-19-0236	Return on Equity
Tucson Electric Power Company	04/19	Tucson Electric Power Company	Docket No. E-01933A-19-0028	Return on Equity
Tucson Electric Power Company	11/15	Tucson Electric Power Company	Docket No. E-01933A-15-0322	Return on Equity
UNS Electric	05/15	UNS Electric	Docket No. E-04204A-15-0142	Return on Equity
UNS Electric	12/12	UNS Electric	Docket No. E-04204A-12-0504	Return on Equity
Arkansas Public Service Commission				
Oklahoma Gas and Electric Co	10/21	Oklahoma Gas and Electric Co	Docket No. D-18-046-FR	Return on Equity



SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Arkansas Oklahoma Gas Corporation	10/13	Arkansas Oklahoma Gas Corporation	Docket No. 13-078-U	Return on Equity
California Public Utilities Commission				
San Jose Water Company	05/21	San Jose Water Company	A2105004	Return on Equity
Colorado Public Utilities Commission				
Public Service Company of Colorado	07/21	Public Service Company of Colorado	21AL-0317E	Return on Equity
Public Service Company of Colorado	02/20	Public Service Company of Colorado	20AL-0049G	Return on Equity
Public Service Company of Colorado	05/19	Public Service Company of Colorado	19AL-0268E	Return on Equity
Public Service Company of Colorado	01/19	Public Service Company of Colorado	19AL-0063ST	Return on Equity
Atmos Energy Corporation	05/15	Atmos Energy Corporation	Docket No. 15AL-0299G	Return on Equity
Atmos Energy Corporation	04/14	Atmos Energy Corporation	Docket No. 14AL-0300G	Return on Equity
Atmos Energy Corporation	05/13	Atmos Energy Corporation	Docket No. 13AL-0496G	Return on Equity
Connecticut Public Utilities Regulatory Authority				
United Illuminating	05/21	United Illuminating	Docket No. 17-12-03RE11	Return on Equity
Connecticut Water Company	01/21	Connecticut Water Company	Docket No. 20-12-30	Return on Equity
Connecticut Natural Gas Corporation	06/18	Connecticut Natural Gas Corporation	Docket No. 18-05-16	Return on Equity
Yankee Gas Services Co. d/b/a Eversource Energy	06/18	Yankee Gas Services Co. d/b/a Eversource Energy	Docket No. 18-05-10	Return on Equity



SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
The Southern Connecticut Gas Company	06/17	The Southern Connecticut Gas Company	Docket No. 17-05-42	Return on Equity
The United Illuminating Company	07/16	The United Illuminating Company	Docket No. 16-06-04	Return on Equity
Federal Energy Regulatory Commission				
Florida Gas Transmission	02/21	Florida Gas Transmission	Docket No. RP21-441	Return on Equity
TransCanyon	01/21	TransCanyon	Docket No. ER21-1065	Return on Equity
Duke Energy	12/20	Duke Energy	Docket No. EL21-9-000	Return on Equity
Wisconsin Electric Power Company	08/20	Wisconsin Electric Power Company	Docket No. EL20-57-000	Return on Equity
Panhandle Eastern Pipe Line Company, LP	10/19	Panhandle Eastern Pipe Line Company, LP	Docket Nos. RP19-78-000 RP19-78-001	Return on Equity
Panhandle Eastern Pipe Line Company, LP	08/19	Panhandle Eastern Pipe Line Company, LP	Docket Nos. RP19-1523	Return on Equity
Sea Robin Pipeline Company LLC	11/18	Sea Robin Pipeline Company LLC	Docket# RP19-352-000	Return on Equity
Tallgrass Interstate Gas Transmission	10/15	Tallgrass Interstate Gas Transmission	RP16-137	Return on Equity
Idaho Public Utilities Commission				
PacifiCorp d/b/a Rocky Mountain Power	05/21	PacifiCorp d/b/a Rocky Mountain Power	Case No. PAC-E-21-07	Return on Equity
Illinois Commerce Commission				
North Shore Gas Company	02/21	North Shore Gas Company	No. 20-0810	Return on Equity
Indiana Utility Regulatory Commission				



SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Indiana Michigan Power Co.	07/21	Indiana Michigan Power Co.	IURC Cause No. 45576	Return on Equity
Indiana Gas Company Inc.	12/20	Indiana Gas Company Inc.	IURC Cause No. 45468	Return on Equity
Southern Indiana Gas and Electric Company	10/20	Southern Indiana Gas and Electric Company	IURC Cause No. 45447	Return on Equity
Indiana and Michigan American Water Company	09/18	Indiana and Michigan American Water Company	IURC Cause No. 45142	Return on Equity
Indianapolis Power and Light Company	12/17	Indianapolis Power and Light Company	Cause No. 45029	Fair Value
Northern Indiana Public Service Company	09/17	Northern Indiana Public Service Company	Cause No. 44988	Fair Value
Indianapolis Power and Light Company	12/16	Indianapolis Power and Light Company	Cause No.44893	Fair Value
Northern Indiana Public Service Company	10/15	Northern Indiana Public Service Company	Cause No. 44688	Fair Value
Indianapolis Power and Light Company	09/15	Indianapolis Power and Light Company	Cause No. 44576 Cause No. 44602	Fair Value
Kokomo Gas and Fuel Company	09/10	Kokomo Gas and Fuel Company	Cause No. 43942	Fair Value
Northern Indiana Fuel and Light Company, Inc.	09/10	Northern Indiana Fuel and Light Company, Inc.	Cause No. 43943	Fair Value
Iowa Department of Commerce Utilities Board				
Iowa-American Water Company	08/20	Iowa-American Water Company	Docket No. RPU-2020-0001	Return on Equity
Kansas Corporation Commission				



SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Atmos Energy Corporation	08/15	Atmos Energy Corporation	Docket No. 16-ATMG-079-RTS	Return on Equity
Kentucky Public Service Commission				
Kentucky American Water Company	11/18	Kentucky American Water Company	Docket No. 2018-00358	Return on Equity
Maine Public Utilities Commission				
Central Maine Power	10/18	Central Maine Power	Docket No. 2018-194	Return on Equity
Maryland Public Service Commission				
Maryland American Water Company	06/18	Maryland American Water Company	Case No. 9487	Return on Equity
Massachusetts Appellate Tax Board				
Hopkinton LNG Corporation	03/20	Hopkinton LNG Corporation	Docket No.	Valuation of LNG Facility
FirstLight Hydro Generating Company	06/17	FirstLight Hydro Generating Company	Docket No. F-325471 Docket No. F-325472 Docket No. F-325473 Docket No. F-325474	Valuation of Electric Generation Assets
Massachusetts Department of Public Utilities				
National Grid USA	11/20	Boston Gas Company	DPU 20-120	Return on Equity
Berkshire Gas Company	05/18	Berkshire Gas Company	DPU 18-40	Return on Equity
Unitil Corporation	01/04	Fitchburg Gas and Electric	DTE 03-52	Integrated Resource Plan; Gas Demand Forecast
Michigan Public Service Commission				
Michigan Gas Utilities Corporation	03/21	Michigan Gas Utilities Corporation	Case No. U-20718	Return on Equity
Wisconsin Electric Power Company	12/11	Wisconsin Electric Power Company	Case No. U-16830	Return on Equity



SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Michigan Tax Tribunal				
New Covert Generating Co., LLC.	03/18	The Township of New Covert Michigan	MTT Docket No. 000248TT and 16-001888-TT	Valuation of Electric Generation Assets
Covert Township	07/14	New Covert Generating Co., LLC.	Docket No. 399578	Valuation of Electric Generation Assets
Minnesota Public Utilities Commission				
CenterPoint Energy Resources	11/21	CenterPoint Energy Resources	D-G-008/GR-21-435	Return on Equity
Allete, Inc. d/b/a Minnesota Power	11/21	Allete, Inc. d/b/a Minnesota Power	D-E-015/GR-21-630	Return on Equity
Otter Tail Power Company	11/20	Otter Tail Power Company	E017/GR-20-719	Return on Equity
Allete, Inc. d/b/a Minnesota Power	11/19	Allete, Inc. d/b/a Minnesota Power	E015/GR-19-442	Return on Equity
CenterPoint Energy Resources Corporation d/b/a CenterPoint Energy Minnesota Gas	10/19	CenterPoint Energy Resources Corporation d/b/a CenterPoint Energy Minnesota Gas	G-008/GR-19-524	Return on Equity
Great Plains Natural Gas Co.	09/19	Great Plains Natural Gas Co.	Docket No. G004/GR-19-511	Return on Equity
Minnesota Energy Resources Corporation	10/17	Minnesota Energy Resources Corporation	Docket No. G011/GR-17-563	Return on Equity
Missouri Public Service Commission				
Evergy Missouri West	1/22	Evergy Missouri West	File No. ER-2022-0130	Return on Equity



SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Evergy Missouri Metro	1/22	Evergy Missouri Metro	File No. ER-2022-0129	Return on Equity
Ameren Missouri	03/21	Ameren Missouri	Docket No. ER-2021-0240 Docket No. GR-2021-0241	Return on Equity
Missouri American Water Company	06/20	Missouri American Water Company	Case No. WR-2020-0344 Case No. SR-2020-0345	Return on Equity
Missouri American Water Company	06/17	Missouri American Water Company	Case No. WR-17-0285 Case No. SR-17-0286	Return on Equity
Montana Public Service Commission				
Montana-Dakota Utilities Co.	06/20	Montana-Dakota Utilities Co.	D2020.06.076	Return on Equity
Montana-Dakota Utilities Co.	09/18	Montana-Dakota Utilities Co.	D2018.9.60	Return on Equity
New Hampshire - Board of Tax and Land Appeals				
Public Service Company of New Hampshire d/b/a Eversource Energy	11/19 12/19	Public Service Company of New Hampshire d/b/a Eversource Energy	Master Docket No. 28873-14-15-16-17PT	Valuation of Utility Property and Generating Assets
New Hampshire Public Utilities Commission				
Public Service Company of New Hampshire	05/19	Public Service Company of New Hampshire	DE-19-057	Return on Equity
New Hampshire-Merrimack County Superior Court				



SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Northern New England Telephone Operations, LLC d/b/a FairPoint Communications, NNE	04/18	Northern New England Telephone Operations, LLC d/b/a FairPoint Communications, NNE	220-2012-CV-1100	Valuation of Utility Property
New Hampshire-Rockingham Superior Court				
Eversource Energy	05/18	Public Service Commission of New Hampshire	218-2016-CV-00899 218-2017-CV-00917	Valuation of Utility Property
New Jersey Board of Public Utilities				
Public Service Electric and Gas Company	10/20	Public Service Electric and Gas Company	EO18101115	Return on Equity
New Jersey American Water Company, Inc.	12/19	New Jersey American Water Company, Inc.	WR19121516	Return on Equity
Public Service Electric and Gas Company	04/19	Public Service Electric and Gas Company	EO18060629 GO18060630	Return on Equity
Public Service Electric and Gas Company	02/18	Public Service Electric and Gas Company	GR17070776	Return on Equity
Public Service Electric and Gas Company	01/18	Public Service Electric and Gas Company	ER18010029 GR18010030	Return on Equity
New Mexico Public Regulation Commission				
Southwestern Public Service Company	07/19	Southwestern Public Service Company	19-00170-UT	Return on Equity
Southwestern Public Service Company	10/17	Southwestern Public Service Company	Case No. 17-00255-UT	Return on Equity
Southwestern Public Service Company	12/16	Southwestern Public Service Company	Case No. 16-00269-UT	Return on Equity
Southwestern Public Service Company	10/15	Southwestern Public Service Company	Case No. 15-00296-UT	Return on Equity
Southwestern Public Service Company	06/15	Southwestern Public Service Company	Case No. 15-00139-UT	Return on Equity



SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
New York State Department of Public Service				
Corning Natural Gas Corporation	07/21	Corning Natural Gas Corporation	Case No. 21-G-0394	Return on Equity
Central Hudson Gas and Electric Corporation	08/20	Central Hudson Gas and Electric Corporation	Electric 20-E-0428 Gas 20-G-0429	Return on Equity
Niagara Mohawk Power Corporation	07/20	National Grid USA	Case No. 20-E-0380 20-G-0381	Return on Equity
Corning Natural Gas Corporation	02/20	Corning Natural Gas Corporation	Case No. 20-G-0101	Return on Equity
New York State Electric and Gas Company Rochester Gas and Electric	05/19	New York State Electric and Gas Company Rochester Gas and Electric	19-E-0378 19-G-0379 19-E-0380 19-G-0381	Return on Equity
Brooklyn Union Gas Company d/b/a National Grid NY KeySpan Gas East Corporation d/b/a National Grid	04/19	Brooklyn Union Gas Company d/b/a National Grid NY KeySpan Gas East Corporation d/b/a National Grid	19-G-0309 19-G-0310	Return on Equity
Central Hudson Gas and Electric Corporation	07/17	Central Hudson Gas and Electric Corporation	Electric 17-E-0459 Gas 17-G-0460	Return on Equity
Niagara Mohawk Power Corporation	04/17	National Grid USA	Case No. 17-E-0238 17-G-0239	Return on Equity
Corning Natural Gas Corporation	06/16	Corning Natural Gas Corporation	Case No. 16-G-0369	Return on Equity
National Fuel Gas Company	04/16	National Fuel Gas Company	Case No. 16-G-0257	Return on Equity
KeySpan Energy Delivery	01/16	KeySpan Energy Delivery	Case No. 15-G-0058 Case No. 15-G-0059	Return on Equity



SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
New York State Electric and Gas Company Rochester Gas and Electric	05/15	New York State Electric and Gas Company Rochester Gas and Electric	Case No. 15-E-0283 Case No. 15-G-0284 Case No. 15-E-0285 Case No. 15-G-0286	Return on Equity
North Dakota Public Service Commission				
Montana-Dakota Utilities Co.	08/20	Montana-Dakota Utilities Co.	C-PU-20-379	Return on Equity
Northern States Power Company	12/12	Northern States Power Company	C-PU-12-813	Return on Equity
Northern States Power Company	12/10	Northern States Power Company	C-PU-10-657	Return on Equity
Oklahoma Corporation Commission				
Arkansas Oklahoma Gas Corporation	01/13	Arkansas Oklahoma Gas Corporation	Cause No. PUD 201200236	Return on Equity
Oregon Public Service Commission				
PacifiCorp d/b/a Pacific Power & Light	02/22	PacifiCorp d/b/a Pacific Power & Light	Docket No. UE-399	Return on Equity
PacifiCorp d/b/a Pacific Power & Light	02/20	PacifiCorp d/b/a Pacific Power & Light	Docket No. UE-374	Return on Equity
Pennsylvania Public Utility Commission				
American Water Works Company Inc.	04/20	Pennsylvania-American Water Company	Docket No. R-2020-3019369 (water) Docket No. R-2020-3019371 (wastewater)	Return on Equity
American Water Works Company Inc.	04/17	Pennsylvania-American Water Company	Docket No. R-2017-2595853	Return on Equity
South Dakota Public Utilities Commission				
Northern States Power Company	06/14	Northern States Power Company	Docket No. EL14-058	Return on Equity



SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Texas Public Utility Commission				
Southwestern Public Service Commission	08/19	Southwestern Public Service Commission	Docket No. D-49831	Return on Equity
Southwestern Public Service Company	01/14	Southwestern Public Service Company	Docket No. 42004	Return on Equity
Utah Public Service Commission				
PacifiCorp d/b/a Rocky Mountain Power	05/20	PacifiCorp d/b/a Rocky Mountain Power	Docket No. 20-035-04	Return on Equity
Virginia State Corporation Commission				
Virginia American Water Company, Inc.	11/21	Virginia American Water Company, Inc.	Docket No. PUR-2021-00255	Return on Equity
Virginia American Water Company, Inc.	11/18	Virginia American Water Company, Inc.	Docket No. PUR-2018-00175	Return on Equity
Washington Utilities Transportation Commission				
Cascade Natural Gas Corporation	06/20	Cascade Natural Gas Corporation	Docket No. UG-200568	Return on Equity
PacifiCorp d/b/a Pacific Power & Light	12/19	PacifiCorp d/b/a Pacific Power & Light	Docket No. UE-191024	Return on Equity
Cascade Natural Gas Corporation	04/19	Cascade Natural Gas Corporation	Docket No. UG-190210	Return on Equity
West Virginia Public Service Commission				
West Virginia American Water Company	04/21	West Virginia American Water Company	Case No. 21-02369-W-42T	Return on Equity
West Virginia American Water Company	04/18	West Virginia American Water Company	Case No. 18-0573-W-42T Case No. 18-0576-S-42T	Return on Equity
Wisconsin Public Service Commission				



SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Wisconsin Electric Power Company and Wisconsin Gas LLC	03/19	Wisconsin Electric Power Company and Wisconsin Gas LLC	Docket No. 05-UR-109	Return on Equity
Wisconsin Public Service Corp.	03/19	Wisconsin Public Service Corp.	6690-UR-126	Return on Equity
Wyoming Public Service Commission				
PacifiCorp d/b/a Rocky Mountain Power	03/20	PacifiCorp d/b/a Rocky Mountain Power	Docket No. 20000-578-ER-20	Return on Equity
Montana-Dakota Utilities Co.	05/19	Montana-Dakota Utilities Co.	30013-351-GR-19	Return on Equity

CERTIFICATIONS/ACCREDITATIONS

Certified General Appraiser, licensed in the Commonwealth of Massachusetts and the State of New Hampshire

Application No. 22-05-____
Exhibit PAC/202
Witness: Ann E. Bulkley

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

PACIFICORP

Exhibit Accompanying Direct Testimony of

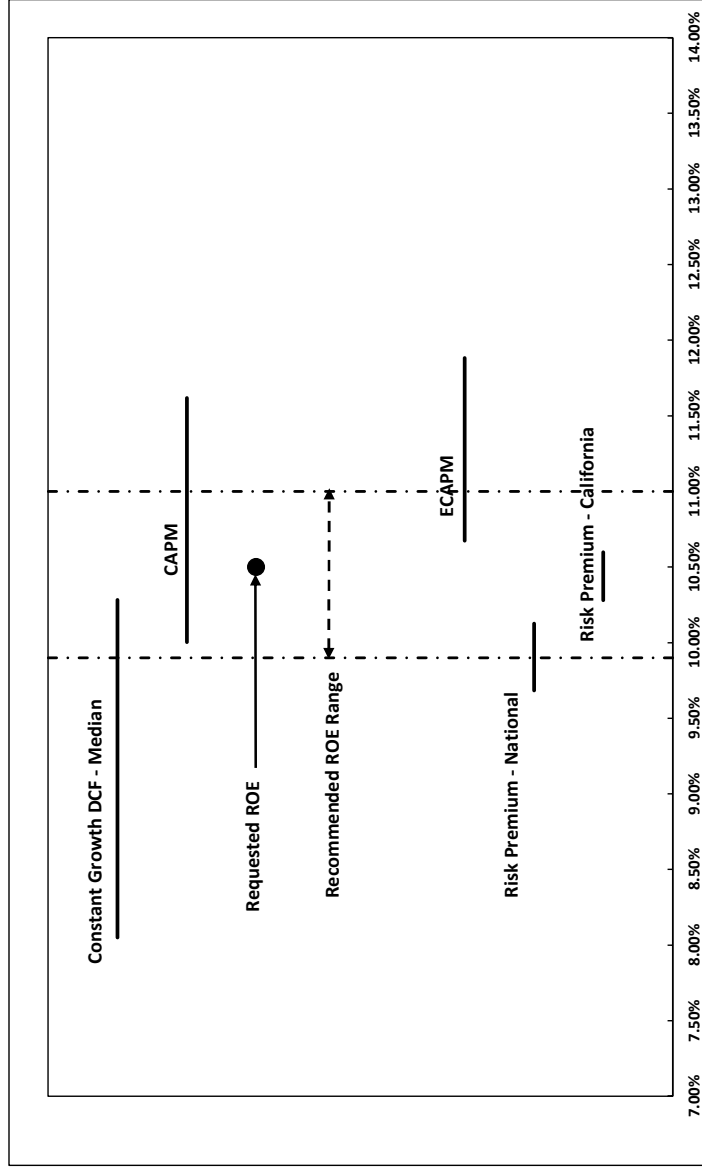
Ann E. Bulkley
Summary of Results

May 2022

SUMMARY OF ROE RESULTS AS OF MARCH 31, 2022

Constant Growth- Median DCF			
	Median Low	Median	Median High
30-Day Average	7.98%	9.50%	10.22%
90-Day Average	8.02%	9.61%	10.27%
180-Day Average	8.15%	9.70%	10.36%
Constant Growth Median	8.05%	9.60%	10.28%
CAPM			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Value Line Beta	11.50%	11.58%	11.62%
Bloomberg Beta	10.64%	10.79%	10.84%
Long-Term Avg. Beta	10.00%	10.20%	10.27%
ECAPM			
	Value Line Beta	11.79%	11.86%
	Bloomberg Beta	11.15%	11.26%
	Long-Term Avg. Beta	10.67%	10.82%
Risk Premium			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Risk Premium Results- National	9.68%	10.00%	10.13%
Risk Premium Results- California	10.28%	10.51%	10.60%

	X	Y
Constant Growth Median DCF	8.05%	8
	9.60%	8
	10.28%	8
CAPM	10.00%	7
	11.62%	7
ECAPM	10.67%	3
	11.88%	3
Risk Premium - National	9.68%	2
	10.13%	2
Risk Premium - California	10.28%	1
	10.60%	1
Low End ROE Recommendation	9.90%	0
	9.90%	9
High End ROE Recommendation	11.00%	0
	11.00%	9
Requested ROE	10.50%	6



Application No. 22-05-____
Exhibit PAC/203
Witness: Ann E. Bulkley

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

PACIFICORP

Exhibit Accompanying Direct Testimony of
Ann E. Bulkley
Constant Growth Discounted Cash Flow Model

May 2022

30-DAY CONSTANT GROWTH DCF

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line Earnings Growth	Yahoo! Finance Earnings Growth	Zacks Earnings Growth	Average Growth Rate	Low ROE	Mean ROE	High ROE
ALLETE, Inc.	\$2.60	4.03%	4.15%	6.00%	5.67%	n/a	5.84%	9.82%	9.99%	10.16%
Alliant Energy Corporation	\$1.71	2.86%	2.94%	4.50%	6.10%	6.10%	5.57%	7.43%	8.51%	9.05%
Ameren Corporation	\$2.36	2.68%	2.78%	6.50%	7.40%	7.20%	7.03%	9.27%	9.81%	10.18%
American Electric Power Company, Inc.	\$3.12	3.33%	3.43%	6.50%	6.10%	5.80%	6.13%	9.23%	9.57%	9.94%
Avista Corporation	\$1.76	3.95%	4.06%	3.00%	6.60%	6.60%	5.40%	7.01%	9.46%	10.68%
CMS Energy Corporation	\$1.84	2.79%	2.89%	6.50%	7.40%	9.20%	7.70%	9.38%	10.59%	12.12%
Duke Energy Corporation	\$3.94	3.76%	3.88%	7.00%	5.85%	6.10%	6.32%	9.72%	10.20%	10.89%
Energy Corporation	\$4.04	3.69%	3.78%	3.00%	6.00%	6.00%	5.00%	6.74%	8.78%	9.80%
Energy, Inc.	\$2.29	3.58%	3.69%	7.50%	5.12%	6.10%	6.24%	8.79%	9.93%	11.21%
IDACORP, Inc.	\$3.00	2.76%	2.81%	4.00%	4.40%	4.30%	4.23%	6.81%	7.05%	7.22%
NextEra Energy, Inc.	\$1.70	2.12%	2.22%	11.00%	9.95%	8.80%	9.92%	11.01%	12.14%	13.23%
NorthWestern Corporation	\$2.52	4.24%	4.31%	2.00%	4.50%	3.10%	3.20%	6.28%	7.51%	8.84%
OGE Energy Corporation	\$1.64	4.27%	4.37%	6.50%	3.90%	3.50%	4.63%	7.84%	9.00%	10.91%
Otter Tail Corporation	\$1.65	2.66%	2.75%	4.50%	9.00%	n/a	6.75%	7.22%	9.50%	11.78%
Portland General Electric Company	\$1.72	3.25%	3.35%	7.00%	7.15%	4.60%	6.25%	7.92%	9.60%	10.51%
Southern Company	\$2.64	3.90%	4.00%	5.50%	6.20%	4.00%	5.23%	7.98%	9.24%	10.22%
Xcel Energy Inc.	\$1.95	2.82%	2.91%	6.00%	6.90%	6.40%	6.43%	8.91%	9.35%	9.82%
Median		3.33%	3.43%	6.00%	6.10%	6.10%	6.13%	7.98%	9.50%	10.22%

[1] Source: Bloomberg Professional, as of March 31, 2022

[2] Source: Bloomberg Professional, equals 30-day average as of March 31, 2022

[3] Equals [1] / [2]

[4] Equals [3] x (1 + 0.5 x [8])

[5] Source: Value Line

[6] Source: Yahoo! Finance

[7] Source: Zacks

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

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

[10] Equals [4] + [8]

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

90-DAY CONSTANT GROWTH DCF

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line Earnings Growth	Yahoo! Finance Earnings Growth	Zacks Earnings Growth	Average Growth Rate	Low ROE	Mean ROE	High ROE
ALLETE, Inc.	\$2.60	4.07%	4.18%	6.00%	5.67%	n/a	5.84%	9.85%	10.02%	10.19%
Alliant Energy Corporation	\$1.71	2.89%	2.97%	4.50%	6.10%	6.10%	5.57%	7.45%	8.53%	9.07%
Ameren Corporation	\$2.36	\$87.24	2.71%	6.50%	7.40%	7.20%	7.03%	9.29%	9.83%	10.21%
American Electric Power Company, Inc.	\$3.12	\$89.41	3.49%	6.50%	6.10%	5.80%	6.13%	9.39%	9.73%	10.10%
Avista Corporation	\$1.76	\$42.95	4.10%	3.00%	6.60%	6.60%	5.40%	7.16%	9.61%	10.83%
CMS Energy Corporation	\$1.84	\$64.18	2.87%	6.50%	7.40%	9.20%	7.70%	9.46%	10.68%	12.20%
Duke Energy Corporation	\$3.94	\$103.21	3.82%	7.00%	5.85%	6.10%	6.32%	9.78%	10.25%	10.95%
Energy Corporation	\$4.04	\$108.85	3.71%	3.00%	6.00%	6.00%	5.00%	6.77%	8.80%	9.82%
Energy, Inc.	\$2.29	\$65.13	3.52%	7.50%	5.12%	6.10%	6.24%	8.73%	9.87%	11.15%
IDACORP, Inc.	\$3.00	\$109.01	2.75%	4.00%	4.40%	4.30%	4.23%	6.81%	7.04%	7.21%
NextEra Energy, Inc.	\$1.70	\$83.19	2.04%	11.00%	9.95%	8.80%	9.92%	10.93%	12.06%	13.16%
NorthWestern Corporation	\$2.52	\$57.75	4.36%	2.00%	4.50%	3.10%	3.20%	6.41%	7.63%	8.96%
OGE Energy Corporation	\$1.64	\$37.44	4.38%	6.50%	3.90%	3.50%	4.63%	7.96%	9.12%	11.02%
Other Tail Corporation	\$1.65	\$64.39	2.56%	4.50%	9.00%	n/a	6.75%	7.12%	9.40%	11.68%
Portland General Electric Company	\$1.72	\$52.15	3.30%	7.00%	7.15%	4.60%	6.25%	7.97%	9.65%	10.57%
Southern Company	\$2.64	\$66.93	3.94%	4.05%	6.20%	4.00%	5.23%	8.02%	9.28%	10.27%
Xcel Energy Inc.	\$1.95	\$68.03	2.87%	6.00%	6.90%	6.40%	6.43%	8.95%	9.39%	9.87%
Median		3.49%	3.60%	6.00%	6.10%	6.10%	6.13%	8.02%	9.61%	10.27%

[1] Source: Bloomberg Professional, as of March 31, 2022

[2] Source: Bloomberg Professional, equals 90-day average as of March 31, 2022

[3] Equals [1] / [2]

[4] Equals [3] x (1 + 0.5 x [8])

[5] Source: Value Line

[6] Source: Yahoo! Finance

[7] Source: Zacks

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

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

[10] Equals [4] + [8]

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

180-DAY CONSTANT GROWTH DCF

Company	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line Earnings Growth	Yahoo! Finance Earnings Growth	Zacks Earnings Growth	Average Growth Rate	Low ROE	Mean ROE	High ROE
ALLETE, Inc.	\$2.60	\$64.61	4.02%	4.14%	6.00%	5.67%	n/a	5.84%	9.81%	9.98%	10.14%
Alliant Energy Corporation	\$1.71	\$58.72	2.91%	2.99%	4.50%	6.10%	6.10%	5.57%	7.48%	8.56%	9.10%
Ameren Corporation	\$2.36	\$86.15	2.74%	2.84%	6.50%	7.40%	7.20%	7.03%	9.33%	9.87%	10.24%
American Electric Power Company, Inc.	\$3.12	\$87.74	3.56%	3.66%	6.50%	6.10%	5.80%	6.13%	9.46%	9.80%	10.17%
Avista Corporation	\$1.76	\$42.01	4.19%	4.30%	3.00%	6.60%	6.60%	5.40%	7.25%	9.70%	10.93%
CMS Energy Corporation	\$1.84	\$63.01	2.92%	3.03%	6.50%	7.40%	9.20%	7.70%	9.52%	10.73%	12.25%
Duke Energy Corporation	\$3.94	\$103.02	3.82%	3.95%	7.00%	5.85%	6.10%	6.32%	9.79%	10.26%	10.96%
Energy Corporation	\$4.04	\$107.44	3.76%	3.85%	3.00%	6.00%	6.00%	5.00%	6.82%	8.85%	9.87%
Energy, Inc.	\$2.29	\$65.21	3.51%	3.62%	7.50%	5.12%	6.10%	6.24%	8.72%	9.86%	11.14%
IDACORP, Inc.	\$3.00	\$107.01	2.80%	2.86%	4.00%	4.40%	4.30%	4.23%	6.86%	7.10%	7.27%
NextEra Energy, Inc.	\$1.70	\$82.83	2.05%	2.15%	11.00%	9.95%	8.80%	9.92%	10.94%	12.07%	13.17%
NorthWestern Corporation	\$2.52	\$59.06	4.27%	4.34%	2.00%	4.50%	3.10%	3.20%	6.31%	7.54%	8.86%
OGE Energy Corporation	\$1.64	\$35.92	4.57%	4.67%	6.50%	3.90%	3.50%	4.63%	8.15%	9.31%	11.21%
Other Tail Corporation	\$1.65	\$60.70	2.72%	2.81%	4.50%	9.00%	n/a	6.75%	7.28%	9.56%	11.84%
Portland General Electric Company	\$1.72	\$50.78	3.39%	3.49%	7.00%	7.15%	4.60%	6.25%	8.07%	9.74%	10.66%
Southern Company	\$2.64	\$65.46	4.03%	4.14%	5.50%	6.20%	4.00%	5.23%	8.11%	9.37%	10.36%
Xcel Energy Inc.	\$1.95	\$67.11	2.91%	3.00%	6.00%	6.90%	6.40%	6.43%	8.99%	9.43%	9.91%
Median			3.51%	3.62%	6.00%	6.10%	6.10%	6.13%	8.15%	9.70%	10.36%

[1] Source: Bloomberg Professional, as of March 31, 2022

[2] Source: Bloomberg Professional, equals 180-day average as of March 31, 2022

[3] Equals [1] / [2]

[4] Equals [3] x (1 + 0.5 x [8])

[5] Source: Value Line

[6] Source: Yahoo! Finance

[7] Source: Zacks

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

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

[10] Equals [4] + [8]

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

Application No. 22-05-____
Exhibit PAC/204
Witness: Ann E. Bulkley

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

PACIFICORP

Exhibit Accompanying Direct Testimony of

Ann E. Bulkley

Capital Asset Pricing Model

May 2022

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

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Current 30-day average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (R_m)	Market Risk Premium ($R_m - R_f$)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	2.37%	0.90	12.68%	10.31%	11.65%	11.91%
Alliant Energy Corporation	LNT	2.37%	0.85	12.68%	10.31%	11.13%	11.52%
Ameren Corporation	AEE	2.37%	0.80	12.68%	10.31%	10.62%	11.13%
American Electric Power Company, Inc.	AEP	2.37%	0.75	12.68%	10.31%	10.10%	10.75%
Avista Corporation	AVA	2.37%	0.95	12.68%	10.31%	12.17%	12.29%
CMS Energy Corporation	CMS	2.37%	0.80	12.68%	10.31%	10.62%	11.13%
Duke Energy Corporation	DUK	2.37%	0.85	12.68%	10.31%	11.13%	11.52%
Entergy Corporation	ETR	2.37%	0.95	12.68%	10.31%	12.17%	12.29%
Evergy, Inc.	EVRG	2.37%	0.95	12.68%	10.31%	12.17%	12.29%
IDACORP, Inc.	IDA	2.37%	0.80	12.68%	10.31%	10.62%	11.13%
NextEra Energy, Inc.	NEE	2.37%	0.95	12.68%	10.31%	12.17%	12.29%
NorthWestern Corporation	NWE	2.37%	0.95	12.68%	10.31%	12.17%	12.29%
OGE Energy Corporation	OGE	2.37%	1.05	12.68%	10.31%	13.20%	13.07%
Otter Tail Corporation	OTTR	2.37%	0.85	12.68%	10.31%	11.13%	11.52%
Portland General Electric Company	POR	2.37%	0.90	12.68%	10.31%	11.65%	11.91%
Southern Company	SO	2.37%	0.95	12.68%	10.31%	12.17%	12.29%
Xcel Energy Inc.	XEL	2.37%	0.80	12.68%	10.31%	10.62%	11.13%
Mean			0.89			11.50%	11.79%

Notes:

[1] Source: Bloomberg Professional, as of March 31, 2022.

[2] Source: Value Line

[3] Source: PAC 206

[4] Equals [3] - [1]

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

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

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

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Near-term projected 30-year U.S. Treasury bond yield (Q3 2022 - Q3 2023)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.12%	0.90	12.68%	9.56%	11.73%	11.96%
Alliant Energy Corporation	LNT	3.12%	0.85	12.68%	9.56%	11.25%	11.61%
Ameren Corporation	AEE	3.12%	0.80	12.68%	9.56%	10.77%	11.25%
American Electric Power Company, Inc.	AEP	3.12%	0.75	12.68%	9.56%	10.29%	10.89%
Avista Corporation	AVA	3.12%	0.95	12.68%	9.56%	12.20%	12.32%
CMS Energy Corporation	CMS	3.12%	0.80	12.68%	9.56%	10.77%	11.25%
Duke Energy Corporation	DUK	3.12%	0.85	12.68%	9.56%	11.25%	11.61%
Entergy Corporation	ETR	3.12%	0.95	12.68%	9.56%	12.20%	12.32%
Evergy, Inc.	EVRG	3.12%	0.95	12.68%	9.56%	12.20%	12.32%
IDACORP, Inc.	IDA	3.12%	0.80	12.68%	9.56%	10.77%	11.25%
NextEra Energy, Inc.	NEE	3.12%	0.95	12.68%	9.56%	12.20%	12.32%
NorthWestern Corporation	NWE	3.12%	0.95	12.68%	9.56%	12.20%	12.32%
OGE Energy Corporation	OGE	3.12%	1.05	12.68%	9.56%	13.16%	13.04%
Otter Tail Corporation	OTTR	3.12%	0.85	12.68%	9.56%	11.25%	11.61%
Portland General Electric Company	POR	3.12%	0.90	12.68%	9.56%	11.73%	11.96%
Southern Company	SO	3.12%	0.95	12.68%	9.56%	12.20%	12.32%
Xcel Energy Inc.	XEL	3.12%	0.80	12.68%	9.56%	10.77%	11.25%
Mean						11.58%	11.86%

Notes:

[1] Source: Blue Chip Financial Forecasts, Vol. 41, No. 4, April 1, 2022, at 2

[2] Source: Value Line

[3] Source: PAC 206

[4] Equals [3] - [1]

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

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

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

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Projected 30-year U.S. Treasury bond yield (2023 - 2027)	Beta (β)	Market Return (R_m)	Market Risk Premium ($R_m - R_f$)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.40%	0.90	12.68%	9.28%	11.75%	11.99%
Alliant Energy Corporation	LNT	3.40%	0.85	12.68%	9.28%	11.29%	11.64%
Ameren Corporation	AEE	3.40%	0.80	12.68%	9.28%	10.82%	11.29%
American Electric Power Company, Inc.	AEP	3.40%	0.75	12.68%	9.28%	10.36%	10.94%
Avista Corporation	AVA	3.40%	0.95	12.68%	9.28%	12.22%	12.33%
CMS Energy Corporation	CMS	3.40%	0.80	12.68%	9.28%	10.82%	11.29%
Duke Energy Corporation	DUK	3.40%	0.85	12.68%	9.28%	11.29%	11.64%
Entergy Corporation	ETR	3.40%	0.95	12.68%	9.28%	12.22%	12.33%
Evergy, Inc.	EVRG	3.40%	0.95	12.68%	9.28%	12.22%	12.33%
IDACORP, Inc.	IDA	3.40%	0.80	12.68%	9.28%	10.82%	11.29%
NextEra Energy, Inc.	NEE	3.40%	0.95	12.68%	9.28%	12.22%	12.33%
NorthWestern Corporation	NWE	3.40%	0.95	12.68%	9.28%	12.22%	12.33%
OGE Energy Corporation	OGE	3.40%	1.05	12.68%	9.28%	13.15%	13.03%
Otter Tail Corporation	OTTR	3.40%	0.85	12.68%	9.28%	11.29%	11.64%
Portland General Electric Company	POR	3.40%	0.90	12.68%	9.28%	11.75%	11.99%
Southern Company	SO	3.40%	0.95	12.68%	9.28%	12.22%	12.33%
Xcel Energy Inc.	XEL	3.40%	0.80	12.68%	9.28%	10.82%	11.29%
Mean						11.62%	11.88%

Notes:

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

[2] Source: Value Line

[3] Source: PAC 206

[4] Equals [3] - [1]

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

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

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

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Current 30-day average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	2.37%	0.83	12.68%	10.31%	10.97%	11.40%
Alliant Energy Corporation	LNT	2.37%	0.79	12.68%	10.31%	10.54%	11.07%
Ameren Corporation	AEE	2.37%	0.75	12.68%	10.31%	10.12%	10.76%
American Electric Power Company, Inc.	AEP	2.37%	0.77	12.68%	10.31%	10.27%	10.87%
Avista Corporation	AVA	2.37%	0.76	12.68%	10.31%	10.22%	10.84%
CMS Energy Corporation	CMS	2.37%	0.74	12.68%	10.31%	10.03%	10.69%
Duke Energy Corporation	DUK	2.37%	0.71	12.68%	10.31%	9.72%	10.46%
Entergy Corporation	ETR	2.37%	0.86	12.68%	10.31%	11.25%	11.61%
Evergy, Inc.	EVRG	2.37%	0.80	12.68%	10.31%	10.60%	11.12%
IDACORP, Inc.	IDA	2.37%	0.82	12.68%	10.31%	10.82%	11.29%
NextEra Energy, Inc.	NEE	2.37%	0.78	12.68%	10.31%	10.44%	11.00%
NorthWestern Corporation	NWE	2.37%	0.89	12.68%	10.31%	11.57%	11.85%
OGE Energy Corporation	OGE	2.37%	0.93	12.68%	10.31%	11.93%	12.12%
Otter Tail Corporation	OTTR	2.37%	0.87	12.68%	10.31%	11.38%	11.71%
Portland General Electric Company	POR	2.37%	0.80	12.68%	10.31%	10.64%	11.15%
Southern Company	SO	2.37%	0.78	12.68%	10.31%	10.40%	10.97%
Xcel Energy Inc.	XEL	2.37%	0.73	12.68%	10.31%	9.95%	10.63%
Mean						10.64%	11.15%

Notes:

[1] Source: Bloomberg Professional, as of March 31, 2022.

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

[3] Source: PAC 206

[4] Equals [3] - [1]

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

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

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

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Near-term projected 30-year U.S. Treasury bond yield (Q3 2022 - Q3 2023)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.12%	0.83	12.68%	9.56%	11.09%	11.49%
Alliant Energy Corporation	LNT	3.12%	0.79	12.68%	9.56%	10.69%	11.19%
Ameren Corporation	AEE	3.12%	0.75	12.68%	9.56%	10.31%	10.90%
American Electric Power Company, Inc.	AEP	3.12%	0.77	12.68%	9.56%	10.45%	11.00%
Avista Corporation	AVA	3.12%	0.76	12.68%	9.56%	10.40%	10.97%
CMS Energy Corporation	CMS	3.12%	0.74	12.68%	9.56%	10.22%	10.84%
Duke Energy Corporation	DUK	3.12%	0.71	12.68%	9.56%	9.94%	10.62%
Entergy Corporation	ETR	3.12%	0.86	12.68%	9.56%	11.36%	11.69%
Evergy, Inc.	EVRG	3.12%	0.80	12.68%	9.56%	10.75%	11.23%
IDACORP, Inc.	IDA	3.12%	0.82	12.68%	9.56%	10.96%	11.39%
NextEra Energy, Inc.	NEE	3.12%	0.78	12.68%	9.56%	10.60%	11.12%
NorthWestern Corporation	NWE	3.12%	0.89	12.68%	9.56%	11.65%	11.91%
OGE Energy Corporation	OGE	3.12%	0.93	12.68%	9.56%	11.99%	12.16%
Otter Tail Corporation	OTTR	3.12%	0.87	12.68%	9.56%	11.48%	11.78%
Portland General Electric Company	POR	3.12%	0.80	12.68%	9.56%	10.79%	11.26%
Southern Company	SO	3.12%	0.78	12.68%	9.56%	10.57%	11.10%
Xcel Energy Inc.	XEL	3.12%	0.73	12.68%	9.56%	10.15%	10.78%
Mean						10.79%	11.26%

Notes:

[1] Source: Blue Chip Financial Forecasts, Vol. 41, No. 4, April 1, 2022, at 2

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

[3] Source: PAC 206

[4] Equals [3] - [1]

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

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

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

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Projected 30-year U.S. Treasury bond yield (2023 - 2027)	Beta (β)	Market Return (R_m)	Market Risk Premium ($R_m - R_f$)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.40%	0.83	12.68%	9.28%	11.14%	11.53%
Alliant Energy Corporation	LNT	3.40%	0.79	12.68%	9.28%	10.75%	11.23%
Ameren Corporation	AEE	3.40%	0.75	12.68%	9.28%	10.38%	10.95%
American Electric Power Company, Inc.	AEP	3.40%	0.77	12.68%	9.28%	10.51%	11.05%
Avista Corporation	AVA	3.40%	0.76	12.68%	9.28%	10.47%	11.02%
CMS Energy Corporation	CMS	3.40%	0.74	12.68%	9.28%	10.29%	10.89%
Duke Energy Corporation	DUK	3.40%	0.71	12.68%	9.28%	10.02%	10.68%
Entergy Corporation	ETR	3.40%	0.86	12.68%	9.28%	11.40%	11.72%
Evergy, Inc.	EVRG	3.40%	0.80	12.68%	9.28%	10.80%	11.27%
IDACORP, Inc.	IDA	3.40%	0.82	12.68%	9.28%	11.01%	11.43%
NextEra Energy, Inc.	NEE	3.40%	0.78	12.68%	9.28%	10.66%	11.17%
NorthWestern Corporation	NWE	3.40%	0.89	12.68%	9.28%	11.68%	11.93%
OGE Energy Corporation	OGE	3.40%	0.93	12.68%	9.28%	12.01%	12.18%
Otter Tail Corporation	OTTR	3.40%	0.87	12.68%	9.28%	11.51%	11.80%
Portland General Electric Company	POR	3.40%	0.80	12.68%	9.28%	10.84%	11.30%
Southern Company	SO	3.40%	0.78	12.68%	9.28%	10.63%	11.14%
Xcel Energy Inc.	XEL	3.40%	0.73	12.68%	9.28%	10.22%	10.84%
Mean						10.84%	11.30%

Notes:

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

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

[3] Source: PAC 206

[4] Equals [3] - [1]

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

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

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

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Current 30-day average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (R_m)	Market Risk Premium ($R_m - R_f$)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	2.37%	0.76	12.68%	10.31%	10.20%	10.82%
Alliant Energy Corporation	LNT	2.37%	0.74	12.68%	10.31%	9.96%	10.64%
Ameren Corporation	AEE	2.37%	0.73	12.68%	10.31%	9.87%	10.57%
American Electric Power Company, Inc.	AEP	2.37%	0.67	12.68%	10.31%	9.26%	10.12%
Avista Corporation	AVA	2.37%	0.75	12.68%	10.31%	10.10%	10.75%
CMS Energy Corporation	CMS	2.37%	0.69	12.68%	10.31%	9.49%	10.29%
Duke Energy Corporation	DUK	2.37%	0.64	12.68%	10.31%	8.98%	9.90%
Entergy Corporation	ETR	2.37%	0.72	12.68%	10.31%	9.78%	10.50%
Evergy, Inc.	EVRG	2.37%	0.98	12.68%	10.31%	12.42%	12.49%
IDACORP, Inc.	IDA	2.37%	0.72	12.68%	10.31%	9.82%	10.54%
NextEra Energy, Inc.	NEE	2.37%	0.71	12.68%	10.31%	9.68%	10.43%
NorthWestern Corporation	NWE	2.37%	0.72	12.68%	10.31%	9.82%	10.54%
OGE Energy Corporation	OGE	2.37%	0.90	12.68%	10.31%	11.60%	11.87%
Otter Tail Corporation	OTTR	2.37%	0.86	12.68%	10.31%	11.23%	11.59%
Portland General Electric Company	POR	2.37%	0.75	12.68%	10.31%	10.06%	10.71%
Southern Company	SO	2.37%	0.61	12.68%	10.31%	8.70%	9.69%
Xcel Energy Inc.	XEL	2.37%	0.65	12.68%	10.31%	9.07%	9.98%
Mean						10.00%	10.67%

Notes:

[1] Source: Bloomberg Professional, as of March 31, 2022.

[2] Source: PAC 205

[3] Source: PAC 206

[4] Equals [3] - [1]

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

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

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

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Near-term projected 30-year U.S. Treasury bond yield (Q3 2022 - Q3 2023)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.12%	0.76	12.68%	9.56%	10.38%	10.95%
Alliant Energy Corporation	LNT	3.12%	0.74	12.68%	9.56%	10.16%	10.79%
Ameren Corporation	AEE	3.12%	0.73	12.68%	9.56%	10.07%	10.73%
American Electric Power Company, Inc.	AEP	3.12%	0.67	12.68%	9.56%	9.51%	10.30%
Avista Corporation	AVA	3.12%	0.75	12.68%	9.56%	10.29%	10.89%
CMS Energy Corporation	CMS	3.12%	0.69	12.68%	9.56%	9.73%	10.46%
Duke Energy Corporation	DUK	3.12%	0.64	12.68%	9.56%	9.25%	10.11%
Entergy Corporation	ETR	3.12%	0.72	12.68%	9.56%	9.99%	10.66%
Evergy, Inc.	EVRG	3.12%	0.98	12.68%	9.56%	12.44%	12.50%
IDACORP, Inc.	IDA	3.12%	0.72	12.68%	9.56%	10.03%	10.69%
NextEra Energy, Inc.	NEE	3.12%	0.71	12.68%	9.56%	9.90%	10.60%
NorthWestern Corporation	NWE	3.12%	0.72	12.68%	9.56%	10.03%	10.69%
OGE Energy Corporation	OGE	3.12%	0.90	12.68%	9.56%	11.68%	11.93%
Otter Tail Corporation	OTTR	3.12%	0.86	12.68%	9.56%	11.33%	11.67%
Portland General Electric Company	POR	3.12%	0.75	12.68%	9.56%	10.25%	10.86%
Southern Company	SO	3.12%	0.61	12.68%	9.56%	8.99%	9.91%
Xcel Energy Inc.	XEL	3.12%	0.65	12.68%	9.56%	9.33%	10.17%
Mean						10.20%	10.82%

Notes:

[1] Source: Blue Chip Financial Forecasts, Vol. 41, No. 4, April 1, 2022, at 2

[2] Source: PAC 205

[3] Source: PAC 206

[4] Equals [3] - [1]

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

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

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

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

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

	[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Projected 30-year U.S. Treasury bond yield (2023 - 2027)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.40%	0.76	12.68%	9.28%	10.45%
Alliant Energy Corporation	LNT	3.40%	0.74	12.68%	9.28%	10.23%
Ameren Corporation	AEE	3.40%	0.73	12.68%	9.28%	10.15%
American Electric Power Company, Inc.	AEP	3.40%	0.67	12.68%	9.28%	9.60%
Avista Corporation	AVA	3.40%	0.75	12.68%	9.28%	10.36%
CMS Energy Corporation	CMS	3.40%	0.69	12.68%	9.28%	9.81%
Duke Energy Corporation	DUK	3.40%	0.64	12.68%	9.28%	9.35%
Entergy Corporation	ETR	3.40%	0.72	12.68%	9.28%	10.07%
Evergy, Inc.	EVRG	3.40%	0.98	12.68%	9.28%	12.45%
IDACORP, Inc.	IDA	3.40%	0.72	12.68%	9.28%	10.11%
NextEra Energy, Inc.	NEE	3.40%	0.71	12.68%	9.28%	9.98%
NorthWestern Corporation	NWE	3.40%	0.72	12.68%	9.28%	10.11%
OGE Energy Corporation	OGE	3.40%	0.90	12.68%	9.28%	11.71%
Otter Tail Corporation	OTTR	3.40%	0.86	12.68%	9.28%	11.37%
Portland General Electric Company	POR	3.40%	0.75	12.68%	9.28%	10.32%
Southern Company	SO	3.40%	0.61	12.68%	9.28%	9.10%
Xcel Energy Inc.	XEL	3.40%	0.65	12.68%	9.28%	9.43%
Mean						10.27%

Notes:

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

[2] Source: PAC 205

[3] Source: PAC 206

[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-____
Exhibit PAC/205
Witness: Ann E. Bulkley

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

PACIFICORP

Exhibit Accompanying Direct Testimony of

Ann E. Bulkley

CAPM – Long-Term Beta

May 2022

HISTORICAL BETA - 2011 - 2021

Company	Ticker	[1] 12/31/2011	[2] 12/31/2012	[3] 12/31/2013	[4] 12/31/2014	[5] 12/31/2015	[6] 12/31/2016	[7] 12/31/2017	[8] 12/31/2018	[9] 12/31/2019	[10] 12/31/2020	[11] 12/31/2021	[12] Average
ALLETE, Inc.	ALE	0.70	0.70	0.75	0.80	0.80	0.75	0.80	0.65	0.65	0.85	0.90	0.76
Alliant Energy Corporation	LNT	0.75	0.70	0.75	0.80	0.80	0.70	0.70	0.60	0.60	0.85	0.85	0.74
Ameren Corporation	AEE	0.80	0.80	0.80	0.75	0.75	0.65	0.70	0.55	0.55	0.85	0.80	0.73
American Electric Power Company, Inc.	AEP	0.70	0.65	0.70	0.70	0.70	0.65	0.65	0.55	0.55	0.75	0.75	0.67
Avista Corporation	AVA	0.70	0.70	0.70	0.80	0.80	0.70	0.75	0.65	0.60	0.90	0.95	0.75
CMS Energy Corporation	CMS	0.75	0.75	0.70	0.70	0.75	0.65	0.65	0.55	0.50	0.80	0.80	0.69
Duke Energy Corporation	DUK	0.65	0.60	0.65	0.60	0.65	0.60	0.60	0.50	0.50	0.85	0.85	0.64
Energy Corporation	ETR	0.70	0.70	0.70	0.70	0.70	0.65	0.65	0.60	0.60	0.95	0.95	0.72
Energy, Inc.	EVRG								NMIF	NMIF	1.00	0.95	0.98
IDACORP, Inc.	IDA	0.70	0.70	0.70	0.80	0.80	0.75	0.70	0.60	0.55	0.80	0.85	0.72
NextEra Energy, Inc.	NEE	0.75	0.70	0.70	0.70	0.75	0.65	0.65	0.55	0.55	0.90	0.90	0.71
NorthWestern Corporation	NWE	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.60	0.60	0.90	0.95	0.72
OGE Energy Corporation	OGE	0.80	0.75	0.85	0.90	0.95	0.90	0.95	0.85	0.75	1.10	1.05	0.90
Otter Tail Corporation	OTTR	0.90	0.90	0.95	0.90	0.85	0.85	0.90	0.75	0.70	0.85	0.90	0.86
Portland General Electric Company	POR	0.75	0.75	0.75	0.80	0.80	0.70	0.70	0.60	0.60	0.85	0.90	0.75
Southern Company	SO	0.55	0.55	0.55	0.55	0.60	0.55	0.55	0.50	0.50	0.90	0.95	0.61
Xcel Energy Inc.	XEL	0.65	0.65	0.65	0.70	0.65	0.60	0.60	0.55	0.50	0.80	0.80	0.65
Mean		0.72	0.71	0.73	0.74	0.75	0.69	0.70	0.60	0.58	0.88	0.89	0.74

Notes:

- [1] Value Line, dated November 4, 2011, November 25, 2011, and December 23, 2011.
- [2] Value Line, dated November 2, 2012, November 23, 2012, and December 21, 2012.
- [3] Value Line, dated November 1, 2013, November 22, 2013, and December 20, 2013.
- [4] Value Line, dated October 31, 2014, November 21, 2014, and December 19, 2014.
- [5] Value Line, dated October 30, 2015, November 20, 2015, and December 18, 2015.
- [6] Value Line, dated October 28, 2016, November 18, 2016, and December 16, 2016.
- [7] Value Line, dated October 27, 2017, November 17, 2017, and December 15, 2017.
- [8] Value Line, dated October 18, 2018, November 16, 2018, and December 14, 2018.
- [9] Value Line, dated October 25, 2019, November 15, 2019, and December 13, 2019.
- [10] Value Line, dated October 23, 2020, November 13, 2020, and December 11, 2020.
- [11] Value Line, dated October 22, 2021, November 12, 2021, and December 10, 2021.
- [12] Average ([1] - [11])

Application No. 22-05-____
Exhibit PAC/206
Witness: Ann E. Bulkley

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

PACIFICORP

Exhibit Accompanying Direct Testimony of

Ann E. Bulkley
Market Return

May 2022

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

[1] Estimated Weighted Average Dividend Yield	1.61%
[2] Estimated Weighted Average Long-Term Growth Rate	10.99%
[3] S&P 500 Estimated Required Market Return	12.68%

		[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.
Agilent Technologies Inc	A	300.11	132.33	39,714	0.14%	0.63%	0.00%	11.5%	0.02%
American Airlines Group Inc	AAL	649.16	18.25	11,847					
Advance Auto Parts Inc	AAP	61.10	206.96	12,645	0.04%	2.90%	0.00%	11.0%	0.00%
Apple Inc	AAPL	16,319.44	174.61	2,849,538	9.70%	0.50%	0.05%	14.0%	1.36%
AbbVie Inc	ABBV	1,766.29	162.11	286,332	0.97%	3.48%	0.03%	4.5%	0.04%
AmerisourceBergen Corp	ABC	209.14	154.71	32,356	0.11%	1.19%	0.00%	6.5%	0.01%
ABIOMED Inc	ABMD	45.52	331.24	15,077	0.05%			7.5%	0.00%
Abbott Laboratories	ABT	1,763.48	118.36	208,726	0.71%	1.59%	0.01%	10.0%	0.07%
Accenture PLC	ACN	662.43	337.23	223,393	0.76%	1.15%	0.01%	12.0%	0.09%
Adobe Inc	ADBE	472.50	455.62	215,280	0.73%			15.5%	0.11%
Analog Devices Inc	ADI	523.32	165.18	86,441	0.29%	1.84%	0.01%	11.0%	0.03%
Archer-Daniels-Midland Co	ADM	562.48	90.26	50,769	0.17%	1.77%	0.00%	12.5%	0.02%
Automatic Data Processing Inc	ADP	420.05	227.54	95,577	0.33%	1.83%	0.01%	9.0%	0.03%
Autodesk Inc	ADSK	217.31	214.35	46,580	0.16%			18.0%	0.03%
Ameren Corp	AEE	258.09	93.76	24,199	0.08%	2.52%	0.00%	6.5%	0.01%
American Electric Power Co Inc	AEP	504.55	99.77	50,339	0.17%	3.13%	0.01%	6.5%	0.01%
AES Corp/The	AES	667.40	25.73	17,172	0.06%	2.46%	0.00%	14.0%	0.01%
Aflac Inc	AFL	649.37	64.39	41,813	0.14%	2.48%	0.00%	9.0%	0.01%
American International Group Inc	AIG	806.25	62.77	50,608		2.04%		31.5%	
Assurant Inc	AIZ	57.71	181.83	10,493	0.04%	1.50%	0.00%	15.5%	0.01%
Arthur J Gallagher & Co	AJG	209.61	174.60	36,599	0.12%	1.17%	0.00%	14.5%	0.02%
Akamai Technologies Inc	AKAM	160.90	119.39	19,210	0.07%			9.5%	0.01%
Albemarle Corp	ALB	117.11	221.15	25,899	0.09%	0.71%	0.00%	6.5%	0.01%
Align Technology Inc	ALGN	78.80	436.00	34,355	0.12%			17.0%	0.02%
Alaska Air Group Inc	ALK	126.09	58.01	7,314					
Allstate Corp/The	ALL	278.35	138.51	38,554	0.13%	2.45%	0.00%	5.0%	0.01%
Allegion plc	ALLE	88.23	109.78	9,686	0.03%	1.49%	0.00%	10.5%	0.00%
Applied Materials Inc	AMAT	883.40	131.80	116,431	0.40%	0.79%	0.00%	14.5%	0.06%
Amcor PLC	AMCR	1,513.73	11.33	17,151	0.06%	4.24%	0.00%	15.0%	0.01%
Advanced Micro Devices Inc	AMD	1,627.37	109.34	177,936	0.61%			17.5%	0.11%
AMETEK Inc	AME	231.17	133.18	30,787	0.10%	0.66%	0.00%	9.0%	0.01%
Amgen Inc	AMGN	557.03	241.82	134,701	0.46%	3.21%	0.01%	5.5%	0.03%
Ameriprise Financial Inc	AMP	110.58	300.36	33,213	0.11%	1.50%	0.00%	13.5%	0.02%
American Tower Corp	AMT	455.89	251.22	114,527	0.39%	2.23%	0.01%	9.0%	0.04%
Amazon.com Inc	AMZN	508.84	3,259.95	1,658,806				26.5%	
Arista Networks Inc	ANET	307.77	138.98	42,773	0.15%			4.5%	0.01%
ANSYS Inc	ANSS	87.03	317.65	27,644	0.09%			8.5%	0.01%
Anthem Inc	ANTM	241.30	491.22	118,533	0.40%	1.04%	0.00%	12.5%	0.05%
Aon PLC	AON	213.94	325.63	69,667	0.24%	0.63%	0.00%	7.0%	0.02%
A O Smith Corp	AOS	131.05	63.89	8,373	0.03%	1.75%	0.00%	10.0%	0.00%
APA Corp	APA	346.78	41.33	14,332		1.21%			
Air Products and Chemicals Inc	APD	221.72	249.91	55,409	0.19%	2.59%	0.00%	12.0%	0.02%
Amphenol Corp	APH	598.94	75.35	45,130	0.15%	1.06%	0.00%	12.0%	0.02%
Aptiv PLC	APTIV	270.92	119.71	32,431				21.5%	
Alexandria Real Estate Equities Inc	ARE	159.94	201.25	32,189	0.11%	2.29%	0.00%	9.0%	0.01%
Atmos Energy Corp	ATO	135.43	119.49	16,183	0.06%	2.28%	0.00%	7.5%	0.00%
Activision Blizzard Inc	ATVI	780.92	80.11	62,560	0.21%	0.59%	0.00%	15.0%	0.03%
AvalonBay Communities Inc	AVB	139.75	248.37	34,710	0.12%	2.56%	0.00%	6.5%	0.01%
Broadcom Inc	AVGO	408.28	629.68	257,086		2.60%		23.0%	
Avery Dennison Corp	AVY	82.36	173.97	14,327	0.05%	1.56%	0.00%	9.0%	0.00%
American Water Works Co Inc	AWK	181.75	165.53	30,086	0.10%	1.46%	0.00%	8.5%	0.01%
American Express Co	AXP	757.29	187.00	141,613	0.48%	1.11%	0.01%	12.0%	0.06%
AutoZone Inc	AZO	19.85	2,044.58	40,583	0.14%			16.5%	0.02%
Boeing Co/The	BA	590.39	191.50	113,059					

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.
Agilent Technologies Inc	A	300.11	132.33	39,714	0.14%	0.63%	0.00%	11.5%	0.02%
American Airlines Group Inc	AAL	649.16	18.25	11,847					
Advance Auto Parts Inc	AAP	61.10	206.96	12,645	0.04%	2.90%	0.00%	11.0%	0.00%
Bank of America Corp	BAC	8,064.86	41.22	332,433	1.13%	2.04%	0.02%	7.5%	0.08%
Baxter International Inc	BAX	503.20	77.54	39,018	0.13%	1.44%	0.00%	9.5%	0.01%
Bath & Body Works Inc	BBWI	238.91	47.80	11,420		1.67%		26.0%	
Best Buy Co Inc	BBY	225.23	90.90	20,473	0.07%	3.87%	0.00%	8.5%	0.01%
Becton Dickinson and Co	BDX	284.77	259.33	73,851	0.25%	1.34%	0.00%	6.0%	0.02%
Franklin Resources Inc	BEN	502.12	27.92	14,019	0.05%	4.15%	0.00%	11.0%	0.01%
Brown-Forman Corp	BF/B	309.80	67.02	20,762	0.07%	1.13%	0.00%	13.0%	0.01%
Biogen Inc	BIIB	146.96	210.60	30,950				-10.5%	
Bio-Rad Laboratories Inc	BIO	24.86	563.23	14,004	0.05%			9.5%	0.00%
Bank of New York Mellon Corp/The	BK	807.11	49.63	40,057	0.14%	2.74%	0.00%	5.0%	0.01%
Booking Holdings Inc	BKNG	40.89	2,348.45	96,023	0.33%			14.0%	0.05%
Baker Hughes Co	BKR	953.34	36.41	34,711		1.98%			
BlackRock Inc	BLK	152.04	764.17	116,186	0.40%	2.55%	0.01%	11.0%	0.04%
Ball Corp	BLL	321.21	90.00	28,909		0.89%		21.0%	
Bristol-Myers Squibb Co	BMJ	2,125.20	73.03	155,204		2.96%			
Broadridge Financial Solutions Inc	BR	116.77	155.71	18,183	0.06%	1.64%	0.00%	9.0%	0.01%
Berkshire Hathaway Inc	BRK/B	1,287.63	352.91	454,419	1.55%			6.0%	0.09%
Brown & Brown Inc	BRO	282.22	72.27	20,396	0.07%	0.57%	0.00%	10.5%	0.01%
Boston Scientific Corp	BSX	1,429.45	44.29	63,310	0.22%			16.0%	0.03%
BorgWarner Inc	BWA	239.97	38.90	9,335	0.03%	1.75%	0.00%	9.5%	0.00%
Boston Properties Inc	BXP	156.68	128.80	20,180		3.04%		-1.5%	
Citigroup Inc	C	1,972.47	53.40	105,330	0.36%	3.82%	0.01%	7.0%	0.03%
Conagra Brands Inc	CAG	479.70	33.57	16,103	0.05%	3.72%	0.00%	4.5%	0.00%
Cardinal Health Inc	CAH	277.06	56.70	15,709	0.05%	3.46%	0.00%	5.0%	0.00%
Carrier Global Corp	CARR	853.01	45.87	39,127		1.31%			
Caterpillar Inc	CAT	535.89	222.82	119,407	0.41%	1.99%	0.01%	8.0%	0.03%
Chubb Ltd	CB	426.23	213.90	91,170	0.31%	1.50%	0.00%	12.5%	0.04%
Cboe Global Markets Inc	CBOE	106.60	114.42	12,197	0.04%	1.68%	0.00%	12.0%	0.00%
CBRE Group Inc	CBRE	332.32	91.52	30,414	0.10%			10.0%	0.01%
Crown Castle International Corp	CCI	433.03	184.60	79,937	0.27%	3.19%	0.01%	12.0%	0.03%
Carnival Corp	CCL	989.70	20.22	20,012					
Ceridian HCM Holding Inc	CDAY	150.11	68.36	10,261					
Cadence Design Systems Inc	CDNS	278.38	164.46	45,782	0.16%			12.0%	0.02%
CDW Corp/DE	CDW	134.94	178.89	24,140	0.08%	1.12%	0.00%	11.0%	0.01%
Celanese Corp	CE	108.03	142.87	15,434	0.05%	1.90%	0.00%	6.5%	0.00%
Constellation Energy Corp	CEG	326.66	56.25	18,375		1.00%			
Cerner Corp	CERN	293.85	93.56	27,492	0.09%	1.15%	0.00%	9.5%	0.01%
CF Industries Holdings Inc	CF	209.11	103.06	21,551	0.07%	1.16%	0.00%	19.5%	0.01%
Citizens Financial Group Inc	CFG	422.14	45.33	19,136	0.07%	3.44%	0.00%	8.5%	0.01%
Church & Dwight Co Inc	CHD	242.70	99.38	24,119	0.08%	1.06%	0.00%	8.0%	0.01%
CH Robinson Worldwide Inc	CHRW	128.64	107.71	13,856	0.05%	2.04%	0.00%	9.0%	0.00%
Charter Communications Inc	CHTR	191.49	545.52	104,463				21.5%	
Cigna Corp	CI	320.95	239.61	76,904	0.26%	1.87%	0.00%	10.0%	0.03%
Cincinnati Financial Corp	CINF	160.44	135.96	21,813	0.07%	2.03%	0.00%	15.0%	0.01%
Colgate-Palmolive Co	CL	840.59	75.83	63,742	0.22%	2.48%	0.01%	5.0%	0.01%
Clorox Co/The	CLX	123.06	139.03	17,109	0.06%	3.34%	0.00%	5.0%	0.00%
Comerica Inc	CMA	131.09	90.43	11,854	0.04%	3.01%	0.00%	6.0%	0.00%
Comcast Corp	CMCSA	4,523.79	46.82	211,804	0.72%	2.31%	0.02%	10.5%	0.08%
CME Group Inc	CME	359.42	237.86	85,491	0.29%	1.68%	0.00%	8.5%	0.02%
Chipotle Mexican Grill Inc	CMG	28.03	1,582.03	44,347	0.15%			20.0%	0.03%
Cummins Inc	CMI	142.08	205.11	29,141	0.10%	2.83%	0.00%	8.0%	0.01%
CMS Energy Corp	CMS	290.14	69.94	20,292	0.07%	2.63%	0.00%	6.5%	0.00%
Centene Corp	CNC	582.88	84.19	49,072	0.17%			10.0%	0.02%
CenterPoint Energy Inc	CNP	629.43	30.64	19,286	0.07%	2.22%	0.00%	5.0%	0.00%
Capital One Financial Corp	COF	405.67	131.29	53,260		1.83%			
Cooper Cos Inc/The	COO	49.30	417.59	20,588	0.07%	0.01%	0.00%	19.0%	0.01%
ConocoPhillips	COP	1,296.05	100.00	129,605	0.44%	1.84%	0.01%	16.5%	0.07%
Costco Wholesale Corp	COST	443.22	575.85	255,231	0.87%	0.55%	0.00%	10.5%	0.09%
Campbell Soup Co	CPB	301.70	44.57	13,447	0.05%	3.32%	0.00%	5.5%	0.00%
Copart Inc	CPRT	237.50	125.47	29,799	0.10%			12.0%	0.01%
Charles River Laboratories International Inc	CRL	50.80	283.97	14,425	0.05%			6.5%	0.00%
salesforce.com Inc	CRM	990.00	212.32	210,197	0.72%			20.0%	0.14%
Cisco Systems Inc	CSCO	4,154.17	55.76	231,636	0.79%	2.73%	0.02%	8.0%	0.06%
CSX Corp	CSX	2,178.58	37.45	81,588	0.28%	1.07%	0.00%	10.0%	0.03%
Cintas Corp	CTAS	102.42	425.39	43,567	0.15%	0.89%	0.00%	13.5%	0.02%
Catalent Inc	CTLT	179.13	110.90	19,865				21.0%	
Coterra Energy Inc	CTRA	810.98	26.97	21,872		8.31%			
Cognizant Technology Solutions Corp	CTSH	524.54	89.67	47,035	0.16%	1.20%	0.00%	7.0%	0.01%
Corteva Inc	CTVA	726.77	57.48	41,775		0.97%			

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Agilent Technologies Inc	A	300.11	132.33	39,714	0.14%	0.63%	0.00%	11.5%	0.02%
American Airlines Group Inc	AAL	649.16	18.25	11,847					
Advance Auto Parts Inc	AAP	61.10	206.96	12,645	0.04%	2.90%	0.00%	11.0%	0.00%
Citrix Systems Inc	CTXS	125.91	100.90	12,705	0.04%			8.0%	0.00%
CVS Health Corp	CVS	1,312.51	101.21	132,839	0.45%	2.17%	0.01%	6.0%	0.03%
Chevron Corp	CVX	1,947.55	162.83	317,120		3.49%		25.0%	
Caesars Entertainment Inc	CZR	214.12	77.36	16,565					
Dominion Energy Inc	D	810.67	84.97	68,883	0.23%	3.14%	0.01%	11.5%	0.03%
Delta Air Lines Inc	DAL	639.93	39.57	25,322				49.0%	
DuPont de Nemours Inc	DD	512.91	73.58	37,740		1.79%			
Deere & Co	DE	306.78	415.46	127,456		1.01%		21.5%	
Discover Financial Services	DFS	282.03	110.19	31,077	0.11%	1.82%	0.00%	16.0%	0.02%
Dollar General Corp	DG	228.87	222.63	50,953	0.17%	0.99%	0.00%	10.5%	0.02%
Quest Diagnostics Inc	DGX	119.46	136.86	16,349	0.06%	1.93%	0.00%	7.5%	0.00%
DR Horton Inc	DHI	354.36	74.51	26,403	0.09%	1.21%	0.00%	11.0%	0.01%
Danaher Corp	DHR	715.90	293.33	209,993		0.34%		21.0%	
Walt Disney Co/The	DIS	1,820.63	137.16	249,718				37.5%	
Discovery Inc	DISCA	171.54	24.92	4,275	0.01%			13.5%	0.00%
Discovery Inc	DISCK	330.15	24.97	8,244					
DISH Network Corp	DISH	290.57	31.65	9,197	0.03%			2.0%	0.00%
Digital Realty Trust Inc	DLR	284.47	141.80	40,338		3.44%		-3.5%	
Dollar Tree Inc	DLTR	225.11	160.15	36,051	0.12%			10.0%	0.01%
Dover Corp	DOV	144.11	156.90	22,610	0.08%	1.27%	0.00%	9.0%	0.01%
Dow Inc	DOW	735.09	63.72	46,840		4.39%			
Domino's Pizza Inc	DPZ	36.03	407.01	14,666	0.05%	1.08%	0.00%	16.5%	0.01%
Duke Realty Corp	DRE	382.77	58.06	22,224	0.08%	1.93%	0.00%	2.5%	0.00%
Darden Restaurants Inc	DRI	127.72	132.95	16,981	0.06%	3.31%	0.00%	15.5%	0.01%
DTE Energy Co	DTE	193.74	132.21	25,615	0.09%	2.68%	0.00%	4.5%	0.00%
Duke Energy Corp	DUK	769.90	111.66	85,967	0.29%	3.53%	0.01%	7.0%	0.02%
DaVita Inc	DVA	96.30	113.11	10,892	0.04%			16.0%	0.01%
Devon Energy Corp	DVN	664.20	59.13	39,274		6.76%		29.5%	
DXC Technology Co	DXC	244.48	32.63	7,977	0.03%			6.0%	0.00%
Dexcom Inc	DXCM	97.39	511.60	49,825				34.0%	
Electronic Arts Inc	EA	281.22	126.51	35,577	0.12%	0.54%	0.00%	10.5%	0.01%
eBay Inc	EBAY	587.53	57.26	33,642	0.11%	1.54%	0.00%	16.5%	0.02%
Ecolab Inc	ECL	286.30	176.56	50,548	0.17%	1.16%	0.00%	8.0%	0.01%
Consolidated Edison Inc	ED	354.09	94.68	33,525	0.11%	3.34%	0.00%	3.5%	0.00%
Equifax Inc	EFX	122.91	237.10	29,142	0.10%	0.66%	0.00%	10.5%	0.01%
Edison International	EIX	380.80	70.10	26,694		3.99%			
Estee Lauder Cos Inc/The	EL	232.42	272.32	63,294	0.22%	0.88%	0.00%	14.0%	0.03%
Eastman Chemical Co	EMN	128.95	112.06	14,450	0.05%	2.71%	0.00%	8.0%	0.00%
Emerson Electric Co	EMR	594.00	98.05	58,242	0.20%	2.10%	0.00%	11.5%	0.02%
Enphase Energy Inc	ENPH	133.94	201.78	27,026				30.0%	
EOG Resources Inc	EOG	585.39	219.23	69,796	0.24%	2.52%	0.01%	16.0%	0.04%
EPAM Systems Inc	EPAM	56.88	296.61	16,871				23.5%	
Equinix Inc	EQIX	90.72	741.62	67,281	0.23%	1.67%	0.00%	15.0%	0.03%
Equity Residential	EQR	375.92	89.92	33,802		2.78%		-2.0%	
Eversource Energy	ES	344.75	88.19	30,403	0.10%	2.89%	0.00%	5.5%	0.01%
Essex Property Trust Inc	ESS	65.28	345.48	22,553		2.55%		-2.5%	
Eaton Corp PLC	ETN	399.57	151.76	60,639	0.21%	2.13%	0.00%	11.5%	0.02%
Entergy Corp	ETR	203.52	116.75	23,760	0.08%	3.46%	0.00%	3.0%	0.00%
Etsy Inc	ETSY	127.03	124.28	15,788				29.0%	
Evergy Inc	EVRG	226.99	68.34	15,513	0.05%	3.35%	0.00%	7.5%	0.00%
Edwards Lifesciences Corp	EW	621.32	117.72	73,141	0.25%			12.5%	0.03%
Exelon Corp	EXC	980.14	47.63	46,684		2.83%			
Expeditors International of Washington Inc	EXPD	167.40	103.16	17,269	0.06%	1.12%	0.00%	11.5%	0.01%
Expedia Group Inc	EXPE	150.23	195.67	29,396					
Extra Space Storage Inc	EXR	134.15	205.60	27,582	0.09%	2.92%	0.00%	6.0%	0.01%
Ford Motor Co	F	3,947.97	16.91	66,760		2.37%		29.0%	
Diamondback Energy Inc	FANG	177.42	137.08	24,320		1.75%			
Fastenal Co	FAST	575.55	59.40	34,188	0.12%	2.09%	0.00%	8.5%	0.01%
Meta Platforms Inc	FB	2,309.08	222.36	513,447				21.5%	
Fortune Brands Home & Security Inc	FBHS	132.35	74.28	9,831	0.03%	1.51%	0.00%	11.0%	0.00%

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Agilent Technologies Inc	A	300.11	132.33	39,714	0.14%	0.63%	0.00%	11.5%	0.02%
American Airlines Group Inc	AAL	649.16	18.25	11,847					
Advance Auto Parts Inc	AAP	61.10	206.96	12,645	0.04%	2.90%	0.00%	11.0%	0.00%
Freeport-McMoRan Inc	FCX	1,454.78	49.74	72,361		1.21%		27.0%	
FactSet Research Systems Inc	FDS	37.80	434.15	16,410	0.06%	0.76%	0.00%	9.5%	0.01%
FedEx Corp	FDX	259.18	231.39	59,971	0.20%	1.30%	0.00%	13.0%	0.03%
FirstEnergy Corp	FE	570.90	45.86	26,182	0.09%	3.40%	0.00%	10.0%	0.01%
F5 Inc	FFIV	60.74	208.95	12,691	0.04%			7.0%	0.00%
Fidelity National Information Services Inc	FIS	609.59	100.42	61,215		1.87%		28.0%	
Fiserv Inc	FISV	652.20	101.40	66,133	0.23%			13.0%	0.03%
Fifth Third Bancorp	FITB	683.67	43.04	29,425	0.10%	2.79%	0.00%	11.5%	0.01%
FleetCor Technologies Inc	FLT	77.89	249.06	19,399	0.07%			11.0%	0.01%
FMC Corp	FMC	125.89	131.57	16,564	0.06%	1.61%	0.00%	10.5%	0.01%
Fox Corp	FOX	247.10	36.28	8,965		1.32%			
Fox Corp	FOXA	315.81	39.45	12,459	0.04%	1.22%	0.00%	10.5%	0.00%
First Republic Bank/CA	FRC	179.06	162.10	29,026	0.10%	0.54%	0.00%	13.5%	0.01%
Federal Realty Investment Trust	FRT	78.69	122.07	9,605	0.03%	3.51%	0.00%	2.5%	0.00%
Fortinet Inc	FTNT	160.82	341.74	54,957				24.0%	
Fortive Corp	FTV	359.07	60.93	21,878	0.07%	0.46%	0.00%	12.0%	0.01%
General Dynamics Corp	GD	278.14	241.18	67,081	0.23%	2.09%	0.00%	6.0%	0.01%
General Electric Co	GE	1,101.75	91.50	100,810	0.34%	0.35%	0.00%	15.0%	0.05%
Gilead Sciences Inc	GILD	1,253.89	59.45	74,544	0.25%	4.91%	0.01%	13.5%	0.03%
General Mills Inc	GIS	602.21	67.72	40,782	0.14%	3.01%	0.00%	3.5%	0.00%
Globe Life Inc	GL	99.18	100.60	9,977	0.03%	0.83%	0.00%	8.0%	0.00%
Corning Inc	GLW	845.65	36.91	31,213	0.11%	2.93%	0.00%	20.0%	0.02%
General Motors Co	GM	1,453.02	43.74	63,555	0.22%			12.0%	0.03%
Generac Holdings Inc	GNRC	63.78	297.26	18,960				23.5%	
Alphabet Inc	GOOG	315.64	2,792.99	881,577				23.5%	
Alphabet Inc	GOOGL	300.76	2,781.35	836,505					
Genuine Parts Co	GPC	141.95	126.02	17,888	0.06%	2.84%	0.00%	8.5%	0.01%
Global Payments Inc	GP	281.97	136.84	38,585	0.13%	0.73%	0.00%	16.5%	0.02%
Garmin Ltd	GRMN	192.79	118.61	22,866	0.08%	2.46%	0.00%	10.0%	0.01%
Goldman Sachs Group Inc/The	GS	341.86	330.10	112,848	0.38%	2.42%	0.01%	8.5%	0.03%
WW Grainger Inc	GW	51.10	515.79	26,358	0.09%	1.26%	0.00%	7.0%	0.01%
Halliburton Co	HAL	898.57	37.87	34,029	0.12%	1.27%	0.00%	9.5%	0.01%
Hasbro Inc	HAS	138.96	81.92	11,384	0.04%	3.42%	0.00%	11.5%	0.00%
Huntington Bancshares Inc/OH	HBAN	1,444.83	14.62	21,123	0.07%	4.24%	0.00%	12.0%	0.01%
HCA Healthcare Inc	HCA	302.02	250.62	75,692	0.26%	0.89%	0.00%	12.5%	0.03%
Home Depot Inc/The	HD	1,033.35	299.33	309,313	1.05%	2.54%	0.03%	10.0%	0.11%
Hess Corp	HES	309.75	107.04	33,155		1.40%			
Hartford Financial Services Group Inc/The	HIG	331.65	71.81	23,816	0.08%	2.14%	0.00%	6.5%	0.01%
Huntington Ingalls Industries Inc	HII	40.07	199.44	7,991	0.03%	2.37%	0.00%	10.0%	0.00%
Hilton Worldwide Holdings Inc	HLT	279.14	151.74	42,357					
Hologic Inc	HOLX	251.30	76.82	19,305				25.0%	
Honeywell International Inc	HON	685.48	194.58	133,381	0.45%	2.01%	0.01%	11.0%	0.05%
Hewlett Packard Enterprise Co	HPE	1,300.14	16.71	21,725	0.07%	2.87%	0.00%	6.5%	0.00%
HP Inc	HPQ	1,053.37	36.30	38,237	0.13%	2.75%	0.00%	15.5%	0.02%
Hormel Foods Corp	HRL	545.00	51.54	28,089	0.10%	2.02%	0.00%	6.5%	0.01%
Henry Schein Inc	HSIC	137.17	87.19	11,960	0.04%			7.0%	0.00%
Host Hotels & Resorts Inc	HST	714.15	19.43	13,876	0.05%	0.62%	0.00%	8.5%	0.00%
Hershey Co/The	HSY	145.63	216.63	31,547	0.11%	1.66%	0.00%	6.0%	0.01%
Humana Inc	HUM	126.74	435.17	55,155	0.19%	0.72%	0.00%	12.0%	0.02%
Howmet Aerospace Inc	HWM	418.91	35.94	15,055	0.05%	0.22%	0.00%	12.5%	0.01%
International Business Machines Corp	IBM	899.31	130.02	116,928	0.40%	5.05%	0.02%	0.5%	0.00%
Intercontinental Exchange Inc	ICE	560.44	132.12	74,045	0.25%	1.15%	0.00%	8.0%	0.02%
IDEXX Laboratories Inc	IDXX	84.25	547.06	46,089	0.16%			14.0%	0.02%
IDEX Corp	IE	76.11	191.73	14,592	0.05%	1.13%	0.00%	8.0%	0.00%
International Flavors & Fragrances Inc	IFF	254.75	131.33	33,456	0.11%	2.41%	0.00%	7.0%	0.01%
illumina Inc	ILMN	157.08	349.40	54,882	0.19%			10.0%	0.02%
Incyte Corp	INCY	221.33	79.42	17,578				25.5%	
Intel Corp	INTC	4,088.70	49.56	202,636	0.69%	2.95%	0.02%	6.0%	0.04%
Intuit Inc	INTU	282.81	480.84	135,987	0.46%	0.57%	0.00%	18.5%	0.09%
International Paper Co	IP	374.89	46.15	17,301	0.06%	4.01%	0.00%	12.5%	0.01%
Interpublic Group of Cos Inc/The	IPG	393.96	35.45	13,966	0.05%	3.27%	0.00%	12.0%	0.01%
IPG Photonics Corp	IPGP	52.94	109.76	5,811	0.02%			17.0%	0.00%
IQVIA Holdings Inc	IQV	190.91	231.21	44,141	0.15%			14.5%	0.02%

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American Airlines Group Inc	AAL	649.16	18.25	11,847					
Advance Auto Parts Inc	AAP	61.10	206.96	12,645	0.04%	2.90%	0.00%	11.0%	0.00%
Ingersoll Rand Inc	IR	407.97	50.35	20,541		0.16%			
Iron Mountain Inc	IRM	289.83	55.41	16,059	0.05%	4.46%	0.00%	10.0%	0.01%
Intuitive Surgical Inc	ISRG	359.20	301.68	108,362	0.37%			13.0%	0.05%
Gartner Inc	IT	82.29	297.46	24,477				20.5%	
Illinois Tool Works Inc	ITW	311.90	209.40	65,312	0.22%	2.33%	0.01%	11.0%	0.02%
Invesco Ltd	IVZ	454.96	23.06	10,491	0.04%	2.95%	0.00%	15.5%	0.01%
Jacobs Engineering Group Inc	J	129.22	137.81	17,807	0.06%	0.67%	0.00%	15.0%	0.01%
JB Hunt Transport Services Inc	JBHT	104.85	200.79	21,053	0.07%	0.80%	0.00%	11.0%	0.01%
Johnson Controls International plc	JCI	702.63	65.57	46,071	0.16%	2.14%	0.00%	14.0%	0.02%
Jack Henry & Associates Inc	JKHY	72.83	197.05	14,350	0.05%	0.99%	0.00%	10.5%	0.01%
Johnson & Johnson	JNJ	2,629.62	177.23	466,047	1.59%	2.39%	0.04%	8.0%	0.13%
Juniper Networks Inc	JNPR	322.57	37.16	11,987	0.04%	2.26%	0.00%	9.0%	0.00%
JPMorgan Chase & Co	JPM	2,952.81	136.32	402,527	1.37%	2.93%	0.04%	7.5%	0.10%
Kellogg Co	K	340.16	64.49	21,937	0.07%	3.60%	0.00%	3.5%	0.00%
KeyCorp	KEY	920.13	22.38	20,592	0.07%	3.49%	0.00%	9.5%	0.01%
Keysight Technologies Inc	KEYS	181.98	157.97	28,747	0.10%			13.0%	0.01%
Kraft Heinz Co/The	KHC	1,224.89	39.39	48,249	0.16%	4.06%	0.01%	4.0%	0.01%
Kimco Realty Corp	KIM	617.92	24.70	15,263	0.05%	3.08%	0.00%	8.5%	0.00%
KLA Corp	KLAC	150.72	366.06	55,171		1.15%		21.0%	
Kimberly-Clark Corp	KMB	336.93	123.16	41,496	0.14%	3.77%	0.01%	5.5%	0.01%
Kinder Morgan Inc	KMI	2,267.49	18.91	42,878	0.15%	5.71%	0.01%	19.0%	0.03%
CarMax Inc	KMX	161.68	96.48	15,599	0.05%			13.5%	0.01%
Coca-Cola Co/The	KO	4,335.00	62.00	268,770	0.92%	2.84%	0.03%	7.0%	0.06%
Kroger Co/The	KR	723.31	57.37	41,496	0.14%	1.46%	0.00%	6.5%	0.01%
Loews Corp	L	246.39	64.82	15,971	0.05%	0.39%	0.00%	12.5%	0.01%
Leidos Holdings Inc	LDOS	136.34	108.02	14,728	0.05%	1.33%	0.00%	8.5%	0.00%
Lennar Corp	LEN	257.31	81.17	20,886	0.07%	1.85%	0.00%	8.5%	0.00%
Laboratory Corp of America Holdings	LH	93.40	263.66	24,626	0.08%			6.0%	0.01%
L3Harris Technologies Inc	LHX	193.06	248.47	47,970		1.80%			
Linde PLC	LIN	507.23	319.43	162,023		1.47%			
LKQ Corp	LKQ	284.99	45.41	12,941	0.04%	2.20%	0.00%	14.0%	0.01%
Eli Lilly & Co	LLY	952.35	286.37	272,724	0.93%	1.37%	0.01%	11.5%	0.11%
Lockheed Martin Corp	LMT	266.53	441.40	117,648	0.40%	2.54%	0.01%	6.5%	0.03%
Lincoln National Corp	LNC	172.46	65.36	11,272	0.04%	2.75%	0.00%	11.5%	0.00%
Alliant Energy Corp	LNT	250.48	62.48	15,650	0.05%	2.74%	0.00%	4.5%	0.00%
Lowe's Cos Inc	LOW	661.56	202.19	133,761	0.46%	1.58%	0.01%	15.5%	0.07%
Lam Research Corp	LRCX	139.50	537.61	74,997	0.26%	1.12%	0.00%	17.0%	0.04%
Lumen Technologies Inc	LUMN	1,023.37	11.27	11,533	0.04%	8.87%	0.00%	3.5%	0.00%
Southwest Airlines Co	LUV	592.34	45.80	27,129				29.5%	
Las Vegas Sands Corp	LVS	763.99	38.87	29,696	0.10%			17.0%	0.02%
Lamb Weston Holdings Inc	LW	145.20	59.91	8,699	0.03%	1.64%	0.00%	6.0%	0.00%
LyondellBasell Industries NV	LYB	328.01	102.82	33,726	0.11%	4.40%	0.01%	5.5%	0.01%
Live Nation Entertainment Inc	LYV	224.63	117.64	26,425					
Mastercard Inc	MA	969.73	357.38	346,562	1.18%	0.55%	0.01%	13.0%	0.15%
Mid-America Apartment Communities Inc	MAA	115.34	209.45	24,158	0.08%	2.08%	0.00%	8.5%	0.01%
Marriott International Inc/MD	MAR	327.25	175.75	57,515	0.20%			17.5%	0.03%
Masco Corp	MAS	236.52	51.00	12,063	0.04%	2.20%	0.00%	9.0%	0.00%
McDonald's Corp	MCD	743.59	247.28	183,874	0.63%	2.23%	0.01%	10.0%	0.06%
Microchip Technology Inc	MCHP	555.99	75.14	41,777	0.14%	1.35%	0.00%	10.0%	0.01%
McKesson Corp	MCK	149.80	306.13	45,858	0.16%	0.61%	0.00%	10.0%	0.02%
Moody's Corp	MCO	185.38	337.41	62,548	0.21%	0.83%	0.00%	9.0%	0.02%
Mondelez International Inc	MDLZ	1,388.33	62.78	87,159	0.30%	2.23%	0.01%	8.0%	0.02%
Medtronic PLC	MDT	1,341.54	110.95	148,844	0.51%	2.27%	0.01%	8.5%	0.04%
MetLife Inc	MET	825.08	70.28	57,986	0.20%	2.73%	0.01%	7.5%	0.01%
MGM Resorts International	MGM	435.33	41.94	18,258		0.02%		25.0%	
Mohawk Industries Inc	MHK	65.07	124.20	8,082	0.03%			10.5%	0.00%
McCormick & Co Inc/MD	MKC	250.23	99.80	24,973	0.09%	1.48%	0.00%	6.0%	0.01%
MarketAxess Holdings Inc	MKTX	37.84	340.20	12,871	0.04%	0.82%	0.00%	14.0%	0.01%
Martin Marietta Materials Inc	MLM	62.40	384.89	24,015	0.08%	0.63%	0.00%	8.5%	0.01%
Marsh & McLennan Cos Inc	MMC	502.77	170.42	85,681	0.29%	1.26%	0.00%	12.0%	0.04%
3M Co	MMM	569.17	148.88	84,738	0.29%	4.00%	0.01%	6.0%	0.02%
Monster Beverage Corp	MNST	529.36	79.90	42,296	0.14%			13.0%	0.02%
Altria Group Inc	MO	1,817.26	52.25	94,952	0.32%	6.89%	0.02%	5.5%	0.02%
Molina Healthcare Inc	MOH	58.67	333.59	19,573	0.07%			11.0%	0.01%
Mosaic Co/The	MOS	368.31	66.50	24,493		0.68%		56.5%	
Marathon Petroleum Corp	MPC	558.57	85.50	47,758		2.71%			
Monolithic Power Systems Inc	MPWR	46.51	485.68	22,588	0.08%	0.62%	0.00%	18.0%	0.01%
Merck & Co Inc	MRK	2,527.73	82.05	207,401	0.71%	3.36%	0.02%	8.0%	0.06%
Moderna Inc	MRNA	403.02	172.26	69,424					
Marathon Oil Corp	MRO	730.77	25.11	18,350		1.12%			
Morgan Stanley	MS	1,781.30	87.40	155,686	0.53%	3.20%	0.02%	10.5%	0.06%

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Agilent Technologies Inc	A	300.11	132.33	39,714	0.14%	0.63%	0.00%	11.5%	0.02%
American Airlines Group Inc	AAL	649.16	18.25	11,847					
Advance Auto Parts Inc	AAP	61.10	206.96	12,645	0.04%	2.90%	0.00%	11.0%	0.00%
MSCI Inc	MSCI	81.27	502.88	40,868	0.14%	0.83%	0.00%	15.5%	0.02%
Microsoft Corp	MSFT	7,496.87	308.31	2,311,359	7.87%	0.80%	0.06%	17.5%	1.38%
Motorola Solutions Inc	MSI	167.45	242.20	40,556	0.14%	1.30%	0.00%	8.0%	0.01%
M&T Bank Corp	MTB	129.06	169.50	21,875	0.07%	2.83%	0.00%	8.0%	0.01%
Match Group Inc	MTCH	285.15	108.74	31,007	0.11%			18.5%	0.02%
Mettler-Toledo International Inc	MTD	22.74	1,373.19	31,221	0.11%			13.5%	0.01%
Micron Technology Inc	MU	1,116.67	77.89	86,977		0.51%		24.0%	
Norwegian Cruise Line Holdings Ltd	NCLH	417.09	21.88	9,126					
Nasdaq Inc	NDAQ	164.41	178.20	29,298	0.10%	1.21%	0.00%	6.5%	0.01%
Nordson Corp	NDSN	57.94	227.08	13,157	0.04%	0.90%	0.00%	13.5%	0.01%
NextEra Energy Inc	NEE	1,962.75	84.71	166,264	0.57%	2.01%	0.01%	11.0%	0.06%
Newmont Corp	NEM	792.55	79.45	62,968	0.21%	2.77%	0.01%	9.5%	0.02%
Netflix Inc	NFLX	443.96	374.59	166,304				23.5%	
NiSource Inc	NI	405.39	31.80	12,891	0.04%	2.96%	0.00%	10.5%	0.00%
NIKE Inc	NKE	1,276.29	134.56	171,737		0.91%		27.0%	
NortonLifeLock Inc	NLOK	582.27	26.52	15,442	0.05%	1.89%	0.00%	11.0%	0.01%
Nielsen Holdings PLC	NLSN	359.49	27.24	9,792		0.88%			
Northrop Grumman Corp	NOC	156.10	447.22	69,812	0.24%	1.40%	0.00%	8.5%	0.02%
ServiceNow Inc	NOW	200.00	556.89	111,378				44.5%	
NRG Energy Inc	NRG	242.15	38.36	9,289		3.65%		-10.5%	
Norfolk Southern Corp	NSC	239.78	285.22	68,389	0.23%	1.74%	0.00%	10.0%	0.02%
NetApp Inc	NTAP	222.54	83.00	18,470	0.06%	2.41%	0.00%	8.0%	0.01%
Northern Trust Corp	NTRS	207.94	116.45	24,215	0.08%	2.40%	0.00%	8.0%	0.01%
Nucor Corp	NUE	268.41	148.65	39,898	0.14%	1.35%	0.00%	12.0%	0.02%
NVIDIA Corp	NVDA	2,510.00	272.86	684,879		0.06%		21.5%	
NVR Inc	NVR	3.36	4,467.27	15,010	0.05%			5.5%	0.00%
Newell Brands Inc	NWL	415.81	21.41	8,902		4.30%			
News Corp	NWS	198.48	22.52	4,470		0.89%			
News Corp	NWSA	390.87	22.15	8,658		0.90%			
NXP Semiconductors NV	NXPI	262.54	185.08	48,591	0.17%	1.83%	0.00%	12.0%	0.02%
Realty Income Corp	O	597.90	69.30	41,435	0.14%	4.28%	0.01%	3.5%	0.00%
Old Dominion Freight Line Inc	ODFL	114.86	298.68	34,308	0.12%	0.40%	0.00%	12.0%	0.01%
Organon & Co	OGN	253.64	34.93	8,860		3.21%			
ONEOK Inc	OKE	446.21	70.63	31,516	0.11%	5.30%	0.01%	12.0%	0.01%
Omnicon Group Inc	OMC	206.95	84.88	17,566	0.06%	3.30%	0.00%	6.0%	0.00%
Oracle Corp	ORCL	2,668.16	82.73	220,737	0.75%	1.55%	0.01%	10.0%	0.08%
O'Reilly Automotive Inc	ORLY	66.30	684.96	45,410	0.15%			13.0%	0.02%
Otis Worldwide Corp	OTIS	424.96	76.95	32,701		1.25%			
Occidental Petroleum Corp	OXY	936.91	56.74	53,160		0.92%		30.5%	
Paramount Global	PARA	607.88	37.81	22,984	0.08%	2.54%	0.00%	7.0%	0.01%
Paycom Software Inc	PAYC	60.21	346.38	20,857	0.07%			20.0%	0.01%
Paychex Inc	PAYX	361.02	136.47	49,268	0.17%	1.93%	0.00%	9.0%	0.02%
People's United Financial Inc	PBCT	429.67	19.99	8,589	0.03%	3.65%	0.00%	2.5%	0.00%
PACCAR Inc	PACR	347.68	88.07	30,620	0.10%	1.54%	0.00%	5.0%	0.01%
Healthpeak Properties Inc	PEAK	539.50	34.33	18,521		3.50%		-7.5%	
Public Service Enterprise Group Inc	PEG	502.08	70.00	35,145	0.12%	3.09%	0.00%	4.0%	0.00%
Penn National Gaming Inc	PENN	168.32	42.42	7,140				28.0%	
PepsiCo Inc	PEP	1,383.25	167.38	231,528	0.79%	2.57%	0.02%	6.5%	0.05%
Pfizer Inc	PFE	5,647.77	51.77	292,385	1.00%	3.09%	0.03%	6.5%	0.06%
Principal Financial Group Inc	PFGB	261.23	73.41	19,177	0.07%	3.49%	0.00%	6.0%	0.00%
Procter & Gamble Co/The	PG	2,397.07	152.80	366,272	1.25%	2.28%	0.03%	6.5%	0.08%
Progressive Corp/The	PGR	584.88	113.99	66,670	0.23%	0.35%	0.00%	4.5%	0.01%
Parker-Hannifin Corp	PH	128.48	283.76	36,457	0.12%	1.45%	0.00%	13.5%	0.02%
PulteGroup Inc	PHM	241.43	41.90	10,116	0.03%	1.43%	0.00%	9.5%	0.00%
Packaging Corp of America	PKG	93.70	156.11	14,628	0.05%	2.56%	0.00%	9.0%	0.00%
PerkinElmer Inc	PKI	126.16	174.46	22,009	0.07%	0.16%	0.00%	10.0%	0.01%
Prologis Inc	PLD	739.75	161.48	119,454	0.41%	1.96%	0.01%	6.0%	0.02%
Philip Morris International Inc	PM	1,550.08	93.94	145,615	0.50%	5.32%	0.03%	7.0%	0.03%
PNC Financial Services Group Inc/The	PNC	418.56	184.45	77,203	0.26%	2.71%	0.01%	11.5%	0.03%
Pentair PLC	PNR	165.10	54.21	8,950	0.03%	1.55%	0.00%	14.0%	0.00%
Pinnacle West Capital Corp	PNW	112.93	78.10	8,820		4.35%		0.0%	
Pool Corp	POOL	40.13	422.85	16,967	0.06%	0.76%	0.00%	17.0%	0.01%
PPG Industries Inc	PPG	236.15	131.07	30,952	0.11%	1.80%	0.00%	10.0%	0.01%
PPL Corp	PPL	735.36	28.56	21,002		2.80%			
Prudential Financial Inc	PRU	376.43	118.17	44,482	0.15%	4.06%	0.01%	5.5%	0.01%
Public Storage	PSA	175.36	390.28	68,438	0.23%	2.05%	0.00%	8.0%	0.02%
Phillips 66	PSX	438.46	86.39	37,879	0.13%	4.26%	0.01%	17.0%	0.02%
PTC Inc	PTC	116.95	107.72	12,598					
PVH Corp	PVH	68.01	76.61	5,210	0.02%	0.20%	0.00%	14.0%	0.00%
Quanta Services Inc	PWR	142.69	131.61	18,779	0.06%	0.21%	0.00%	16.5%	0.01%

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Agilent Technologies Inc	A	300.11	132.33	39,714	0.14%	0.63%	0.00%	11.5%	0.02%
American Airlines Group Inc	AAL	649.16	18.25	11,847					
Advance Auto Parts Inc	AAP	61.10	206.96	12,645	0.04%	2.90%	0.00%	11.0%	0.00%
Pioneer Natural Resources Co	PXD	242.88	250.03	60,728		6.05%		23.0%	
PayPal Holdings Inc	PYPL	1,165.01	115.65	134,733	0.46%			16.0%	0.07%
QUALCOMM Inc	QCOM	1,127.00	152.82	172,228	0.59%	1.78%	0.01%	19.0%	0.11%
Qorvo Inc	QRVO	108.43	124.10	13,456	0.05%			14.5%	0.01%
Royal Caribbean Cruises Ltd	RCL	255.00	83.78	21,364					
Everest Re Group Ltd	RE	39.27	301.38	11,836	0.04%	2.06%	0.00%	11.0%	0.00%
Regency Centers Corp	REG	171.37	71.34	12,226	0.04%	3.50%	0.00%	12.5%	0.01%
Regeneron Pharmaceuticals Inc	REGN	106.72	698.42	74,533	0.25%			12.5%	0.03%
Regions Financial Corp	RF	937.15	22.26	20,861	0.07%	3.05%	0.00%	10.5%	0.01%
Robert Half International Inc	RHI	110.69	114.18	12,638	0.04%	1.51%	0.00%	7.5%	0.00%
Raymond James Financial Inc	RJF	207.60	109.91	22,818	0.08%	1.24%	0.00%	10.5%	0.01%
Ralph Lauren Corp	RL	46.29	113.44	5,251	0.02%	2.42%	0.00%	12.5%	0.00%
ResMed Inc	RMD	146.23	242.51	35,463	0.12%	0.69%	0.00%	8.5%	0.01%
Rockwell Automation Inc	ROK	116.20	280.03	32,538	0.11%	1.60%	0.00%	10.0%	0.01%
Rollins Inc	ROL	492.46	35.05	17,261	0.06%	1.14%	0.00%	10.5%	0.01%
Roper Technologies Inc	ROP	105.60	472.23	49,869	0.17%	0.53%	0.00%	8.5%	0.01%
Ross Stores Inc	ROST	350.89	90.46	31,742	0.11%	1.37%	0.00%	14.0%	0.02%
Republic Services Inc	RS	315.79	132.50	41,842	0.14%	1.39%	0.00%	10.5%	0.01%
Raytheon Technologies Corp	RTX	1,490.27	99.07	147,641	0.50%	2.06%	0.01%	7.5%	0.04%
SBA Communications Corp	SBAC	108.02	344.10	37,169		0.83%		42.5%	
Signature Bank/New York NY	SBNY	62.57	293.49	18,363	0.06%	0.76%	0.00%	12.0%	0.01%
Starbucks Corp	SBUX	1,150.30	90.97	104,643	0.36%	2.15%	0.01%	16.5%	0.06%
Charles Schwab Corp/The	SCHW	1,814.62	84.31	152,991	0.52%	0.95%	0.00%	7.0%	0.04%
SolarEdge Technologies Inc	SEDG	55.12	322.37	17,767	0.06%			19.5%	0.01%
Sealed Air Corp	SEE	148.16	66.96	9,921	0.03%	1.19%	0.00%	13.5%	0.00%
Sherwin-Williams Co/The	SHW	260.55	249.62	65,038	0.22%	0.96%	0.00%	11.5%	0.03%
SVB Financial Group	SIVB	58.81	559.45	32,901	0.11%			5.0%	0.01%
J M Smucker Co/The	SJM	108.46	135.41	14,686	0.05%	2.92%	0.00%	4.0%	0.00%
Schlumberger NV	SLB	1,413.02	41.31	58,372	0.20%	1.21%	0.00%	11.5%	0.02%
Snap-on Inc	SNA	53.42	205.48	10,976	0.04%	2.76%	0.00%	4.5%	0.00%
Synopsys Inc	SNPS	153.10	333.27	51,023	0.17%			14.0%	0.02%
Southern Co/The	SO	1,059.80	72.51	76,846	0.26%	3.64%	0.01%	5.5%	0.01%
Simon Property Group Inc	SPG	328.34	131.56	43,197	0.15%	5.02%	0.01%	2.5%	0.00%
S&P Global Inc	SPGI	347.03	410.18	142,344	0.48%	0.83%	0.00%	10.5%	0.05%
Sempra Energy	SRE	315.77	168.12	53,088	0.18%	2.72%	0.00%	10.0%	0.02%
STERIS PLC	STE	100.13	241.77	24,208	0.08%	0.71%	0.00%	11.5%	0.01%
State Street Corp	STT	366.07	87.12	31,892	0.11%	2.62%	0.00%	8.0%	0.01%
Seagate Technology Holdings PLC	STX	218.90	89.90	19,679	0.07%	3.11%	0.00%	16.0%	0.01%
Constellation Brands Inc	STZ	164.34	230.32	37,851	0.13%	1.32%	0.00%	5.5%	0.01%
Stanley Black & Decker Inc	SWK	163.41	139.79	22,843	0.08%	2.26%	0.00%	6.0%	0.00%
Skyworks Solutions Inc	SWKS	161.67	133.28	21,548	0.07%	1.68%	0.00%	15.5%	0.01%
Synchrony Financial	SYF	521.27	34.81	18,145	0.06%	2.53%	0.00%	9.5%	0.01%
Stryker Corp	SYK	377.70	267.35	100,978	0.34%	1.04%	0.00%	8.5%	0.03%
Sysco Corp	SY	507.45	81.65	41,433	0.14%	2.30%	0.00%	17.5%	0.02%
AT&T Inc	T	7,142.89	23.63	168,787	0.57%	4.70%	0.03%	3.0%	0.02%
Molson Coors Beverage Co	TAP	200.60	53.38	10,708		2.85%		41.0%	
TransDigm Group Inc	TDG	55.46	651.54	36,136	0.12%			16.5%	0.02%
Teledyne Technologies Inc	TDY	46.77	472.63	22,103	0.08%			14.5%	0.01%
Bio-Techne Corp	TECH	39.29	433.04	17,013	0.06%	0.30%	0.00%	17.5%	0.01%
TE Connectivity Ltd	TEL	325.58	130.98	42,644	0.15%	1.71%	0.00%	10.5%	0.02%
Teradyne Inc	TER	162.42	118.23	19,203	0.07%	0.37%	0.00%	8.5%	0.01%
Truist Financial Corp	TFC	1,328.99	56.70	75,354	0.26%	3.39%	0.01%	7.0%	0.02%
Teleflex Inc	TFX	46.90	354.83	16,642	0.06%	0.38%	0.00%	15.0%	0.01%
Target Corp	TGT	462.42	212.22	98,134	0.33%	1.70%	0.01%	15.0%	0.05%
TJX Cos Inc/The	TJX	1,175.23	60.58	71,195	0.24%	1.95%	0.00%	20.0%	0.05%
Thermo Fisher Scientific Inc	TMO	391.19	590.65	231,058	0.79%	0.20%	0.00%	15.5%	0.12%
T-Mobile US Inc	TMUS	1,249.29	128.35	160,346	0.55%			7.5%	0.04%
Tapestry Inc	TPR	263.99	37.15	9,807	0.03%	2.69%	0.00%	10.0%	0.00%
Trimble Inc	TRMB	251.22	72.14	18,123	0.06%			10.0%	0.01%
T Rowe Price Group Inc	TROW	227.81	151.19	34,443	0.12%	3.17%	0.00%	12.0%	0.01%

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.
Agilent Technologies Inc	A	300.11	132.33	39,714	0.14%	0.63%	0.00%	11.5%	0.02%
American Airlines Group Inc	AAL	649.16	18.25	11,847					
Advance Auto Parts Inc	AAP	61.10	206.96	12,645	0.04%	2.90%	0.00%	11.0%	0.00%
Travelers Cos Inc/The	TRV	241.50	182.73	44,129	0.15%	1.93%	0.00%	8.0%	0.01%
Tractor Supply Co	TSCO	112.15	233.37	26,172	0.09%	1.58%	0.00%	14.5%	0.01%
Tesla Inc	TSLA	1,033.51	1,077.60	1,113,708				51.5%	
Tyson Foods Inc	TSN	292.46	89.63	26,213	0.09%	2.05%	0.00%	6.0%	0.01%
Trane Technologies PLC	TT	233.54	152.70	35,661		1.76%			
Take-Two Interactive Software Inc	TTWO	115.42	153.74	17,744	0.06%			15.0%	0.01%
Twitter Inc	TWTR	800.64	38.69	30,977				39.0%	
Texas Instruments Inc	TXN	923.55	183.48	169,452	0.58%	2.51%	0.01%	8.5%	0.05%
Textron Inc	TXT	216.33	74.38	16,091	0.05%	0.11%	0.00%	8.5%	0.00%
Tyler Technologies Inc	TYL	41.43	444.89	18,432	0.06%			14.0%	0.01%
Under Armour Inc	UA	253.22	15.56	3,940					
Under Armour Inc	UAA	188.67	17.02	3,211				33.0%	
United Airlines Holdings Inc	UAL	323.61	46.36	15,003					
UDR Inc	UDR	325.40	57.37	18,668	0.06%	2.65%	0.00%	10.5%	0.01%
Universal Health Services Inc	UHS	67.55	144.95	9,792	0.03%	0.55%	0.00%	11.0%	0.00%
Ulta Beauty Inc	ULTA	52.33	398.22	20,838	0.07%			15.5%	0.01%
UnitedHealth Group Inc	UNH	940.90	509.97	479,830	1.63%	1.14%	0.02%	12.0%	0.20%
Union Pacific Corp	UNP	628.39	273.21	171,682	0.58%	1.73%	0.01%	9.0%	0.05%
United Parcel Service Inc	UPS	733.44	214.46	157,293	0.54%	2.84%	0.02%	11.5%	0.06%
United Rentals Inc	URI	72.19	355.21	25,643	0.09%			12.5%	0.01%
US Bancorp	USB	1,485.04	53.15	78,930	0.27%	3.46%	0.01%	6.5%	0.02%
Visa Inc	V	1,658.42	221.77	367,789	1.25%	0.68%	0.01%	12.0%	0.15%
VF Corp	VFC	388.90	56.86	22,113	0.08%	3.52%	0.00%	9.5%	0.01%
Valero Energy Corp	VLO	409.42	101.54	41,572	0.14%	3.86%	0.01%	11.0%	0.02%
Vulcan Materials Co	VMC	132.89	183.70	24,413	0.08%	0.87%	0.00%	8.5%	0.01%
Vornado Realty Trust	VNO	191.72	45.32	8,689		4.68%		-19.0%	
Verisk Analytics Inc	VRSK	161.28	214.63	34,616	0.12%	0.58%	0.00%	10.5%	0.01%
VeriSign Inc	VRSN	110.17	222.46	24,508	0.08%			8.5%	0.01%
Vertex Pharmaceuticals Inc	VRTX	254.58	260.97	66,437	0.23%			18.5%	0.04%
Ventas Inc	VTR	399.55	61.76	24,676	0.08%	2.91%	0.00%	10.5%	0.01%
Viatis Inc	VTRS	1,209.58	10.88	13,160		4.41%			
Verizon Communications Inc	VZ	4,197.82	50.94	213,837	0.73%	5.03%	0.04%	2.5%	0.02%
Westinghouse Air Brake Technologies Corp	WAB	185.29	96.17	17,819	0.06%	0.62%	0.00%	9.0%	0.01%
Waters Corp	WAT	60.52	310.39	18,784	0.06%			6.0%	0.00%
Walgreens Boots Alliance Inc	WBA	863.77	44.77	38,671	0.13%	4.27%	0.01%	7.5%	0.01%
Western Digital Corp	WDC	312.92	49.65	15,536				20.5%	
WEC Energy Group Inc	WEC	315.44	99.81	31,484	0.11%	2.92%	0.00%	6.0%	0.01%
Welltower Inc	WELL	447.28	96.14	43,001	0.15%	2.54%	0.00%	3.5%	0.01%
Wells Fargo & Co	WFC	3,801.59	48.46	184,225	0.63%	2.06%	0.01%	5.5%	0.03%
Whirlpool Corp	WHR	58.46	172.78	10,101	0.03%	4.05%	0.00%	9.5%	0.00%
Waste Management Inc	WM	415.16	158.50	65,803	0.22%	1.64%	0.00%	7.5%	0.02%
Williams Cos Inc/The	WMB	1,217.31	33.41	40,670	0.14%	5.09%	0.01%	10.0%	0.01%
Walmart Inc	WMT	2,751.78	148.92	409,795	1.40%	1.50%	0.02%	7.5%	0.10%
W R Berkley Corp	WRB	265.19	66.59	17,659	0.06%	0.52%	0.00%	17.5%	0.01%
Westrock Co	WRK	263.21	47.03	12,379	0.04%	2.13%	0.00%	17.0%	0.01%
West Pharmaceutical Services Inc	WST	74.28	410.71	30,508	0.10%	0.18%	0.00%	17.0%	0.02%
Willis Towers Watson PLC	WTW	117.75	236.22	27,814	0.09%	1.39%	0.00%	11.0%	0.01%
Weyerhaeuser Co	WY	747.08	37.90	28,314		1.90%		22.0%	
Wynn Resorts Ltd	WYNN	115.92	79.74	9,243				27.0%	
Xcel Energy Inc	XEL	544.21	72.17	39,276	0.13%	2.70%	0.00%	6.0%	0.01%
Exxon Mobil Corp	XOM	4,233.59	82.59	349,652		4.26%			
DENTSPLY SIRONA Inc	XRAY	217.55	49.22	10,708	0.04%	1.02%	0.00%	12.0%	0.00%
Xylem Inc/NY	XYL	180.09	85.26	15,355	0.05%	1.41%	0.00%	6.5%	0.00%
Yum! Brands Inc	YUM	288.98	118.53	34,253	0.12%	1.92%	0.00%	10.5%	0.01%
Zimmer Biomet Holdings Inc	ZBH	209.32	127.90	26,772	0.09%	0.75%	0.00%	7.0%	0.01%
Zebra Technologies Corp	ZBRA	53.08	413.70	21,959	0.07%			10.5%	0.01%
Zions Bancorp NA	ZION	151.90	65.56	9,958	0.03%	2.32%	0.00%	7.5%	0.00%
Zoetis Inc	ZTS	471.80	188.59	88,977	0.30%	0.69%	0.00%	11.0%	0.03%

Notes:
[1] Equals sum of Col. [9]
[2] Equals sum of Col. [11]
[3] Equals ([1] x (1 + (0.5 x [2]))) + [2]
[4] Source: Bloomberg Professional as of March 31, 2022
[5] Source: Bloomberg Professional as of March 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, as of March 31, 2022
[9] Equals [7] x [8]
[10] Source: Value Line, as of March 31, 2022
[11] Equals [7] x [10]

Application No. 22-05-____
Exhibit PAC/207
Witness: Ann E. Bulkley

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

PACIFICORP

Exhibit Accompanying Direct Testimony of

Ann E. Bulkley

Risk Premium Approach - National

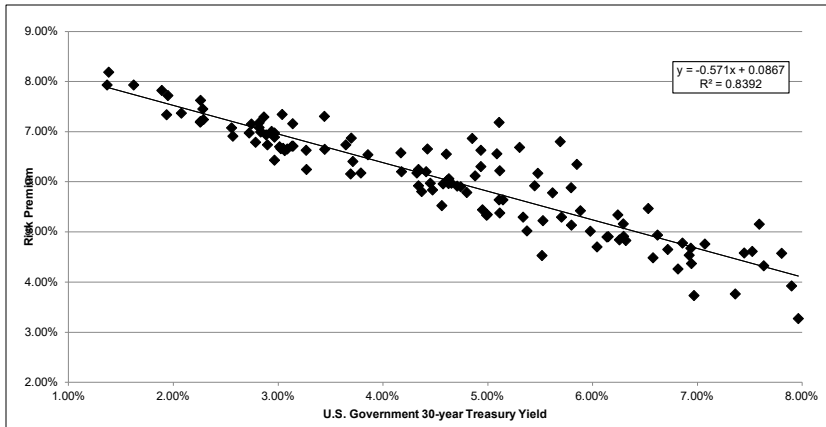
May 2022

BOND YIELD PLUS RISK PREMIUM

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

BOND YIELD PLUS RISK PREMIUM

	[1]	[2]	[3]
Quarter	Average Authorized VI Electric ROE	U.S. Govt. 30- year Treasury	Risk Premium
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%
AVERAGE	10.63%	4.58%	6.05%
MEDIAN	10.59%	4.62%	6.18%



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.916070
R Square	0.839184
Adjusted R Square	0.837833
Standard Error	0.004186
Observations	121

ANOVA					
	df	SS	MS	F	Significance F
Regression	1	0.010882	0.010882	620.976321	0.000000
Residual	119	0.002085	0.000018		
Total	120	0.012967			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.0867	0.00112	77.57	0.000000	0.084453	0.088878	0.084453	0.088878
U.S. Govt. 30-year Treasury	(0.5710)	0.02291	(24.92)	0.000000	(0.616399)	(0.525651)	(0.616399)	(0.525651)

	[7]	[8]	[9]
	U.S. Govt. 30-year Treasury	Risk Premium	ROE
Current 30-day average of 30-year U.S. Treasury bond yield [4]	2.37%	7.31%	9.68%
Blue Chip Near-Term Projected Forecast (Q3 2022 - Q3 2023) [5]	3.12%	6.88%	10.00%
Blue Chip Long-Term Projected Forecast (2023-2027) [6]	3.40%	6.73%	10.13%
AVERAGE			9.94%

Notes:

- [1] Source: Regulatory Research Associates, rate cases through March 31, 2022
- [2] Source: 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] Source: Bloomberg Professional, 30-day average as of March 31, 2022.
- [5] Source: Blue Chip Financial Forecasts, Vol. 41, No. 4, April 1, 2022, at 2
- [6] Source: Blue Chip Financial Forecasts, Vol. 40, No. 12, December 1, 2021, at 14
- [7] See notes [4], [5] & [6]
- [8] Equals 0.086666 + (-0.571025 x Column [7])
- [9] Equals Column [7] + Column [8]

Application No. 22-05-____
Exhibit PAC/208
Witness: Ann E. Bulkley

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

PACIFICORP

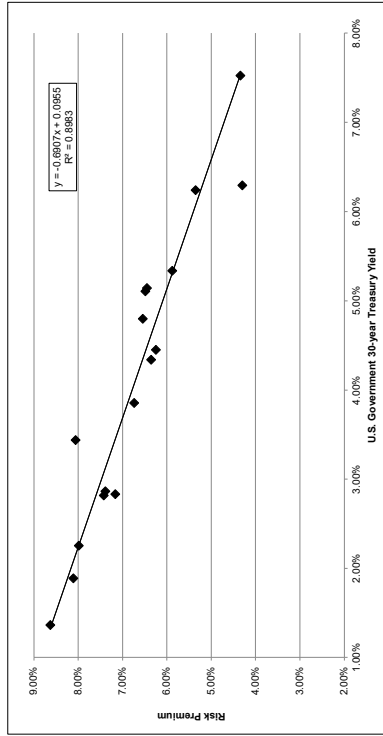
Exhibit Accompanying Direct Testimony of

Ann E. Bulkley

Risk Premium Approach - California

May 2022

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%
AVERAGE	10.83%	4.15%	6.68%
MEDIAN	10.70%	4.34%	6.55%



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.947768
R Square	0.898264
Adjusted R Square	0.891482
Standard Error	0.004089
Observations	17

ANOVA		df	SS	MS	F	Significance F
Regression	1	0.002214	0.002214	132.440776	0.000000	
Residual	15	0.000251	0.000017			
Total	16	0.002465				

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.0955	0.00268	35.61	0.000000	0.089743	0.101171
U.S. Govt. 30-year Treasury	(0.6907)	0.06001	(11.51)	0.000000	(0.562735)	(0.818566)

	[7]	[8]	[9]
U.S. Govt. 30-year Treasury			
Risk Premium			
ROE			
Current 30-day average of 30-year U.S. Treasury bond yield [4]	2.37%	7.91%	10.28%
Blue Chip Near-Term Projected Forecast (Q3 2022 - Q3 2023) [5]	3.12%	7.39%	10.51%
Blue Chip Long-Term Projected Forecast (2023-2027) [6]	3.40%	7.20%	10.60%
AVERAGE			10.46%

Notes:

- [1] Source: Regulatory Research Associates, rate cases through March 31, 2022
- [2] Source: 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] Source: Bloomberg Professional, 30-day average as of March 31, 2022.
- [5] Source: Blue Chip Financial Forecasts, Vol. 41, No. 4, April 1, 2022, at 2
- [6] Source: Blue Chip Financial Forecasts, Vol. 40, No. 12, December 1, 2021, at 14
- [7] See notes [4], [5] & [6]
- [8] Equals 0.095457 + (-0.69050 x Column [7])
- [9] Equals Column [7] + Column [8]

Application No. 22-05-____
Exhibit PAC/209
Witness: Ann E. Bulkley

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

PACIFICORP

Exhibit Accompanying Direct Testimony of

Ann E. Bulkley

Capital Expenditures Analysis

May 2022

2022-2026 CAPITAL EXPENDITURES AS A PERCENT OF 2020 NET PLANT
(*\$ Millions*)

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	
		2020	2022	2023	2024	2025	2026	2022-2026 Cap. Ex. / Net Plant	
ALLETE, Inc.	ALE								
	Capital Spending per Share		\$3.60	\$6.25	\$6.88	\$7.50	\$7.50		
	Common Shares Outstanding		54.00	55.00	56.50	58.00	58.00		
	Capital Expenditures		\$194.4	\$343.8	\$388.4	\$435.0	\$435.0	37.11%	1
	Net Plant	\$4,841							
Alliant Energy Corporation	LNT								
	Capital Spending per Share		\$5.90	\$5.90	\$6.08	\$6.25	\$6.25		
	Common Shares Outstanding		251.00	251.50	252.25	253.00	253.00		
	Capital Expenditures		\$1,480.9	\$1,483.9	\$1,532.4	\$1,581.3	\$1,581.3	53.43%	10
	Net Plant	\$14,336							
Ameren Corporation	AEE								
	Capital Spending per Share		\$12.90	\$12.55	\$12.78	\$13.00	\$13.00		
	Common Shares Outstanding		262.50	267.00	\$273.50	280.00	280.00		
	Capital Expenditures		\$3,386.3	\$3,350.9	\$3,494.0	\$3,640.0	\$3,640.0	65.32%	16
	Net Plant	\$26,807							
American Electric Power Company, Inc.	AEP								
	Capital Spending per Share		\$15.35	\$14.15	\$14.08	\$14.00	\$14.00		
	Common Shares Outstanding		514.00	523.00	\$534.00	545.00	545.00		
	Capital Expenditures		\$7,889.9	\$7,400.5	\$7,516.1	\$7,630.0	\$7,630.0	59.57%	14
	Net Plant	\$63,902							
Avista Corporation	AVA								
	Capital Spending per Share		\$6.50	\$6.25	\$6.00	\$6.00	\$6.00		
	Common Shares Outstanding		73.50	76.50	79.50	79.50	79.50		
	Capital Expenditures		\$477.8	\$478.1	\$477.0	\$477.0	\$477.0	47.82%	5
	Net Plant	\$4,992							
CMS Energy Corporation	CMS								
	Capital Spending per Share		\$8.95	\$10.00	\$9.88	\$9.75	\$9.75		
	Common Shares Outstanding		289.80	289.80	294.90	300.00	300.00		
	Capital Expenditures		\$2,593.7	\$2,898.0	\$2,912.1	\$2,925.0	\$2,925.0	67.75%	17
	Net Plant	\$21,039							
Duke Energy Corporation	DUK								
	Capital Spending per Share		\$16.60	\$15.70	\$15.60	\$15.50	\$15.50		
	Common Shares Outstanding		770.00	770.00	770.00	770.00	770.00		
	Capital Expenditures		\$12,782.0	\$12,089.0	\$12,012.0	\$11,935.0	\$11,935.0	56.89%	13
	Net Plant	\$106,782							
Entergy Corporation	ETR								
	Capital Spending per Share		\$18.15	\$19.00	\$19.38	\$19.75	\$19.75		
	Common Shares Outstanding		\$206.00	209.00	211.50	214.00	214.00		
	Capital Expenditures		\$3,738.9	\$3,971.0	\$4,097.8	\$4,226.5	\$4,226.5	52.15%	8
	Net Plant	\$38,853							
Energy, Inc.	EVRG								
	Capital Spending per Share		\$8.60	\$9.20	\$9.35	\$9.50	\$9.50		
	Common Shares Outstanding		\$230.00	230.00	230.00	230.00	230.00		
	Capital Expenditures		\$1,978.0	\$2,116.0	\$2,150.5	\$2,185.0	\$2,185.0	52.79%	9
	Net Plant	\$20,106							
IDACORP, Inc.	IDA								
	Capital Spending per Share		\$7.70	\$8.85	\$10.00	\$10.00	\$10.00		
	Common Shares Outstanding		50.45	50.45	50.45	50.45	50.45		
	Capital Expenditures		\$388.5	\$446.5	\$504.5	\$504.5	\$504.5	49.87%	6
	Net Plant	\$4,710							
NextEra Energy, Inc.	NEE								
	Capital Spending per Share		\$8.10	\$8.40	\$9.20	\$10.00	\$10.00		
	Common Shares Outstanding		1,980	2,025	2,025	2,025.00	2,025.00		
	Capital Expenditures		\$16,038.0	\$17,010.0	\$18,630.0	\$20,250.0	\$20,250.0	100.41%	18
	Net Plant	\$91,803							

2022-2026 CAPITAL EXPENDITURES AS A PERCENT OF 2020 NET PLANT
(\$ Millions)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	
	2020	2022	2023	2024	2025	2026	2022-2026 Cap. Ex. / Net Plant	
NorthWestern Corporation								
NWE								
Capital Spending per Share		\$9.70	\$8.23	\$6.75	\$6.75	\$6.75		
Common Shares Outstanding		60.00	61.00	62.00	62.00	62.00		
Capital Expenditures		\$582.0	\$501.7	\$418.5	\$418.5	\$418.5	47.23%	4
Net Plant	\$4,953							
OGE Energy Corp.								
OGE								
Capital Spending per Share		\$4.75	\$4.75	\$4.75	\$4.75	\$4.75		
Common Shares Outstanding		200.10	200.10	200.10	200.10	200.10		
Capital Expenditures		\$950.5	\$950.5	\$950.5	\$950.5	\$950.5	50.69%	7
Net Plant	\$9,375							
Otter Tail Corporation								
OTTR								
Capital Spending per Share		\$4.35	\$4.75	\$5.50	\$6.25	\$6.25		
Common Shares Outstanding		\$41.70	41.80	41.90	42.00	42.00		
Capital Expenditures		\$181.4	\$198.6	\$230.5	\$262.5	\$262.5	55.40%	12
Net Plant	\$2,049							
Portland General Electric Company								
POR								
Capital Spending per Share		\$7.45	\$6.85	\$6.25	\$6.25	\$6.25		
Common Shares Outstanding		89.80	89.90	90.00	90.00	90.00		
Capital Expenditures		\$669.0	\$615.8	\$562.5	\$562.5	\$562.5	39.43%	3
Net Plant	\$7,539							
Southern Company								
SO								
Capital Spending per Share		\$6.55	\$6.55	\$6.40	\$6.25	\$6.25		
Common Shares Outstanding		1,070	1,070	1,070	1,070	1,070		
Capital Expenditures		\$7,008.5	\$7,008.5	\$6,848.0	\$6,687.5	\$6,687.5	39.07%	2
Net Plant	\$87,634							
Xcel Energy Inc.								
XEL								
Capital Spending per Share		\$9.70	\$9.85	\$10.00	\$10.00	\$10.00		
Common Shares Outstanding		544	549	553	553	553		
Capital Expenditures		\$5,276.8	\$5,402.7	\$5,530.0	\$5,530.0	\$5,530.0	63.49%	15
Net Plant	\$42,950							
PacifiCorp								
PacifiCorp								
Capital Expenditures [8]		\$2,000.70	\$3,317.40	\$2,501.20	\$2,025.00	\$2,196.00		
Net Plant [9]	\$22,430						53.68%	11

Notes:

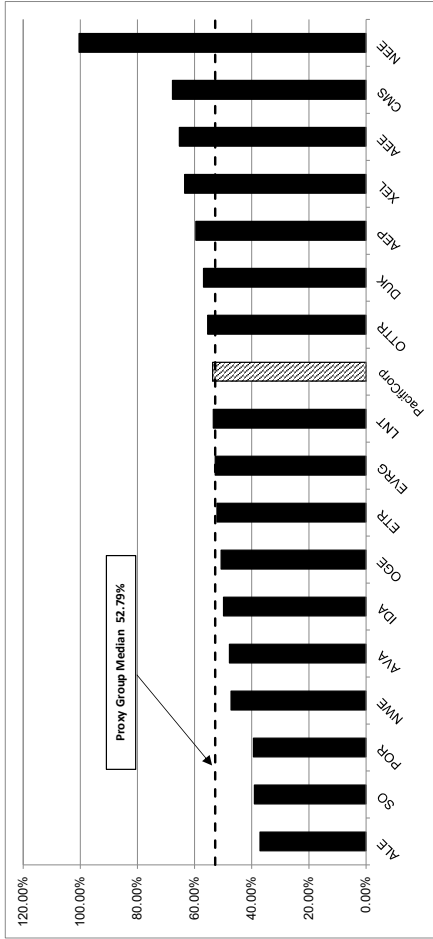
[1] - [6] Value Line (Jan. 21, 2022 for AVA, IDA, NEW, POR, XEL; Feb. 11, 2022 for DUJ, NEE, SO; Mar. 11, 2022 for ALE, LNT, AEE, AEP, CMS, ETR, EVRG, OGE, OTTR)

[7] Equals (Column [2] + [3] + [4] + [5] + [6]) / Column [1]

[8] Source: Company Provided Data

[9] Source: Company Provided Data

2022-2026 CAPITAL EXPENDITURES AS A PERCENT OF 2020 NET PLANT



Projected CAPEX / Net Plant

Rank	Company	2022-2026
1	ALLETE, Inc.	37.11%
2	Southern Company	39.07%
3	Portland General Electric Company	39.43%
4	North Western Corporation	47.23%
5	Avista Corporation	47.82%
6	IDACORP, Inc.	49.87%
7	OGE Energy Corp.	50.69%
8	Entergy Corporation	52.15%
9	Evergy, Inc.	52.79%
10	Alliant Energy Corporation	53.43%
11	PacifiCorp	53.68%
12	Otter Tail Corporation	55.40%
13	Duke Energy Corporation	56.89%
14	American Electric Power Company, Inc.	59.57%
15	Xcel Energy Inc.	63.49%
16	Ameren Corporation	65.32%
17	CMS Energy Corporation	67.75%
18	NextEra Energy, Inc.	100.41%
	Proxy Group Median	52.79%
	PacifiCorp/Proxy Group	1.02

Notes:

Source: Exhibit PAC/309, pages 1-2 col. [7]

X-Axis	Median
0	52.79%
10	52.79%

Application No. 22-05-____
Exhibit PAC/210
Witness: Ann E. Bulkley

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

PACIFICORP

Exhibit Accompanying Direct Testimony of

Ann E. Bulkley
Regulatory Risk Analysis

May 2022

COMPARISON OF PACIFICORP AND PROXY GROUP COMPANIES
RISK ASSESSMENT

Proxy Group Company	Operating Subsidiary	Jurisdiction	Service	Fuel Cost Recovery Mechanism	Test Year	Rate Base	[4] Revenue Decoupling		[5] Non-Volumetric Rate Design		Capital Cost Recovery
							Formula-based rates	Straight Fixed-Variable Rate Design	Formula-based rates	Straight Fixed-Variable Rate Design	
ALLETE, Inc. Alliant Energy Corporation	ALLETE (Minnesota Power)	Minnesota	Electric	Yes	Fully Forecast	Average	No	No	No	No	Yes
	Interstate Power & Light Co.	Iowa	Electric	Yes	Historical	Average	No	No	No	No	No
Ameren Corporation	Wisconsin Power & Light Co.	Wisconsin	Electric	Yes	Fully Forecast	Average	No	No	No	No	No
	Ameren Illinois Co.	Illinois	Gas	N/A	Historical	Year End	No	No	No	No	No
	Ameren Missouri Co.	Missouri	Gas	Yes	Fully Forecast	Average	Partial	Yes	No	Yes	Yes
	Union Electric Co.	Illinois	Electric	Yes - Sharing Band	Historical	Year End	Partial	No	No	Yes	Yes
	Southwestern Electric Power Co.	Missouri	Gas	Yes	Historical	Year End	Partial	No	No	Yes	Yes
American Electric Power Company, Inc.	Indiana Michigan Power Co.	Indiana	Electric	Yes	Historical	Year End	Partial	No	No	Yes	Yes
	Kentucky Power Co.	Kentucky	Electric	Yes	Fully Forecast	Year End	Partial	No	No	Yes	Yes
	Southwestern Electric Power Co.	Louisiana	Electric	Yes	Fully Forecast	Year End	Partial	No	No	Yes	Yes
	Indiana Michigan Power Co.	Michigan	Electric	Yes	Historical	Year End	Partial	No	No	Yes	Yes
	Ohio Power Co.	Ohio	Electric	N/A	Historical	Year End	Partial	No	No	Yes	Yes
	Public Service Co. of Oklahoma	Oklahoma	Electric	Yes	Partially Forecast	Average	No	No	No	Yes	No
	AEP Texas	Texas	Electric	Yes	Historical	Year End	Partial	No	No	Yes	Yes
	Southwestern Electric Power Co.	Texas	Electric	N/A	Historical	Year End	No	No	No	No	No
	Appalachian Power Co./Wheeling Power Co.	West Virginia	Electric	Yes	Historical	Year End	No	No	No	No	Yes
	Appalachian Electric Light and Power Co.	Alaska	Electric	Yes	Historical	Average	No	No	No	No	No
Avista Corporation	Avista Corp.	Alaska	Electric	Yes - Sharing Band	Historical	Year End	Full	No	No	Yes	No
	Avista Corp.	Idaho	Gas	Yes	Historical	Year End	Full	No	No	Yes	No
	Avista Corp.	Oregon	Gas	Yes - Sharing Band	Fully Forecast	Year End	Full	No	No	Yes	No
	Avista Corp.	Washington	Electric	Yes - Sharing Band	Historical	Average	Partial	No	No	Yes	No
	Avista Corp.	Washington	Gas	Yes	Historical	Average	Partial	No	No	Yes	No
	Consumers Energy Co.	Michigan	Electric	Yes	Fully Forecast	Average	Partial	No	No	Yes	No
	Duke Energy Florida, LLC	Florida	Gas	Yes	Fully Forecast	Average	Partial	No	No	No	Yes
	Duke Energy Indiana, LLC	Indiana	Electric	Yes	Fully Forecast	Year End	Partial	No	No	No	Yes
	Duke Energy Kentucky, Inc.	Kentucky	Electric	Yes	Historical	Year End	Partial	No	No	No	Yes
	Duke Energy Kentucky, Inc.	Kentucky	Gas	Yes	Fully Forecast	Average	Partial	No	No	No	No
Duke Energy Corporation	Duke Energy Carolinas, LLC/Duke Energy Progress, LLC	North Carolina	Electric	Yes	Historical	Year End	No	No	No	No	No
	Piedmont Natural Gas Co. Inc.	North Carolina	Gas	Yes	Historical	Year End	Full	No	No	Yes	Yes

[8]

[7]

[6]

[5]

[4]

[3]

[2]

[1]

Application No. 22-05-____
Exhibit PAC/211
Witness: Ann E. Bulkley

BEFORE THE PUBLIC UTILITIES COMMISSION
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PACIFICORP

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Ann E. Bulkley

Capital Structure Analysis

May 2022

CAPITAL STRUCTURE ANALYSIS

Proxy Group Company	Ticker	Most Recent 8 Quarters (2019Q4 - 2021Q3)			
		Common Equity Ratio	Preferred Equity Ratio	Long-Term Debt Ratio	Total Capitalization
ALLETE, Inc.	ALE	56.86%	43.14%	0.00%	100.00%
Alliant Energy Corporation	LNT	51.58%	46.75%	1.67%	100.00%
Ameren Corporation	AEE	52.60%	46.65%	0.76%	100.00%
American Electric Power Company, Inc.	AEP	48.27%	51.73%	0.00%	100.00%
Avista Corporation	AVA	51.08%	48.92%	0.00%	100.00%
CMS Energy Corporation	CMS	51.22%	48.56%	0.22%	100.00%
Duke Energy Corporation	DUK	52.81%	47.19%	0.00%	100.00%
Entergy Corporation	ETR	46.85%	53.04%	0.11%	100.00%
Eergy, Inc.	EVRG	59.61%	40.39%	0.00%	100.00%
IDACORP, Inc.	IDA	53.86%	45.86%	0.28%	100.00%
NextEra Energy, Inc.	NEE	61.11%	38.89%	0.00%	100.00%
NorthWestern Corporation	NWE	47.43%	52.57%	0.00%	100.00%
OGE Energy Corporation	OGE	53.98%	46.02%	0.00%	100.00%
Otter Tail Corporation	OTTR	53.13%	46.87%	0.00%	100.00%
Portland General Electric Company	POR	47.81%	52.19%	0.00%	100.00%
Southern Company	SO	54.23%	45.19%	0.58%	100.00%
Xcel Energy Inc.	XEL	54.04%	45.96%	0.00%	100.00%
	Median	52.81%	46.75%	0.00%	
	Maximum	61.11%	53.04%	1.67%	
	Minimum	46.85%	38.89%	0.00%	
	Average	52.73%	47.05%	0.21%	

Notes:

- [1] Ratios are weighted by actual common capital, preferred capital, and long-term debt of the operating subsidiaries
[2] Electric operating subsidiaries with data listed as N/A from S&P Capital IQ Pro have been excluded from the analysis.