

Exhibit No. __T (DCP-1T)
Docket UE-152253
Witness: David C. Parcell

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

**WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION,**

Complainant,

v.

**PACIFIC POWER & LIGHT
COMPANY,**

Respondent.

DOCKET UE-152253

TESTIMONY OF

DAVID C. PARCELL

**ON BEHALF OF THE STAFF OF WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION**

Cost of Capital

March 17, 2016

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	RECOMMENDATIONS AND SUMMARY	3
III.	ECONOMIC/LEGAL PRINCIPLES AND METHODOLOGIES.....	5
IV.	GENERAL ECONOMIC CONDITIONS	8
V.	PACIFICORP'S OPERATIONS AND BUSINESS RISKS	15
VI.	CAPITAL STRUCTURE, COST OF DEBT AND PREFERRED STOCK.....	17
VII.	SELECTION OF PROXY GROUP.....	22
VIII.	DISCOUNTED CASH FLOW ("DCF") ANALYSIS	22
IX.	CAPITAL ASSET PRICING MODEL ("CAPM") ANALYSIS.....	26
X.	COMPARABLE EARNINGS ("CE") ANALYSIS.....	30
XI.	RETURN ON EQUITY RECOMMENDATIONS	34
XII.	TOTAL COST OF CAPITAL	35

LIST OF EXHIBITS

Exhibit No. DCP-2	Background and Experience Profile
Exhibit No. DCP-3	PacifiCorp Total Cost of Capital
Exhibit No. DCP-4	Economic Indicators
Exhibit No. DCP-5	PacifiCorp History of Credit Rating
Exhibit No. DCP-6	PacifiCorp Capital Structure Ratios
Exhibit No. DCP-7	AUS Utility Reports Electric Utility Groups Average Common Equity Ratios
Exhibit No. DCP-8	Proxy Companies Basis for Selection
Exhibit No. DCP-9	Proxy Companies DCF Cost Rates
Exhibit No. DCP-10	Standard & Poor's 500 Composite Return on Average Common Equity
Exhibit No. DCP-11	Proxy Companies CAPM Cost Rates
Exhibit No. DCP-12	Proxy Companies Rates of Return on Average Common Equity
Exhibit No. DCP-13	Standard & Poor's 500 Composite Returns and Market-to-Book Ratios
Exhibit No. DCP-14	Risk Indicators

I. INTRODUCTION

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Q. Please state your name, occupation, and business address.

A. My name is David C. Parcell. I am President and Senior Economist of Technical Associates, Inc. My business address is Suite 130, 1503 Santa Rosa Rd., Richmond, Virginia 23229.

Q. Please summarize your educational background and professional experience.

A. I hold B.A. (1969) and M.A. (1970) degrees in economics from Virginia Polytechnic Institute and State University (Virginia Tech) and a M.B.A. (1985) from Virginia Commonwealth University. I have been a consulting economist with Technical Associates since 1970. I have provided cost of capital testimony in public utility ratemaking proceedings dating back to 1972. In this regard, I have previously filed testimony and/or testified in over 525 utility proceedings before about 50 regulatory agencies in the United States and Canada. I have previously filed testimony on behalf of the Staff of the Washington Utilities and Transportation Commission (Commission) in proceedings involving Puget Sound Energy and Avista Corp. as well as Pacific Power & Light Company. Exhibit No. DCP-2 provides a more complete description of my education and relevant work experience.

Q. What is the purpose of your testimony in this proceeding?

A. I have been retained by the Commission Staff to evaluate the cost of capital (“COC”) aspects of the current rate case of Pacific Power & Light Company (“Pacific Power”), a

1 division of PacifiCorp (“PacifiCorp” or “Company”). I have performed independent
2 studies and I am making recommendations of the current COC for PacifiCorp. In
3 addition, since PacifiCorp is owned by Berkshire Hathaway Energy (“BHE”), I have also
4 evaluated this entity in my analyses.

5
6 **Q. How is your testimony organized?**

7 A. PacifiCorp’s application “does not propose to change any element in its cost of capital.”¹
8 As a result, the Company is proposing to use the same COC, including capital structure
9 percentages and cost rates that were adopted by the Commission in PacifiCorp’s last rate
10 proceeding.² PacifiCorp’s COC request is being made in conjunction with its requests for
11 the implementation of a decoupling mechanism and a two-year rate plan.³

12
13 **Q. Have you prepared an exhibit in support of your testimony?**

14 A. Yes, In addition to Exhibit No. DCP-2, identified above, I have prepared Exhibit Nos.
15 DCP-3 through DCP-14. These exhibits were prepared either by me or under my
16 direction. The information contained in these exhibits is correct to the best of my
17 knowledge and belief

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19
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¹ Exh. No. RBW-1T 2:13-14.

² *Wash. Utils. & Transp. Comm’n v. Pacific Power & Light Co.*, Docket UE-140762, Order 08, 10, ¶ 16 (March 25, 2015) (Pacific Power 2016 GRC Order).

³ Exh. No. RBD-1T 2–3.

II. RECOMMENDATIONS AND SUMMARY

Q. What is your recommendation in this proceeding?

A. My overall COC recommendation for PacifiCorp is shown on Exhibit No. DCP-3 and is summarized as follows:

Item	Percent	Cost	Weighted Cost		
Short-Term Debt	0.19%	2.15%		0.00%	
Long-Term Debt	50.69%	5.21%		2.64%	
Preferred Stock	0.02%	6.75%		0.00%	
Common Equity	49.10%	9.0% 9.25% 9.50%	4.42%	4.54%	4.66%
Total	100.0%		7.07%		7.31%
				7.19%	

PacifiCorp’s application requests a COC of 7.30 percent and a cost of equity (“ROE”) of 9.50 percent. These match the respective COC and ROE authorized by the Commission in the Company’s last rate proceeding.

Q. Please summarize your analyses and conclusions.

A. This proceeding is concerned with PacifiCorp regulated electric utility operations in Washington. My analyses concern the Company’s COC. The first step in performing these analyses is to develop the appropriate capital structure. As noted above, PacifiCorp proposes use of the same capital structure adopted by the Commission in the previous rate proceeding, which is consistent with the capital structure I proposed in that proceeding. I also use this capital structure, which I continue to believe is the proper capital structure for the Company.

1 The second step in a cost of capital calculation is to determine the embedded cost
2 rates of debt and preferred stock. As noted, PacifiCorp proposes to use the same rates as
3 those adopted by the Commission in the prior proceeding. In contrast, I propose use of
4 PacifiCorp's test year cost rates for long-term debt, short-term debt and common equity.

5 The third step in the COC calculation is to estimate the ROE. I employ three
6 recognized methodologies to estimate PacifiCorp's ROE, each of which I apply to two
7 proxy groups of electric utilities. These three methodologies and my findings are:

<u>Methodology</u>	<u>Range</u>
Discounted Cash Flow ("DCF")	8.5%-9.5% (9.00% mid-point)
Capital Asset Pricing Model ("CAPM")	6.7
Comparable Earnings ("CE")	9.0%-10.0% (9.50% mid-point)

8
9
10 Based upon these finding, I conclude that PacifiCorp's ROE is within a range of 9.0
11 percent to 9.5 percent, which is based upon the mid-point of the range of the results for
12 the DCF and CE models.⁴ PacifiCorp's COC witness Strunk endorses the Company's
13 proposed ROE of 9.50 percent, although he maintains that he would be recommending a
14 10.00 percent ROE if the Company were not requesting the same COC as adopted by the
15 Commission in the last proceeding.

16 Combining these three steps into the weighted COC results in an overall rate of
17 return of 7.07 percent to 7.31 percent (which incorporates a 9.0 percent to 9.50 percent
18 ROE). My specific COC recommendation is the mid-point of this range, or 7.19 percent
19 (9.25 percent ROE).

20

⁴ As I indicate in a later section, my ROE recommendation does not directly incorporate the CAPM results, which I believe to be somewhat low at this time, relative to the DCF and CE results.

1 **III. ECONOMIC/LEGAL PRINCIPLES AND METHODOLOGIES**

2
3 **Q. What are the primary economic and legal principles that establish the standards for**
4 **determining a fair rate of return for a regulated utility?**

5 A. Public utility rates are normally established in a manner designed to allow the recovery of
6 their costs, including capital costs. This is frequently referred to as “cost of service”
7 ratemaking. Rates for regulated public utilities traditionally have been primarily
8 established using the “rate base – rate of return” concept. Under this method, utilities are
9 allowed to recover a level of operating expenses, taxes, and depreciation deemed
10 reasonable for rate-setting purposes, and are granted an opportunity to earn a fair rate of
11 return on the assets utilized (i.e., rate base) in providing service to their customers.

12 The rate base is derived from the asset side of the utility’s balance sheet as a
13 dollar amount and the rate of return is developed from the liabilities/owners’ equity side
14 of the balance sheet as a percentage. Thus, the revenue impact of the cost of capital is
15 derived by multiplying the rate base by the rate of return, including income taxes.

16 The rate of return is developed from the cost of capital, which is estimated by
17 weighting the capital structure components (i.e., debt, preferred stock, and common
18 equity) by their percentages in the capital structure and multiplying these values by their
19 cost rates. This is also known as the weighted cost of capital.

20 Technically, “fair rate of return” is a legal and accounting concept that refers to an
21 ex post (after the fact) earned return on an asset base, while the cost of capital is an
22 economic and financial concept which refers to an ex ante (before the fact) expected, or

1 required, return on a capital base. In regulatory proceedings, however, the two terms are
2 often used interchangeably, and I have equated the two concepts in my testimony.

3 From an economic standpoint, a fair rate of return is normally interpreted to mean
4 that an efficient and economically managed utility will be able to maintain its financial
5 integrity, attract capital, and establish comparable returns for similar risk investments.
6 These concepts are derived from economic and financial theory and are generally
7 implemented using financial models and economic concepts.

8 Although I am not a lawyer and I do not offer a legal opinion, my testimony is
9 based on my understanding that two United States Supreme Court decisions provide the
10 controlling standards for a fair rate of return. The first decision is *Bluefield Water Works*
11 *and Improvement Co. v. Public Serv. Comm'n of West Virginia*, 262 U.S. 679 (1923). In
12 this decision, the Court stated:

13 The annual rate that will constitute just compensation depends upon many
14 circumstances and must be determined by the exercise of fair and
15 enlightened judgment, having regard to all relevant facts. A public utility
16 is entitled to such rates as will permit it to earn a return on the value of the
17 property which it employs for the convenience of the public equal to that
18 generally being made at the same time and in the same general part of the
19 country on investments in other business undertakings which are attended
20 by corresponding risks and uncertainties; but it has no constitutional right
21 to profits such as are realized or anticipated in highly profitable enterprises
22 or speculative ventures. The return should be reasonably sufficient to
23 assure confidence in the financial soundness of the utility, and should be
24 adequate, under efficient and economical management, to maintain and
25 support its credit and enable it to raise the money necessary for the proper
26 discharge of its public duties. A rate of return may be reasonable at one
27 time, and become too high or too low by changes affecting opportunities
28 for investment, the money market, and business conditions generally.
29
30

31 It is generally understood that the *Bluefield* decision established the following
32 standards for a fair rate of return: comparable earnings, financial integrity, and capital

1 attraction. It also noted that required returns change over time, and there is an underlying
2 assumption that the utility be operated efficiently.

3 The second decision is *Federal Power Comm'n v. Hope Natural Gas Co.*, 320
4 U.S. 591 (1942). In that decision, the Court stated:

5 The rate-making process under the [Natural Gas] Act, i.e., the fixing of
6 'just and reasonable' rates, involves a balancing of the investor and
7 consumer interests. . . . From the investor or company point of view it is
8 important that there be enough revenue not only for operating expenses
9 but also for the capital costs of the business. These include service on the
10 debt and dividends on the stock. By this standard the return to the equity
11 owner should be commensurate with returns on investments in other
12 enterprises having corresponding risks. That return, moreover, should be
13 sufficient to assure confidence in the financial integrity of the enterprise,
14 so as to maintain its credit and to attract capital.
15

16 The three economic and financial parameters in the *Bluefield* and *Hope* decisions
17 – comparable earnings, financial integrity, and capital attraction – reflect the economic
18 criteria encompassed in the “opportunity cost” principle of economics. The opportunity
19 cost principle provides that a utility and its investors should be afforded an opportunity
20 (not a guarantee) to earn a return commensurate with returns they could expect to achieve
21 on investments of similar risk. The opportunity cost principle is consistent with the
22 fundamental premise on which regulation rests, namely, that it is intended to act as a
23 surrogate for competition.
24

25 **Q. How can the *Bluefield* and *Hope* parameters be employed to estimate the cost of**
26 **capital for a utility?**

27 **A.** Neither the courts nor economic/financial theory has developed exact and mechanical
28 procedures for precisely determining the cost of capital. This is the case because the cost
29 of capital is an opportunity cost and is prospective-looking, which dictates that it must be

1 estimated. However, there are several useful models that can be employed to assist in
2 estimating the ROE, which is the capital structure item that is the most difficult to
3 determine. These include the DCF, CAPM, CE and risk premium (“RP”) methods. I
4 have not directly employed a RP model in my analyses although, as discussed later, my
5 CAPM analysis is a form of the RP methodology. Each of these methodologies will be
6 described in more detail later in my testimony.

7
8 **IV. GENERAL ECONOMIC CONDITIONS**

9
10 **Q. Are economic and financial conditions important in determining the costs of capital**
11 **for a public utility?**

12 A. Yes. The costs of capital, for both fixed-cost (debt and preferred stock) components and
13 common equity, are determined in part by current and prospective economic and
14 financial conditions. At any given time, each of the following factors has an influence on
15 the costs of capital:

- 16
- The level of economic activity (i.e., growth rate of the economy);
 - 17 • The stage of the business cycle (i.e., recession, expansion, or transition);
 - 18 • The level of inflation;
 - 19 • The level and trend of interest rates; and,
 - 20 • Current and expected economic conditions.

21 My understanding is that this position is consistent with the *Bluefield* decision that
22 noted “[a] rate of return may be reasonable at one time and become too high or too low

1 by changes affecting opportunities for investment, the money market, and business
2 conditions generally.” *Bluefield*, 262 U.S. at 693.

3 **Q. What indicators of economic and financial activity did you evaluate in your**
4 **analyses?**

5 A. I examined several sets of economic statistics from 1975 to the present. I chose this time
6 period because it permits the evaluation of economic conditions over four full business
7 cycles, allowing for an assessment of changes in long-term trends. Consideration of
8 economic/financial conditions over a relatively long period of time allows me to assess
9 how such conditions have had impacts on the level and trends of the costs of capital.
10 This period also approximates the beginning and continuation of active rate case
11 activities by public utilities, which generally began in the mid-1970s.

12 A business cycle is commonly defined as a complete period of expansion
13 (recovery and growth) and contraction (recession). A full business cycle is a useful and
14 convenient period over which to measure levels and trends in long-term capital costs
15 because it incorporates the cyclical (i.e., stage of business cycle) influences and, thus,
16 permits a comparison of structural (or long-term) trends.

17
18 **Q. Please describe the timeframes of the four prior business cycles and the current**
19 **cycle.**

20 A. The four prior complete cycles and current cycle cover the following periods:
21
22
23

<u>Business Cycle</u>	<u>Expansion Cycle</u>	<u>Contraction Period</u>
1975-1982	Mar. 1975-July 1981	Aug. 1981-Oct. 1982
1982-1991	Nov. 1982-July 1990	Aug. 1990-Mar. 1991
1991-2001	Mar. 1991-Mar. 2001	Apr. 2001-Nov. 2001
2001-2009	Nov. 2001-Nov. 2007	Dec. 2007-June 2009
Current	July 2009-	

Source: National Bureau of Economic Research, "Business Cycle Expansions and Contractions."⁵

1

2 **Q. Do you have any general observations concerning the recent trends in economic**
3 **conditions and their impact on capital costs over this broad period?**

4 A. Yes, I do. From the early 1980s until the end of 2007, the United States economy had
5 enjoyed general prosperity and stability. This period had been characterized by longer
6 economic expansions, relatively tame contractions, low and declining inflation, and
7 declining interest rates and other capital costs.

8 However, in 2008 and 2009, the economy declined significantly, initially as a
9 result of the 2007 collapse of the "sub-prime" mortgage market and the related liquidity
10 crisis in the financial sector of the economy. Subsequently, this financial crisis
11 intensified with a more broad-based decline, initially based on a substantial increase in
12 petroleum prices and a dramatic decline in the U.S. financial sector, culminating with the
13 collapse and/or bailouts of a significant number of well-known institutions such as Bear
14 Stearns, Lehman Brothers, Merrill Lynch, Freddie Mac, Fannie Mae, AIG and Wachovia.
15 The recession also witnessed the demise of national companies such as Circuit City and
16 the bankruptcies of automotive manufacturers such as Chrysler and General Motors.

17 This decline has been described as the worst financial crisis since the Great
18 Depression and has been referred to as the "Great Recession." Beginning in 2008, the

⁵ <http://www.nber.org/cycles/cyclesmain.html>.

1 U.S. and other governments implemented unprecedented actions to attempt to correct or
2 minimize the scope and effects of this recession.

3 The recession reached its low point in mid-2009, when the economy began to
4 expand again, although at a slow and uneven rate. However, the length and severity of
5 the recession, as well as a relatively slow and uneven recovery, indicate that the impacts
6 of the recession have been and will be felt for an extended period of time.

7
8 **Q. Please describe recent and current economic and financial conditions and their
9 impact on the cost of capital.**

10 A. One impact of the Great Recession has been a reduction in actual and expected
11 investment returns and a corresponding reduction in the costs of capital. This decline is
12 evidenced by a decline in both short-term and long-term interest rates and the
13 expectations of investors and is reflected in ROE model results (such as DCF, CAPM and
14 CE). Regulatory agencies throughout the United States have recognized the decline in
15 capital costs by authorizing lower ROEs for regulated utilities.

16 Exhibit No. DCP-4 shows several sets of relevant economic and financial
17 statistics for the cited time periods. Pages 1 and 2 contain general macroeconomic
18 statistics; pages 3 and 4 show interest rates; and pages 5 and 6 contain equity market
19 statistics.

20 Pages 1 and 2 show that in 2007 the economy subsequently entered a significant
21 decline, as indicated by the growth in real (i.e., adjusted for inflation) Gross Domestic
22 Product ("GDP"), industrial production, and an increase in the unemployment rate. This
23 recession lasted until mid-2009, making it a longer-than-normal recession, as well as a

1 much deeper recession. Since then, economic growth has been somewhat erratic and the
2 economy has grown slower than the prior expansions.

3 Pages 1 and 2 also show the rate of inflation. As reflected in the Consumer Price
4 Index (“CPI”), for example, inflation rose significantly during the 1975-1982 business
5 cycle and reached double-digit levels in 1979-1980. The rate of inflation has declined
6 substantially since 1981. Since 2008, the CPI has been 3 percent or lower, with 2013
7 being only 1.5 percent and both 2014 and 2015 being below 1 percent. It is thus apparent
8 that the rate of inflation has generally been declining over the past several business
9 cycles. Recent and current levels of inflation are at the lowest levels of the past 35 years,
10 which is reflective of lower capital costs.⁶

11
12 **Q. What have been the trends in interest rates over the four prior business cycles and**
13 **at the current time?**

14 A. Pages 3 and 4 show several series of interest rates. Both short-term and long-term rates
15 rose sharply to record levels in 1975-1981 when the inflation rate was high. Interest rates
16 declined substantially in conjunction with inflation since the early 1980’s.

17 From 2008 to late 2015, the Federal Reserve System (“Federal Reserve”)
18 maintained the Federal Funds rate (i.e., short-term interest rate) at 0.25 percent, an all-
19 time low. The Federal Reserve recently raised it slightly to 0.50 percent. The Federal
20 Reserve also purchased U.S. Treasury securities to stimulate the economy.⁷ As seen on

⁶ The rate of inflation is one component of interest rate expectations of investors, who generally expect to receive a return in excess of the rate of inflation. Thus, a lower rate of inflation has a downward impact on interest rates and other capital costs.

⁷ This is referred to as Quantitative Easing which was comprised of three “rounds.” In “round” 3, known as QE3, the Federal Reserve initially purchased some \$85 billion of U.S. Treasury Securities per month in order to stimulate the economy. The Federal Reserve eventually “tapered” its purchase of U.S. Treasury securities through October 2014, at which time Quantitative Easing ended.

1 page 4, in 2012, both U.S. and corporate bond yields declined to their lowest levels in the
2 past four business cycles and in more than 35 years. Even with the “tapering” and
3 eventual ending of the Federal Reserve’s Quantitative Easing program, interest rates have
4 remained low. Currently, both government and corporate lending rates remain at
5 historically low levels, again reflective of lower capital costs.

6
7 **Q. What does this exhibit show for trends of common share prices?**

8 A. Pages 5 and 6 show several series of common stock prices and ratios. These indicate that
9 stock prices were essentially stagnant during the high inflation/high interest rate
10 environment of the late 1970s and early 1980s. The 1983-1991 business cycle and the
11 more recent cycles witnessed a significant upward trend in stock prices. The beginning
12 of the recent financial crisis saw stock prices decline precipitously, as stock prices in
13 2008 and early 2009 were down significantly from peak 2007 levels, reflecting the
14 financial/economic crisis. Beginning in the second quarter of 2009, prices recovered
15 substantially and ultimately reached and exceeded the levels achieved prior to the
16 “crash.” On the other hand, recent equity markets have been somewhat volatile.

17
18 **Q. What conclusions do you draw from your discussion of economic and financial**
19 **conditions?**

20 A. Recent economic and financial circumstances have differed from any that have prevailed
21 since at least the 1930s. The late 2008-early 2009 deterioration in stock prices, the
22 decline in U.S. Treasury bond yields, and an increase in corporate bond yields were
23 evidenced in the then-evident “flight to safety.” Concurrently, there was a decline in

1 capital costs and returns, which significantly reduced the value of most retirement
2 accounts, investment portfolios and other assets. One significant aspect of this has been a
3 decline in investor expectations of returns,⁸ even with the return of stock prices to levels
4 achieved prior to the “crash.” This evident in several ways: 1) lower interest rates on
5 bank deposits; 2) lower interest rates on U.S. Treasury and corporate bonds; 3), lower
6 increases in social security cost of living benefits;⁹ and 4), lower authorized ROEs by
7 regulatory commissions. Finally, as noted above, utility bond interest rates are currently
8 at levels below those prevailing prior to the financial crisis of late 2008 to early 2009 and
9 are near the lowest levels in the past 35 years. It is also noteworthy that long-term
10 interest rates have declined slightly in recent months, in spite of the Federal Reserve’s
11 raising of short-term rates in December of 2015.

12
13 **Q. How do these economic/financial conditions impact the determination of a ROE for**
14 **regulated utilities?**

15 A. The costs of capital for regulated utilities have declined in recent years. For example, the
16 current interest costs that utilities pay on new debt remain near the low point of the last
17 several decades. In addition, the results of the traditional ROE models (i.e., DCF, CAPM
18 and CE) are lower than was the case prior to the Great Recession. In light of this, it is not
19 surprising that the average ROEs authorized by state regulatory agencies have declined
20 and continued to decline through 2015, as follows:

21

⁸ See, for example, Kiplinger’s Personal Finance, “Investors Brace for Smaller Gains, Focus on Long-Term,”
August 30, 2015.

⁹ The 2015 increase in Social Security benefits was 1.70 percent – near an all-time low. There is no increase in 2016
Social Security benefits.

<u>Year</u>	<u>Electric¹⁰</u>	<u>Natural Gas</u>
2012	10.01%	9.94%
2013	9.94%	9.68%
2014	9.76%	9.78%
2015	9.58%	9.60%

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V. PACIFICORP'S OPERATIONS AND BUSINESS RISKS

Q. Please describe PacifiCorp and its operations.

A. PacifiCorp is a regulated electric utility that generates, transmits and distributes electricity to customers in Washington. Pacific Power is a division of PacifiCorp and operates as a "trade name" of PacifiCorp in Washington, California and Oregon. PacifiCorp also operates in Utah, Wyoming and Idaho under the "trade name" of Rocky Mountain Power. Prior to March 21, 2006, PacifiCorp was owned by ScottishPower.

Q. Please describe PacifiCorp's ownership structure.

A. As noted above, Pacific Power is a division of PacifiCorp, which is an indirect subsidiary of BHE.¹¹ BHE's other U.S. utility subsidiaries are:

- Nevada Power;
- Sierra Pacific Power;
- Mid-American Energy;
- Northern Natural Gas;
- Kern River Gas Transmission; and,
- BHE Transmission.

¹⁰ Average ROE values for electric utilities exclude Virginia surcharge/rider generation cases that incorporate plan-specific ROE premiums. See Regulatory Research Associates, Regulatory Focus, January 16, 2014, page 1.

¹¹ BHE was previously named Mid-American Energy Holding Company.

1 In 2015, 91 percent of BHE's operating income was generated by rate-regulated
2 businesses.¹²

3 BHE also has several other subsidiaries. The major non-U.S. utility subsidiaries
4 are:

5 Northern Powergrid Holdings (United Kingdom);
6 BHE Renewables, LLC;
7 CalEnergy Philippines; and,
8 Home Services of America, Inc.
9

10 **Q. What are the current security ratings of Pacific Power and PacifiCorp?**

11 A. Pacific Power, as a division of PacifiCorp, does not issue its own securities directly to
12 investors, but rather is a component of PacifiCorp. It follows that Pacific Power does not
13 have rated securities. The current ratings of PacifiCorp are as follows:

<u>Rating Agency</u>	<u>Senior Unsecured</u>	<u>Senior Secured</u>
Moody's	A3	A1
S&P	A-	A
Fitch	A	A+

(Source: Response to UTC-146)

14
15 **Q. What have been the recent trends in PacifiCorp's debt ratings?**

16 A. This is shown on Exhibit No. DCP-5. PacifiCorp's debt has been rated in the "Single A"
17 category by all three rating agencies since at least 2010.

18
19 **Q. How do the bond ratings of PacifiCorp compare to other electric utilities?**

20 A. As I indicated in a previous answer, PacifiCorp has single A bond ratings on its senior
21 debt, which are investment grade (i.e., Triple-B or above). Of the 48 electric utilities and

¹² Berkshire Hathaway Energy Co., Dec. 31, 2015, Form 10-K, page 1.

1 combination gas and electric utilities covered by AUS Utility Reports, the following
2 numbers of bond ratings currently exist:

<u>Moody's Rating</u>	<u>Number of Companies</u>	<u>S&P Rating</u>	<u>Number of Companies</u>
Aa2	1	AA	-
Aa3	-	AA-	1
A1*	1	A+	--
A2	7	A*	3
A3	18	A-	18
Baa1	11	BBB+	11
Baa2	7	BBB	9
Baa3	--	BBB-	3
Ba or less	--	BB	--
NR	3	NR	3

* PacifiCorp's ratings.

3
4 This comparison indicates that PacifiCorp's ratings are above the most common rating
5 categories of most electric utilities. This is indicative of a lower financial risk for
6 PacifiCorp.

7
8 **VI. CAPITAL STRUCTURE, COSTS OF DEBT AND PREFERRED STOCK**

9
10 **Q. What is the importance of determining a proper capital structure in a regulatory
11 framework?**

12 A. A utility's capital structure is important because the concept of rate base – rate of return
13 regulation requires the capital structure to be utilized in estimating the total cost of
14 capital. Within this framework, it is proper to ascertain whether the utility's capital
15 structure is appropriate relative to its level of business risk and relative to other utilities.

16 As discussed in Section III of my testimony, the purpose of determining the
17 proper capital structure for a utility is to ascertain its capital costs. The rate base – rate of

1 return concept recognizes the assets employed in providing utility services and provides
2 for a return on these assets by identifying the liabilities and common equity (and their
3 cost rates) used to finance the assets. In this process, the rate base is derived from the
4 asset side of the balance sheet and the COC is derived from the liabilities/owners' equity
5 side of the balance sheet. The inherent assumption in this procedure is that the dollar
6 values of the capital structure and the rate base are approximately equal and the former is
7 utilized to finance the latter.

8 The common equity ratio (i.e. the percentage of common equity in the capital
9 structure) is the capital structure item which normally receives the most attention. This is
10 the case because common equity: (1) usually commands the highest cost rate; (2)
11 generates associated income tax liabilities; and (3) causes the most controversy since its
12 cost cannot be precisely determined.

13

14 **Q. What are the historic capital structure ratios of PacifiCorp and BHE?**

15 A. I have examined the historic (2011-2015) capital structure ratios of PacifiCorp and BHE.

16 See Exhibit No. DCP-6. PacifiCorp's common equity ratios have been:

17

	<u>Including S-T Debt</u>	<u>Excluding S-T Debt</u>
2011	51.3%	53.9%
2012	52.5%	52.6%
2013	53.2%	53.2%
2014	52.4%	52.4%
2015	51.1%	51.2%

18

1 Correspondingly, BHE's common equity ratios have been:

	<u>Including S-T Debt</u>	<u>Excluding S-T Debt</u>
2011	41.4%	42.5%
2012	42.1%	43.2%
2013	36.7%	36.9%
2014	33.8%	34.6%
2015	37.0%	37.6%

2

3 This indicates that BHE, on a consolidated basis, has maintained a capital structure with
4 substantially less equity than PacifiCorp.

5 Page 3 of Exhibit No. DCP-6 reflects the 2015 capital structure ratios of
6 PacifiCorp and the other electric utility subsidiaries of BHE. As is shown there, this
7 indicates that PacifiCorp's equity ratio is among the highest of BHE's electric
8 subsidiaries.

9

10 **Q. How do these capital structures compare to those of investor-owned electric
11 utilities?**

12 A. Exhibit No. DCP-7 shows the common equity ratios (including short-term debt in
13 capitalization) for the groups of electric and combination electric utilities followed by
14 AUS Utility Reports. These are:

Year	Electric	Combination Gas And Electric
2011	47%	46%
2012	47%	46%
2013	48%	47%
2014	47%	47%
2015*	48%	47%

(Source: AUS Utility Reports)
* As of September 30.

15

16 These equity ratios are lower than those of PacifiCorp.

1 **Q. What capital structure is PacifiCorp requesting in this proceeding?**

2 A. PacifiCorp is proposing the following capital structure ratios, which reflects the capital
3 structure adopted by the Commission in the Company's last rate proceeding.

4	Short-Term Debt	0.19%
5	Long-Term Debt	50.69%
6	Preferred Stock	0.02%
7	Common Equity	49.10%

8
9
10 **Q. Do you believe this is a proper capital structure to use for determining PacifiCorp's
11 COC?**

12 A. Yes, I do. This capital structure is consistent with the recent capital structures of other
13 electric utilities. It also matches the equity ratio used by this Commission in the most
14 recent PacifiCorp rate proceedings.

15
16 **Q. What is your understanding of this Commission's recent policy on the proper
17 capital structure to use to determine the COC?**

18 A. It is my understanding that the Commission's policy on determining a capital structure
19 balances safety (the preservation of investment quality credit ratings and access to
20 capital) against economy (the lowest overall cost to attract and maintain capital). *WUTC*
21 *v. Puget Sound Energy, Inc.*, Dockets UE-040640 and UG-040641, Order 06, ¶ 27
22 (February 18, 2005). The Commission noted that the appropriate capital structure can
23 either be the Company's historical capital structure, the projected capital structure, or a
24 hypothetical capital structure.

25

1 **Q. Is your recommended capital structure consistent with this policy?**

2 A. Yes. The capital structure that I use is similar to recent actual ratios and is consistent
3 with the capital structure of other utilities. I also believe that the hypothetical capital
4 structure that I propose provides a “balance of safety and economy” as cited above.

5
6 **Q. What are the cost rates of debt and preferred stock in the Company’s application?**

7 A. PacifiCorp’s filing requests a cost of long term debt of 5.18 percent, a cost of short-term
8 debt of 1.73 percent, and a cost of preferred stock of 6.75 percent. Each of these is the
9 same as the cost rates adopted by the Commission in the prior proceeding. I propose use
10 of the actual test year cost rates in my COC analyses. I note, on the other hand, there is
11 very little difference between the 5.21 percent current cost of long-term debt and the 5.18
12 percent historic cost proposed by PacifiCorp. The updated cost rate of short-term debt
13 (2.15 percent) exceeds the historic rate (1.73 percent) but the very small percentage of
14 short-term debt in the capital structure negates any meaningful impact.

15
16 **Q. Can the ROE be determined with the same degree of precision as the cost of debt?**

17 A. No. The cost rates of debt are largely determined by interest payments, issue prices, and
18 related expenses. The ROE, on the other hand, cannot be precisely quantified, primarily
19 because this cost is an opportunity cost. As mentioned previously, there are several
20 models that can be employed to estimate the ROE. Three of the primary methods – DCF,
21 CAPM, and CE – are developed in the following sections of my testimony.

22

1 **VII. SELECTION OF PROXY GROUPS**

2
3 **Q. How have you estimated the ROE for PacifiCorp?**

4 A. PacifiCorp is not a publicly-traded company. Its parent company (BHE) is also not
5 publicly-traded. Consequently, it is not possible to directly apply ROE models to either
6 PacifiCorp or BHE. However, in COC analyses, it is customary to analyze groups of
7 comparison, or “proxy,” companies as a substitute for PacifiCorp to determine its ROE.

8 I have accordingly selected such a group for comparison to PacifiCorp. In
9 conjunction with PacifiCorp’s decision to use the same COC adopted in its last
10 proceeding, I have used the same proxy group I developed in that proceeding. Exhibit
11 No. DCP-8 shows certain operational risk characteristics of this group.

12 In addition, I have conducted studies of the ROE for the electric utilities proxy
13 group that was selected by PacifiCorp witness Strunk.

14
15 **Q. Please explain why you are using two proxy groups in your cost of equity analyses.**

16 A. It has long been my practice to develop my own independently-determined proxy group
17 and to also conduct ROE analyses on the utility witness’ proxy group. My conclusions
18 and recommendations, in turn, are based upon the results of both proxy groups.

19
20 **VIII. DCF ANALYSIS**

21
22 **Q. What is the theory and methodological basis of the DCF model?**

1 A. The DCF model is one of the oldest and most commonly-used models for estimating the
2 ROE for public utilities. The DCF model is based on the “dividend discount model” of
3 financial theory, which maintains that the value (price) of any security or commodity is
4 the discounted present value of all future cash flows.

5 The most common variant of the DCF model assumes that dividends are expected
6 to grow at a constant rate (the “constant growth” or “Gordon DCF model”). In this
7 framework, the ROE is derived from the following formula:

$$8 \quad K = \frac{D}{P} + g$$

9 where: P = current price

10 D = current dividend rate

11 K = discount rate (cost of capital)

12 G = constant rate of expected growth

13 This formula essentially recognizes that the return expected or required by investors is
14 comprised of two factors: the dividend yield (current income) and expected growth in
15 dividends (future income).

16

17 **Q. Please explain how you employ the DCF model.**

18 A. I use the constant growth DCF model. In doing so, I combine the current dividend yield
19 for each of the proxy utility stocks described in the previous section with several
20 indicators of expected dividend growth.

21

22 **Q. How did you derive the dividend yield component of the DCF equation?**

23 A. Several methods can be used to calculate the dividend yield component. These methods
24 generally differ in the manner in which the dividend rate is employed (i.e., current versus

1 future dividends or annual versus quarterly compounding variant, which is expressed as
2 follows:

$$3 \text{ Yield} = \frac{D_0(1 + 0.5g)}{P_0}$$

4 This dividend yield component recognizes the timing of dividend payments and dividend
5 increases.

6 The P_0 in my yield calculation is the average of the high and low stock price for
7 each proxy company for the most recent three month period (December 2015 – February
8 2016). The D_0 is the current annualized dividend rate for each proxy company.

9
10 **Q. How do you estimate the dividend growth component of the DCF equation?**

11 A. The DCF model's dividend growth rate component is usually the most crucial and
12 controversial element involved in using this methodology. The objective of estimating
13 the dividend growth component is to reflect the growth expected by investors that is
14 embodied in the price (and yield) of a company's stock. As such, it is important to
15 recognize that individual investors have different expectations and consider alternative
16 indicators in deriving their expectations. This is evidenced by the fact that every
17 investment decision resulting in the purchase of a particular stock is matched by another
18 investment decision to sell that stock.

19 A wide array of indicators exists for estimating investors' growth expectations.
20 As a result, it is evident that investors do not always use one single indicator of growth.
21 It therefore is necessary to consider alternative dividend growth indicators in deriving the
22 growth component of the DCF model. I have considered five indicators of growth in my
23 DCF analyses. These are:

- 1 1. Years 2011-2015 (5-year average) earnings retention, or fundamental growth;
- 2 2. Five-year average of historic growth in earnings per share (EPS), dividends per
- 3 share (DPS), and book value per share (BVPS);
- 4 3. Years 2016, 2017 and 2018-2020 projections of earnings retention growth (per
- 5 Value Line);
- 6 4. Years 2012-2014 to 2018-2020 projections of EPS, DPS, and BVPS (per Value
- 7 Line); and
- 8 5. Five-year projections of EPS growth (per First Call).

9 I believe this combination of growth indicators is a representative and appropriate set
10 with which to begin the process of estimating investor expectations of dividend growth
11 for the groups of proxy companies. I also believe that these growth indicators reflect the
12 types of information that investors consider in making their investment decisions. As I
13 indicated previously, investors have an array of information available to them, all of
14 which would be expected to have some impact on their decision-making process.

15

16 **Q. Please describe your DCF calculations.**

17 A. Exhibit No. DCP-9 presents my DCF analysis. Page 1 shows the calculation of the “raw”
18 (i.e., prior to adjustment for growth) dividend yield for each proxy company. Pages 2
19 and 3 show the growth rates for the groups of proxy companies. Page 4 shows the DCF
20 calculations, which are presented on several bases: mean, median, low and high values.
21 These results can be summarized as follows:

22

	<u>Mean</u>	<u>Median</u>	<u>Mean Low¹³</u>	<u>Mean High¹⁴</u>	<u>Median Low¹³</u>	<u>Median High¹⁴</u>
Parcell Proxy Group	8.8%	8.7%	7.6%	10.6%	7.4%	9.3%
Strunk Proxy Group	8.2%	8.0%	7.7%	8.5%	7.5%	8.7%

1
2 I note that the individual DCF calculations shown on Exhibit No. DCP-9 should not be
3 interpreted to reflect the expected cost of capital for individual companies in the proxy
4 groups; rather, the individual values shown should be interpreted as alternative
5 information considered by investors.

6
7 **Q. What do you conclude from your DCF analyses?**

8 A. The DCF rates resulting from the analysis of the proxy groups fall into a wide range
9 between 7.4 percent and 10.6 percent. The highest DCF rates are 8.5 percent to 10.6
10 percent. I note that the 10.6 percent rate is significantly influenced by the recent historic
11 growth of a single company, which just completed a major acquisition.

12 I believe a range of 8.5 percent to 9.5 percent represents the current DCF-derived
13 ROE for the proxy groups. This range includes most of the highest DCF rates and
14 generally exceeds the low and mean/median DCF rates. I recommend a DCF ROE of 9.0
15 percent for PacifiCorp, which focuses on the highest DCF rates and exceeds the low and
16 mean/median DCF rates.

17
18 **IX. CAPM ANALYSIS**

19
20 **Q. Please describe the theory and methodological basis of the CAPM.**

¹³ Using the lowest growth rate.

¹⁴ Using only the highest growth rate.

1 A. CAPM was developed in the 1960s and 1970s as an extension of modern portfolio theory
2 (MPT), which studies the relationships among risk, diversification, and expected returns.
3 The CAPM describes and measures the relationship between a security's investment risk
4 and its market rate of return.

5
6 **Q. How is the CAPM derived?**

7 A. The general form of the CAPM is:

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

8
9 where: K = cost of equity

10 R_f = risk free rate

11 R_m = return on market

12 β = beta

13 R_m-R_f = market risk premium
14

15 The CAPM is a variant of the RP method. I believe the CAPM is generally superior to
16 the simple RP method because the CAPM specifically recognizes the risk of a particular
17 company or industry (i.e., beta), whereas the simple RP method assumes the same ROE
18 for all companies exhibiting similar bond ratings or other characteristics.

19
20 **Q. What do you use for the risk-free rate?**

21 A. The first input of the CAPM is the risk-free rate (R_f). The risk-free rate reflects the level
22 of return that can be achieved without accepting any risk.

23 In CAPM applications, the risk-free rate is generally recognized by use of U.S.
24 Treasury securities. Two general types of U.S. Treasury securities are often utilized as
25 the R_f component, short-term U.S. Treasury bills and long-term U.S. Treasury bonds.

1 I have performed CAPM calculations using the three-month average yield
2 (December 2015-February 2016) for 20-year U.S. Treasury bonds. I use the yields on
3 long-term Treasury bonds since this matches the long-term perspective of ROE analyses.
4 Over this three month period, these bonds had an average yield of 2.43 percent.

5
6 **Q. What is beta and what betas do you employ in your CAPM?**

7 A. Beta is a measure of the relative volatility (and thus risk) of a particular stock in relation
8 to the overall market. Betas less than 1 are considered less risky than the market,
9 whereas betas greater than 1 are more risky. Utility stocks traditionally have had betas
10 below 1. I utilize the most recent Value Line betas for each company in my proxy group.

11
12 **Q. How do you estimate the market risk premium component?**

13 A. The market risk premium component ($R_m - R_f$) represents the investor-expected premium
14 of common stocks over the risk-free rate, or long-term government bonds. For the
15 purpose of estimating the market risk premium, I considered alternative measures of
16 returns of the S&P 500 (a broad-based group of large U.S. companies) and 20-year U.S.
17 Treasury bonds (i.e., the same timeframe as employed in Morningstar sources used to
18 develop risk premiums).

19 First, I compared the actual annual returns on equity of the S&P 500 with the
20 actual annual yields of U.S. Treasury bonds. Exhibit No. DCP-10 shows the ROE for the
21 S&P 500 group for the period 1978-2014 (all available years reported by S&P). This
22 schedule also indicates the annual yields on 20-year U.S. Treasury bonds and the annual
23 differentials (i.e., risk premiums) between the S&P 500 and U.S. Treasury 20-year bonds.

1 Based upon these returns, I conclude that the risk premium from this analysis is 6.85
2 percent.

3 I next considered the total returns (i.e., dividends/interest plus capital
4 gains/losses) for the S&P 500 group as well as for long-term government bonds, as
5 tabulated by Morningstar (formerly Ibbotson Associates), using both arithmetic and
6 geometric means. I considered the total returns for the entire 1926-2014 period, which
7 are as follows:

	<u>S&P 500</u>	<u>L-T Gov't Bonds</u>	<u>Risk Premium</u>
Arithmetic	12.1%	6.1%	6.0%
Geometric	10.1%	5.7%	4.4%

8
9 I conclude from this analysis that the expected risk premium is about 5.75 percent (i.e.,
10 the average of all three risk premiums: 6.85 percent from Schedule 8; 6.0 percent
11 arithmetic and 4.4 percent geometric from Morningstar). I believe that a combination of
12 arithmetic and geometric means is appropriate since investors have access to both types
13 of means¹⁵ and presumably, both types are reflected in investment decisions and thus,
14 stock prices and the ROE.

15

16 **Q. What are your CAPM results?**

17 A. Exhibit No. DCP-11 shows my CAPM calculations. The results are:

	<u>Mean</u>	<u>Median</u>
Parcell Proxy Group	6.7%	6.7%
Strunk Proxy Group	6.7%	6.7%

18

¹⁵ For example, Value Line uses compound (i.e., geometric) growth rates in its projection. In addition, mutual funds report growth rates on a compound basis.

1 **Q. What is your conclusion concerning the CAPM ROE?**

2 A. The CAPM results collectively indicate a ROE of 6.7 percent for the groups of proxy
3 utilities. I conclude that an appropriate CAPM ROE estimation for PacifiCorp is 6.70
4 percent.

5

6 **X. CE ANALYSIS**

7

8 **Q. Please describe the basis of the CE methodology.**

9 A. The CE method is derived from the “corresponding risk” concept discussed in the
10 *Bluefield* and *Hope* cases. This method is thus based upon the economic concept of
11 opportunity cost. As previously noted, the ROE is an opportunity cost: the prospective
12 return available to investors from alternative investments of similar risk.

13 The CE method is designed to measure the returns expected to be earned on the
14 original cost book value of similar risk enterprises. Thus, it provides a direct measure of
15 the fair return, since it translates into practice the competitive principle upon which
16 regulation rests.

17 The CE method normally examines the experienced and/or projected return on
18 book common equity. The logic for examining returns on book equity follows from the
19 use of original cost rate base regulation for public utilities, which uses a utility’s book
20 common equity to determine the cost of capital. This cost of capital is, in turn, used as
21 the fair rate of return which is then applied (multiplied) to the book value of rate base to
22 establish the dollar level of capital costs to be recovered by the utility. This technique is
23 thus consistent with the rate base – rate of return methodology used to set utility rates.

1 **Q. How do you apply the CE methodology in your analysis of PacifiCorp's ROE?**

2 A. I apply the CE methodology by examining realized ROE for the group of proxy
3 companies, as well as unregulated companies, and evaluating investor acceptance of
4 these returns by reference to the resulting market-to-book ratios ("M/B"). In this manner
5 it is possible to assess the degree to which a given level of return equates to the COC. It
6 is generally recognized for utilities that an M/B of greater than one (i.e., 100 percent)
7 reflect a situation where a company is able to attract new equity capital without dilution
8 (i.e., above book value). As a result, one objective of a fair cost of equity is the
9 maintenance of stock prices at or above book value. There is no regulatory obligation to
10 set rates designed to maintain an M/B significantly above one.

11 I further note that my CE analysis is based upon market data (through the use of
12 M/Bs) and is thus essentially a market test. As a result, my CE analysis is not subject to
13 the criticisms occasionally made by some who maintain that past earned returns do not
14 represent the cost of capital. In addition, my CE analysis also uses prospective returns
15 and thus is not backward looking.

16
17 **Q. What time periods do you examine in your CE analysis?**

18 A. My CE analysis considers the experienced ROEs of the proxy groups of utilities for the
19 period 2002-2015 (i.e., the last fourteen years). The CE analysis requires that I examine
20 a relatively long period of time in order to determine trends in earnings over at least a full
21 business cycle. Further, in estimating a fair level of return for a future period, it is
22 important to examine earnings over a diverse period of time in order to avoid any undue
23 influence from unusual or abnormal conditions that may occur in a single year or shorter

1 period. Therefore, in forming my judgment of the current cost of equity, I focused on
2 two periods: 2009-2015 (the current business cycle) and 2002-2008 (the most recent
3 business cycle). I have also considered projected ROEs for 2016 and 2018-2020.
4

5 **Q. Please describe your CE analysis.**

6 A. Exhibit No. DCP-12 and Exhibit No. DCP-13 contain summaries of experienced ROEs
7 and M/Bs for three groups of companies, while Exhibit No. DCP-14 presents a risk
8 comparison of utilities versus unregulated firms.

9 Exhibit No. DCP-12 shows the ROEs and M/Bs for the groups of proxy utilities.

10 These can be summarized as follows:

11

	<u>Parcell Proxy Group</u>	<u>Strunk Proxy Group</u>
Historic ROE		
Mean	9.4-10.2%	10.1-11.1%
Median	9.4-9.8%	9.8-10.4%
Historic M/B		
Mean	137-157%	149-158%
Median	133-145%	140-150%
Prospective ROE		
Mean	9.0-10.3%	9.9-10.6%
Median	9.0-10.0%	9.5-10.0%

12
13 These results indicate that historic ROEs of 9.4 percent to 11.1 percent have been
14 adequate to produce M/Bs of 133 percent to 158 percent for the groups of utilities.

15 Furthermore, projected ROEs for 2016, 2017 and 2018-2020 are within a range of 9.0
16 percent to 10.6 percent for the utility groups. These relate to 2015 M/B of 160 percent or
17 greater.
18

1 **Q. Do you also review the earnings of unregulated firms?**

2 A. Yes. As an alternative, I also examine the S&P's 500 Composite group. This is a well
3 recognized group of firms that is widely utilized in the investment community and is
4 indicative of the competitive sector of the economy. Exhibit No. DCP-13 presents the
5 earned ROEs and M/Bs for the S&P 500 group over the past thirteen years (i.e., 2002-
6 2014). As this schedule indicates, over the two business cycle periods, this group's
7 average ROEs ranged from 12.4 percent to 13.6 percent, with average M/Bs ranging
8 between 220 percent and 275 percent.

9
10 **Q. How can the above information be used to estimate PacifiCorp's ROE?**

11 A. The recent ROE of the proxy utilities and S&P 500 groups can be viewed as an indication
12 of the level of return realized and expected in the regulated and competitive sectors of the
13 economy. In order to apply these returns to the ROE for the proxy utilities, however, it is
14 necessary to compare the risk levels of the electric utilities and the competitive
15 companies. I do this in Exhibit No. DCP-14, which compares several risk indicators for
16 the S&P 500 group and the electric utility groups. The information in this exhibit
17 indicates that the S&P 500 group is more risky than the electric utility proxy groups.

18
19 **Q. What ROE is indicated by your CE analysis?**

20 A. Based on recent and prospective ROEs and M/Bs, my CE analysis indicates that the ROE
21 for the proxy utilities is no more than 9.0 percent to 10.0 percent (9.5 percent mid-point).
22 Recent ROEs of 9.4 percent to 11.1 percent have resulted in M/Bs more than 130 percent.
23 Prospective ROEs of 9.0 percent to 10.6 percent have been accompanied by M/Bs over

1 160 percent. As a result, it is apparent that authorized returns below this level would
2 continue to result in M/Bs of well above 100 percent. As I indicated earlier, the fact that
3 M/Bs substantially exceeds 100 percent indicates that historic and prospective ROEs of
4 9.5 percent reflect earning levels that are well above the actual cost of equity for those
5 regulated companies. I also note that a company whose stock sells above book value can
6 attract capital in a way that enhances the book value of existing stockholders, thus
7 creating a favorable environment for financial integrity. Finally, I note that my 9.0
8 percent to 10.0 percent CE recommendation generally reflects the actual and prospective
9 ROEs for the proxy groups. I have made no adjustments to these return levels to reflect
10 the high M/B.

11
12 **XI. RETURN ON EQUITY RECOMMENDATION**

13
14 **Q. Please summarize the results of your three ROE analyses.**

15 **A.** My three ROE analyses produced the following:

	<u>Mid-Point</u>	<u>Range</u>
DCF	9.0%	8.5-9.5%
CAPM	6.7%	
CE	9.5%	9.0-10.0%

16
17 These results indicate an overall broad range of 6.7 percent to 9.5 percent, which focuses
18 on the respective individual model results. I recommend a ROE range of 9.0 percent to
19 9.5 percent for PacifiCorp. This range includes my DCF result (9.0 percent), and my CE
20 result (9.5 percent).

21
22 **Q. It appears that your CAPM results are less than your DCF and CE results. Do you**
23 **directly consider the CAPM results in determining the ROE for PacifiCorp?**

1 A. Not at this time. I have conducted CAPM studies in my ROE analyses for many years. It
2 is apparent that the CAPM results are currently significantly less than the DCF and CE
3 results. There are two reasons for the lower CAPM results. First, risk premiums are
4 lower currently than was the case in prior years. This is the result of lower equity returns
5 that have been experienced beginning with the Great Recession and continuing over the
6 past several years. This is also reflective of a decline in investor expectations of equity
7 returns and risk premiums. Second, the level of interest rates on U.S. Treasury bonds
8 (i.e., the risk free rate) has been lower in recent years. This is partially the result of the
9 actions of the Federal Reserve System to stimulate the economy. This also impacts
10 investor expectations of returns in a negative fashion.

11 I note that, initially, investors may have believed that the decline in Treasury
12 yields was a temporary factor that would soon be replaced by a rise in interest rates.
13 However, this has not been the case as interest rates have remained low and continued to
14 decline for the past five-plus years. As a result, it cannot be maintained that low interest
15 rates (and low CAPM results) are temporary and do not reflect investor expectations.
16 Consequently, the CAPM results should be considered as one factor in determining the
17 cost of equity for PacifiCorp. Even though I do not factor the CAPM results directly into
18 my ROE recommendation, I do believe these lower results are indicative of the recent
19 and continuing decline in utility COC, including ROE.

20

21

XII. TOTAL COST OF CAPITAL

22

23 Q. What is the total cost of capital for PacifiCorp?

1 A. Exhibit No. DCP-3 reflects the COC for PacifiCorp using the Company's proposed
2 capital structure and embedded costs of debt and preferred stock, as well as my ROE
3 recommendations. The resulting total cost of capital is a range of 7.05 percent to 7.30
4 percent. I recommend a COC of 7.19 percent for PacifiCorp, which incorporates a ROE
5 of 9.25 percent.

6
7 **Q. As part of its current rates application, PacifiCorp is requesting a decoupling**
8 **mechanism and a two-year rate plan. Are these factors that should be considered in**
9 **establishing PacifiCorp's ROE?**

10 A. Yes, they are. The establishment of a decoupling mechanism and a two-year rate plan are
11 positive factors for PacifiCorp from a financial standpoint, as has been recognized by
12 rating agencies.¹⁶

13 I note that mechanisms such as these are becoming more common among electric
14 utilities, as noted in the Moody's report cited above. In addition, I am aware that this
15 Commission has indicated that it does not consider it appropriate to "support a discrete
16 adjustment to ROE to account for particularized risks"¹⁷ As a result, I am not
17 recommending any specific downward adjustment to PacifiCorp's ROE to reflect the
18 risk-reducing impacts of these mechanisms. On the other hand, I believe that the
19 potential adoption of these mechanisms is risk-reducing to PacifiCorp. As a result, I

¹⁶ For example, Moody's November 6, 2015, Report titled "2016 Outlook – US Regulated Utilities: Credit-Supportive Regulatory Environment Drives Stable Outlook."

¹⁷ *In Re Petition of Puget Sound Energy, Inc. and Northwest Energy Coalition for an Order Authorizing PSE to Implement Electric and Natural Gas Decoupling Mechanisms and To Record Accounting Entries Associated With the Mechanisms*, Docket UE-121697, Order 14, ¶ 156 (June 29, 2015).

1 believe that the Company's ROE should be no greater than the mid-point of the "range of
2 reasonableness" that the Commission finds appropriate in this proceeding.

3

4 **Q. Does this conclude your direct testimony?**

5 **A. Yes, it does.**

Exhibit No. __ (DCP-4)
Docket UE-152253
Witness: David C. Parcell

**BEFORE THE WASHINGTON
UTILITIES AND TRANSPORTATION COMMISSION**

**WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION,**

Complainant,

v.

**PACIFIC POWER & LIGHT
COMPANY,**

Respondent.

DOCKET UE-152253

**EXHIBIT TO
TESTIMONY OF**

DAVID C. PARCELL

**ON BEHALF STAFF OF
WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION**

Economic Indicators

March 17, 2016

ECONOMIC INDICATORS

Year	Real GDP* Growth	Industrial Production Growth	Unemploy- ment Rate	Consumer Price Index
1975 - 1982 Cycle				
1975	-1.1%	-8.9%	8.5%	7.0%
1976	5.4%	10.8%	7.7%	4.8%
1977	5.5%	5.9%	7.0%	6.8%
1978	5.0%	5.7%	6.0%	9.0%
1979	2.8%	4.4%	5.8%	13.3%
1980	-0.2%	-1.9%	7.0%	12.4%
1981	1.8%	1.9%	7.5%	8.9%
1982	-2.1%	-4.4%	9.5%	3.8%
1983 - 1991 Cycle				
1983	4.0%	3.7%	9.5%	3.8%
1984	6.8%	9.3%	7.5%	3.9%
1985	3.7%	1.7%	7.2%	3.8%
1986	3.1%	0.9%	7.0%	1.1%
1987	2.9%	4.9%	6.2%	4.4%
1988	3.8%	4.5%	5.5%	4.4%
1989	3.5%	1.8%	5.3%	4.6%
1990	1.8%	-0.2%	5.6%	6.1%
1991	-0.5%	-2.0%	6.8%	3.1%
1992 - 2001 Cycle				
1992	3.0%	3.1%	7.5%	2.9%
1993	2.7%	3.4%	6.9%	2.7%
1994	4.0%	5.5%	6.1%	2.7%
1995	3.7%	4.8%	5.6%	2.5%
1996	4.5%	4.3%	5.4%	3.3%
1997	4.5%	7.3%	4.9%	1.7%
1998	4.2%	5.8%	4.5%	1.6%
1999	3.7%	4.5%	4.2%	2.7%
2000	4.1%	4.0%	4.0%	3.4%
2001	1.1%	-3.4%	4.7%	1.6%
2002 - 2009 Cycle				
2002	1.8%	0.2%	5.8%	2.4%
2003	2.8%	1.2%	6.0%	1.9%
2004	3.8%	2.3%	5.5%	3.3%
2005	3.3%	3.2%	5.1%	3.4%
2006	2.7%	2.2%	4.6%	2.5%
2007	1.8%	2.5%	4.6%	4.1%
2008	-0.3%	-3.4%	5.8%	0.1%
2009	-2.8%	-11.3%	9.3%	2.7%
Current Cycle				
2010	2.5%	5.6%	9.6%	1.5%
2011	1.6%	3.0%	8.9%	3.0%
2012	2.3%	2.8%	8.1%	1.7%
2013	2.2%	1.9%	7.4%	1.5%
2014	2.4%	3.7%	6.2%	0.8%
2015	2.4%	1.3%	5.3%	0.7%

*GDP=Gross Domestic Product

Source: Council of Economic Advisors, Economic Indicators, various issues.

ECONOMIC INDICATORS

Year	Real GDP* Growth	Industrial Production Growth	Unemployment Rate	Consumer Price Index
2004				
1st Qtr.	3.0%	2.8%	5.6%	5.2%
2nd Qtr.	3.5%	4.9%	5.6%	4.4%
3rd Qtr.	3.6%	4.6%	5.4%	0.8%
4th Qtr.	2.5%	4.3%	5.4%	3.6%
2005				
1st Qtr.	4.1%	3.8%	5.3%	4.4%
2nd Qtr.	1.7%	3.0%	5.1%	1.6%
3rd Qtr.	3.1%	2.7%	5.0%	8.8%
4th Qtr.	2.1%	2.9%	4.9%	-2.0%
2006				
1st Qtr.	5.4%	3.4%	4.7%	4.8%
2nd Qtr.	1.4%	4.5%	4.6%	4.8%
3rd Qtr.	0.1%	5.2%	4.7%	0.4%
4th Qtr.	3.0%	3.5%	4.5%	0.0%
2007				
1st Qtr.	0.9%	2.5%	4.5%	4.8%
2nd Qtr.	3.2%	1.6%	4.5%	5.2%
3rd Qtr.	2.3%	1.8%	4.6%	1.2%
4th Qtr.	2.9%	1.7%	4.8%	6.4%
2008				
1st Qtr.	-1.8%	1.9%	4.9%	2.8%
2nd Qtr.	1.3%	0.2%	5.3%	7.6%
3rd Qtr.	-3.7%	-3.0%	6.0%	2.8%
4th Qtr.	-8.9%	6.0%	6.9%	-13.2%
2009				
1st Qtr.	-5.3%	-11.6%	8.1%	2.4%
2nd Qtr.	-0.3%	-12.9%	9.3%	3.2%
3rd Qtr.	1.4%	-9.3%	9.6%	2.0%
4th Qtr.	4.0%	-4.5%	10.0%	2.5%
2010				
1st Qtr.	1.6%	2.7%	9.7%	0.9%
2nd Qtr.	3.9%	6.5%	9.7%	-1.2%
3rd Qtr.	2.8%	6.9%	9.6%	2.8%
4th Qtr.	2.8%	6.2%	9.6%	2.8%
2011				
1st Qtr.	-1.5%	5.4%	9.0%	4.8%
2nd Qtr.	2.9%	3.6%	9.0%	3.2%
3rd Qtr.	0.8%	3.3%	9.1%	2.4%
4th Qtr.	4.6%	4.0%	8.7%	0.4%
2012				
1st Qtr.	2.3%	4.5%	8.3%	3.2%
2nd Qtr.	1.6%	4.7%	8.2%	0.0%
3rd Qtr.	2.5%	3.4%	8.1%	4.0%
4th Qtr.	0.1%	2.8%	7.8%	0.0%
2013				
1st Qtr.	1.9%	2.5%	7.7%	2.0%
2nd Qtr.	1.1%	2.0%	7.6%	1.2%
3rd Qtr.	3.0%	2.6%	7.3%	1.6%
4th Qtr.	3.9%	3.3%	7.0%	1.2%
2014				
1st Qtr.	-0.9%	3.2%	6.6%	1.6%
2nd Qtr.	4.6%	4.2%	6.2%	3.6%
3rd Qtr.	4.3%	4.7%	6.1%	0.0%
4th Qtr.	2.1%	4.5%	5.7%	-2.8%
2015				
1st Qtr.	0.6%	3.5%	5.6%	-1.2%
2nd Qtr.	3.9%	1.4%	5.4%	3.2%
3rd Qtr.	2.0%	1.1%	5.2%	-0.1%
4th Qtr.	1.0%	-0.8%	5.0%	0.0%

*GDP=Gross Domestic Product

Source: Council of Economic Advisors, Economic Indicators, various issues.

INTEREST RATES

Year	Prime Rate	US Treasury T Bills 3 Month	US Treasury T Bonds 10 Year	Utility Bonds Aaa	Utility Bonds Aa	Utility Bonds A	Utility Bonds Baa
1975 - 1982 Cycle							
1975	7.86%	5.84%	7.99%	9.03%	9.44%	10.09%	10.96%
1976	6.84%	4.99%	7.61%	8.63%	8.92%	9.29%	9.82%
1977	6.83%	5.27%	7.42%	8.19%	8.43%	8.61%	9.06%
1978	9.06%	7.22%	8.41%	8.87%	9.10%	9.29%	9.62%
1979	12.67%	10.04%	9.44%	9.86%	10.22%	10.49%	10.96%
1980	15.27%	11.51%	11.46%	12.30%	13.00%	13.34%	13.95%
1981	18.89%	14.03%	13.93%	14.64%	15.30%	15.95%	16.60%
1982	14.86%	10.69%	13.00%	14.22%	14.79%	15.86%	16.45%
1983 - 1991 Cycle							
1983	10.79%	8.63%	11.10%	12.52%	12.83%	13.66%	14.20%
1984	12.04%	9.58%	12.44%	12.72%	13.66%	14.03%	14.53%
1985	9.93%	7.48%	10.62%	11.68%	12.06%	12.47%	12.96%
1986	8.33%	5.98%	7.68%	8.92%	9.30%	9.58%	10.00%
1987	8.21%	5.82%	8.39%	9.52%	9.77%	10.10%	10.53%
1988	9.32%	6.69%	8.85%	10.05%	10.26%	10.49%	11.00%
1989	10.87%	8.12%	8.49%	9.32%	9.56%	9.77%	9.97%
1990	10.01%	7.51%	8.55%	9.45%	9.65%	9.86%	10.06%
1991	8.46%	5.42%	7.86%	8.85%	9.09%	9.36%	9.55%
1992 - 2001 Cycle							
1992	6.25%	3.45%	7.01%	8.19%	8.55%	8.69%	8.86%
1993	6.00%	3.02%	5.87%	7.29%	7.44%	7.59%	7.91%
1994	7.15%	4.29%	7.09%	8.07%	8.21%	8.31%	8.63%
1995	8.83%	5.51%	6.57%	7.68%	7.77%	7.89%	8.29%
1996	8.27%	5.02%	6.44%	7.48%	7.57%	7.75%	8.16%
1997	8.44%	5.07%	6.35%	7.43%	7.54%	7.60%	7.95%
1998	8.35%	4.81%	5.26%	6.77%	6.91%	7.04%	7.26%
1999	8.00%	4.66%	5.65%	7.21%	7.51%	7.62%	7.88%
2000	9.23%	5.85%	6.03%	7.88%	8.06%	8.24%	8.36%
2001	6.91%	3.44%	5.02%	7.47%	7.59%	7.78%	8.02%
2002 - 2009 Cycle							
2002	4.67%	1.62%	4.61%		[1] 7.19%	7.37%	8.02%
2003	4.12%	1.01%	4.01%		6.40%	6.58%	6.84%
2004	4.34%	1.38%	4.27%		6.04%	6.16%	6.40%
2005	6.19%	3.16%	4.29%		5.44%	5.65%	5.93%
2006	7.96%	4.73%	4.80%		5.84%	6.07%	6.32%
2007	8.05%	4.41%	4.63%		5.94%	6.07%	6.33%
2008	5.09%	1.48%	3.66%		6.18%	6.53%	7.25%
2009	3.25%	0.16%	3.26%		5.75%	6.04%	7.06%
Current Cycle							
2010	3.25%	0.14%	3.22%		5.24%	5.46%	5.96%
2011	3.25%	0.06%	2.78%		4.78%	5.04%	5.57%
2012	3.25%	0.09%	1.80%		3.83%	4.13%	4.86%
2013	3.25%	0.06%	2.35%		4.24%	4.47%	4.98%
2014	3.25%	0.03%	2.54%		4.19%	4.28%	4.80%
2015	3.26%	0.60%	2.14%		4.00%	4.12%	5.03%

[1] Note: Moody's has not published Aaa utility bond yields since 2001.

Sources: Council of Economic Advisors, Economic Indicators; Moody's Bond Record; Federal Reserve Bulletin; various issues.

INTEREST RATES

	Prime Rate	US Treasury T Bills 3 Month	US Treasury T Bonds 10 Year	Utility Bonds Aa	Utility Bonds A	Utility Bonds Baa
2010						
Jan	3.25%	0.06%	3.73%	5.55%	5.77%	6.16%
Feb	3.25%	0.10%	3.69%	5.69%	5.87%	6.25%
Mar	3.25%	0.15%	3.73%	5.64%	5.84%	6.22%
Apr	3.25%	0.15%	3.85%	5.62%	5.81%	6.19%
May	3.25%	0.16%	3.42%	5.29%	5.50%	5.97%
June	3.25%	0.12%	3.20%	5.22%	5.46%	6.18%
July	3.25%	0.16%	3.01%	4.99%	5.26%	5.98%
Aug	3.25%	0.15%	2.70%	4.75%	5.01%	5.55%
Sept	3.25%	0.15%	2.65%	4.74%	5.01%	5.53%
Oct	3.25%	0.13%	2.54%	4.89%	5.10%	5.62%
Nov	3.25%	0.13%	2.76%	5.12%	5.37%	5.85%
Dec	3.25%	0.15%	3.29%	5.32%	5.56%	6.04%
2011						
Jan	3.25%	0.15%	3.39%	5.29%	5.57%	6.06%
Feb	3.25%	0.14%	3.58%	5.42%	5.68%	6.10%
Mar	3.25%	0.11%	3.41%	5.33%	5.56%	5.97%
Apr	3.25%	0.06%	3.46%	5.32%	5.55%	5.98%
May	3.25%	0.04%	3.17%	5.08%	5.32%	5.74%
June	3.25%	0.04%	3.00%	5.04%	5.26%	5.67%
July	3.25%	0.03%	3.00%	5.05%	5.27%	5.70%
Aug	3.25%	0.05%	2.30%	4.44%	4.69%	5.22%
Sept	3.25%	0.02%	1.98%	4.24%	4.48%	5.11%
Oct	3.25%	0.02%	2.15%	4.21%	4.52%	5.24%
Nov	3.25%	0.01%	2.01%	3.92%	4.25%	4.93%
Dec	3.25%	0.02%	1.98%	4.00%	4.33%	5.07%
2012						
Jan	3.25%	0.02%	1.97%	4.03%	4.34%	5.06%
Feb	3.25%	0.08%	1.97%	4.02%	4.36%	5.02%
Mar	3.25%	0.08%	2.17%	4.16%	4.48%	5.13%
Apr	3.25%	0.08%	2.05%	4.10%	4.40%	5.11%
May	3.25%	0.09%	1.80%	3.92%	4.20%	4.97%
June	3.25%	0.09%	1.62%	3.79%	4.08%	4.91%
July	3.25%	0.10%	1.53%	3.58%	3.93%	4.85%
Aug	3.25%	0.11%	1.68%	3.65%	4.00%	4.88%
Sept	3.25%	0.10%	1.72%	3.69%	4.02%	4.81%
Oct	3.25%	0.10%	1.75%	3.68%	3.91%	4.54%
Nov	3.25%	0.11%	1.65%	3.60%	3.84%	4.42%
Dec	3.25%	0.08%	1.72%	3.75%	4.00%	4.56%
2013						
Jan	3.25%	0.07%	1.91%	3.90%	4.15%	4.66%
Feb	3.25%	0.10%	1.98%	3.95%	4.18%	4.74%
Mar	3.25%	0.09%	1.96%	3.90%	4.15%	4.66%
Apr	3.25%	0.06%	1.76%	3.74%	4.00%	4.49%
May	3.25%	0.05%	1.93%	3.91%	4.17%	4.65%
June	3.25%	0.05%	2.30%	4.27%	4.53%	5.08%
July	3.25%	0.04%	2.58%	4.44%	4.68%	5.21%
Aug	3.25%	0.04%	2.74%	4.53%	4.73%	5.28%
Sept	3.25%	0.02%	2.81%	4.58%	4.80%	5.31%
Oct	3.25%	0.06%	2.62%	4.48%	4.70%	5.17%
Nov	3.25%	0.07%	2.72%	4.56%	4.77%	5.24%
Dec	3.25%	0.07%	2.90%	4.59%	4.81%	5.25%
2014						
Jan	3.25%	0.05%	2.86%	4.44%	4.63%	5.09%
Feb	3.25%	0.06%	2.71%	4.38%	4.53%	5.01%
Mar	3.25%	0.05%	2.72%	4.40%	4.51%	5.00%
Apr	3.25%	0.04%	2.71%	4.30%	4.41%	4.85%
May	3.25%	0.03%	2.56%	4.16%	4.26%	4.69%
June	3.25%	0.03%	2.60%	4.23%	4.29%	4.73%
July	3.25%	0.03%	2.54%	4.16%	4.23%	4.66%
Aug	3.25%	0.03%	2.42%	4.07%	4.13%	4.65%
Sept	3.25%	0.02%	2.53%	4.18%	4.24%	4.79%
Oct	3.25%	0.02%	2.30%	3.96%	4.06%	4.67%
Nov	3.25%	0.02%	2.33%	4.03%	4.09%	4.75%
Dec	3.25%	0.04%	2.21%	3.90%	3.95%	4.70%
2015						
Jan	3.25%	0.03%	1.88%	3.52%	3.58%	4.39%
Feb	3.25%	0.03%	1.98%	3.62%	3.67%	4.44%
Mar	3.25%	0.03%	2.04%	3.67%	3.74%	4.51%
Apr	3.25%	0.02%	1.94%	3.63%	3.75%	4.51%
May	3.25%	0.02%	2.20%	4.05%	4.17%	4.91%
June	3.25%	0.04%	2.36%	4.29%	4.39%	5.13%
July	3.25%	0.03%	2.32%	4.27%	4.40%	5.22%
Aug	3.25%	0.09%	2.17%	4.13%	4.25%	5.23%
Sep	3.25%	0.06%	2.17%	4.25%	4.39%	5.42%
Oct	3.25%	0.01%	2.07%	4.13%	4.29%	5.47%
Nov	3.25%	0.13%	2.25%	4.22%	4.40%	5.57%
Dec	3.50%	0.26%	2.24%	4.16%	4.35%	5.55%
2016						
Jan	3.50%	0.25%	2.09%	4.09%	4.27%	5.49%
Feb	3.50%	0.32%	1.78%	3.94%	4.11%	5.28%

Sources: Council of Economic Advisors, Economic Indicators; Moody's Bond Record; Federal Reserve Bulletin; various issues.

STOCK PRICE INDICATORS

	S&P Composite [1]	NASDAQ Composite [1]	DJIA	S&P D/P	S&P E/P
1975 - 1982 Cycle					
1975			802.49	4.31%	9.15%
1976			974.92	3.77%	8.90%
1977			894.63	4.62%	10.79%
1978			820.23	5.28%	12.03%
1979			844.40	5.47%	13.46%
1980			891.41	5.26%	12.66%
1981			932.92	5.20%	11.96%
1982			884.36	5.81%	11.60%
1983 - 1991 Cycle					
1983			1,190.34	4.40%	8.03%
1984			1,178.48	4.64%	10.02%
1985			1,328.23	4.25%	8.12%
1986			1,792.76	3.49%	6.09%
1987			2,275.99	3.08%	5.48%
1988	[1]	[1]	2,060.82	3.64%	8.01%
1989	322.84		2,508.91	3.45%	7.41%
1990	334.59		2,678.94	3.61%	6.47%
1991	376.18	491.69	2,929.33	3.24%	4.79%
1992 - 2001 Cycle					
1992	415.74	\$599.26	3,284.29	2.99%	4.22%
1993	451.21	715.16	3,522.06	2.78%	4.46%
1994	460.42	751.65	3,793.77	2.82%	5.83%
1995	541.72	925.19	4,493.76	2.56%	6.09%
1996	670.50	1,164.96	5,742.89	2.19%	5.24%
1997	873.43	1,469.49	7,441.15	1.77%	4.57%
1998	1,085.50	1,794.91	8,625.52	1.49%	3.46%
1999	1,327.33	2,728.15	10,464.88	1.25%	3.17%
2000	1,427.22	2,783.67	10,734.90	1.15%	3.63%
2001	1,194.18	2,035.00	10,189.13	1.32%	2.95%
2002 - 2009 Cycle					
2002	993.94	1,539.73	9,226.43	1.61%	2.92%
2003	965.23	1,647.17	8,993.59	1.77%	3.84%
2004	1,130.65	1,986.53	10,317.39	1.72%	4.89%
2005	1,207.23	2,099.32	10,547.67	1.83%	5.36%
2006	1,310.46	2,263.41	11,408.67	1.87%	5.78%
2007	1,477.19	2,578.47	13,169.98	1.86%	5.29%
2008	1,220.04	2,161.65	11,252.62	2.37%	3.54%
2009	948.05	1,845.38	8,876.15	2.40%	1.86%
Current Cycle					
2010	1,139.97	2,349.89	10,662.80	1.98%	6.04%
2011	1,268.89	2,677.44	11,966.36	2.05%	6.77%
2012	1,379.35	2,965.56	12,967.08	2.24%	6.20%
2013	1,462.51	3,537.69	14,999.67	2.14%	5.57%
2014	1,930.67	4,374.31	16,773.99	2.04%	5.25%
2015	2,061.20	4,943.49	17,590.81	2.10%	4.59%

[1] Note: this source did not publish the S&P Composite prior to 1988 and the NASDAQ Composite prior to 1991.

Source: Council of Economic Advisors, Economic Indicators, various issues.

STOCK PRICE INDICATORS

	S&P Composite	NASDAQ Composite	DJIA	S&P D/P	S&P E/P
2005					
1st Qtr.	1,191.98	2,056.01	10,648.48	1.77%	5.11%
2nd Qtr.	1,181.65	2,012.24	10,382.35	1.85%	5.32%
3rd Qtr.	1,225.91	2,144.61	10,532.24	1.83%	5.42%
4th Qtr.	1,262.07	2,246.09	10,827.79	1.86%	5.60%
2006					
1st Qtr.	1,283.04	2,287.97	10,996.04	1.85%	5.61%
2nd Qtr.	1,281.77	2,240.46	11,188.84	1.90%	5.86%
3rd Qtr.	1,288.40	2,141.97	11,274.49	1.91%	5.88%
4th Qtr.	1,389.48	2,390.26	12,175.30	1.81%	5.75%
2007					
1st Qtr.	1,425.30	2,444.85	12,470.97	1.84%	5.85%
2nd Qtr.	1,496.43	2,552.37	13,214.26	1.82%	5.65%
3rd Qtr.	1,490.81	2,609.68	13,488.43	1.86%	5.15%
4th Qtr.	1,494.09	2,701.59	13,502.95	1.91%	4.51%
2008					
1st Qtr.	1,350.19	2,332.91	12,383.86	2.11%	4.55%
2nd Qtr.	1,371.65	2,426.26	12,508.59	2.10%	4.05%
3rd Qtr.	1,251.94	2,290.87	11,322.40	2.29%	3.94%
4th Qtr.	909.80	1,599.64	8,795.61	2.98%	1.65%
2009					
1st Qtr.	809.31	1,485.14	7,774.06	3.00%	0.86%
2nd Qtr.	892.23	1,731.41	8,327.83	2.45%	0.82%
3rd Qtr.	996.68	1,985.25	9,229.93	2.16%	1.19%
4th Qtr.	1,088.70	2,162.33	10,172.78	1.99%	4.57%
2010					
1st Qtr.	1,121.60	2,274.88	10,454.42	1.94%	5.21%
2nd Qtr.	1,135.25	2,343.40	10,570.54	1.97%	6.51%
3rd Qtr.	1,096.39	2,237.97	10,390.24	2.09%	6.30%
4th Qtr.	1,204.00	2,534.62	11,236.02	1.95%	6.15%
2011					
1st Qtr.	1,302.74	2,741.01	12,024.62	1.85%	6.13%
2nd Qtr.	1,319.04	2,766.64	12,370.73	1.97%	6.35%
3rd Qtr.	1,237.12	2,613.11	11,671.47	2.15%	7.69%
4th Qtr.	1,225.65	2,600.91	11,798.65	2.25%	6.91%
2012					
1st Qtr.	1,347.44	2,902.90	12,839.80	2.12%	6.29%
2nd Qtr.	1,350.39	2,928.62	12,765.58	2.30%	6.45%
3rd Qtr.	1,402.21	3,029.86	13,118.72	2.27%	6.00%
4th Qtr.	1,418.21	3,001.69	13,142.91	2.28%	6.07%
2013					
1st Qtr.	1,514.41	3,177.10	14,000.30	2.21%	5.59%
2nd Qtr.	1,609.77	3,369.49	14,961.28	2.15%	5.66%
3rd Qtr.	1,675.31	3,643.63	15,255.25	2.14%	5.61%
4th Qtr.	1,770.45	3,960.54	15,751.96	2.06%	5.42%
2014					
1st Qtr.	1,834.30	4,210.06	16,170.26	2.04%	5.38%
2nd Qtr.	1,900.37	4,195.81	16,603.50	2.06%	5.26%
3rd Qtr.	1,975.95	4,483.51	16,953.85	2.02%	5.37%
4th Qtr.	2,012.04	4,607.88	17,368.36	2.03%	4.97%
2015					
1st Qtr.	2,063.46	4,821.99	17,806.47	2.02%	4.80%
2nd Qtr.	2,094.37	5,029.47	18,007.48	2.05%	4.60%
3rd Qtr.	2,026.14	4,921.81	17,065.52	2.16%	4.72%
4th Qtr.	2,053.17	5,000.70	18,482.97	2.16%	

Source: Council of Economic Advisors, Economic Indicators, various issues.