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Exhibit Number : ORA-09
Commissioner : L. Randolph
ALJ : K. McDonald
Witness : T. Renaghan



OFFICE OF RATEPAYER ADVOCATES
CALIFORNIA PUBLIC UTILITIES COMMISSION

Report on the Results of Operations
for
Liberty Utilities
(formerly CalPeco Electric)
Test Year 2016
General Rate Case

Cost of Capital
Rate of Return
and
Return on Equity

San Francisco, California
November 9, 2015

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1 **COST OF CAPITAL, RATE OF RETURN AND RETURN ON EQUITY**

2 **I. INTRODUCTION**

3 This exhibit discusses the Office of Ratepayer Advocates (ORA) and Liberty
4 Utilities (LU) recommended rate of return (ROR) for test year (TY) 2016. The ROR
5 or weighted cost of capital is defined as the cost of common equity, preferred equity,
6 and long-term debt weighted by the proportions of common equity, preferred equity
7 and debt in the firm’s capital structure. Liberty Utilities is recommending a weighted
8 cost of capital of 7.92%, while ORA is recommending a weighted cost of capital of
9 7.17%.

10 **II. SUMMARY OF RECOMMENDATIONS**

11 The following summarizes ORA’s recommendations:

- 12 • ORA recommends that Liberty Utilities rely upon its 2015 actual
13 capital structure of 51.63% debt and 48.37% equity.
- 14 • ORA recommends a cost of equity of 9.71%.
- 15 • ORA recommends a cost of debt of 6.51%.
- 16 • Coupling ORA’s recommended capital structure with its
17 recommended cost of debt and equity yields a weighted average
18 cost of capital or Rate of Return (ROR) of 7.17%.

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1 Table 9-01 compares ORA's TY2016 forecast of Cost of Capital with those of
 2 Liberty:

3 **Table 9-01**
 4 **Liberty Cost of Capital for TY2016**
 5 **(In Thousands of Dollars)**
 6 **Liberty Cost of Capital**
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Description <i>Component</i> <i>(a)</i>	DRA Recommended			Liberty Utilities Proposed		
	<i>Weight</i> <i>(b)</i>	<i>Rate</i> <i>(c)</i>	<i>Wtd. Cost</i> <i>(d=b*c)</i>	<i>Weight</i> <i>(e)</i>	<i>Rate</i> <i>(f)</i>	<i>Wtd. Cost</i> <i>(g=e*f)</i>
Short-Term Debt	1.69 %	1.47 %	0.02 %	1.69 %	1.47 %	0.02 %
Customer Deposits	0.23 %	0.12 %	0.00 %	0.23 %	0.12 %	0.00 %
Long-Term Debt	49.70 %	4.92 %	2.45 %	43.08 %	4.92 %	2.12 %
Total Debt	51.63 %	6.51 %	2.47 %	45.00 %	6.51 %	2.14 %
Common Stock	0.42 %	9.71 %	0.04 %	0.42 %	10.50 %	0.04 %
Preferred Equity	0.00 %	9.71 %	0.00 %	0.00 %	10.50 %	0.00 %
Common Equity	47.95 %	9.71 %	4.65 %	54.57 %	10.50 %	5.73 %
Total Equity	48.37 %	9.71 %	4.70 %	55.00 %		5.77 %
Total Capital	100.00 %		7.17 %	100.00 %		7.92 %

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 9 Table 9-02 compares ORA's and Liberty Utilities' recommended cost of equity
 10 for TY2016.

11 **Table 9-02**
 12 **ORA and Liberty Utilities Recommended Cost of Equity**
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Financial Model	ORA	Liberty Utilities
(1)	(2)	(3)
Discounted Cash Flow	9.50 %	9.33 %
Capital Asset Pricing	9.31 %	10.40 %
Empirical Capital Asset Pricing	9.84 %	10.80 %
Risk Premium Models	10.19 %	10.70 %
Average	9.71 %	10.10

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1 **A. Overview of Liberty’s Request**

2 Liberty Utilities is proposing the Commission adopt a weighted cost of capital
3 for test year 2016 of 7.92%. This recommended weighted cost of capital is based on
4 a test year capital structure of 45% debt and 55% equity. Liberty Utilities estimates
5 a total debt cost of 6.51% and cost of equity of 10.5%. When these proposed debt
6 and equity costs are weighted by the capital structure it yields a weighted cost of
7 debt of 7.92%.

8 **1. Comparison Groups**

9 The standard approach in regulatory cost of capital proceedings is to
10 compare the firm in question to a group of comparable firms. Therefore, before
11 discussing Liberty Utilities and ORA’s capital structure and cost of equity
12 recommendations it will be useful review Liberty Utilities comparison groups of firms.

13 Liberty Utilities relies upon two comparison groups. Liberty Utilities explains
14 that the comparison groups consist of “(1) a group of investment-grade, dividend-
15 paying combination electric and gas utilities, and (2) a group consisting of Value
16 Line’s Western Electric Utilities. The companies included in my analysis were
17 required to have the majority of their revenues from regulated utility operations.”¹

18 Table 9-03 reports the Value Line Safety rating, the Value Line Financial
19 Strength and the Standard & Poor’s (S&P) bond rating for each firm in the
20 combination Electric and Gas comparison group. Table 9-04 reports analogous data
21 for each firm in the Value Line Electric Utility West comparison group.

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¹ Liberty Utilities, Exhibit 2, p. 21 of 241, lines 7-10, May 1, 2015.

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**Table 9-03
Electric and Gas Comparison Group Statistics**

Firm	Ticker	Value Line Safety	Value Line Financial Strength	S&P Bond Rating
(1)	(2)	(3)	(4)	(5)
Alliant Energy	LNT	2	A	A-
Ameren Corp	AEE	2	A	BBB+
Avista Corp	AVA	2	A	BBB
Black Hills	BKH	2	B++	BBB
CenterPoint Energy	CNP	2	B++	A-
CMS Energy	CMS	2	B++	BBB+
Consolidated Edison	ED	1	A+	A-
Dominion Resources	D	2	B++	A-
DTE Energy	DTE	2	B++	BBB+
Duke Energy	DUK	2	A	A-
Empire District Electric	EDE	2	B++	BBB
Entergy Corp	ETR	3	B++	BBB
Integrus Energy	TEG	2	A	A-
MGE Energy	MGEE	1	A	A
Eversource Energy	ES	1	A	A
Northwestern Corp	NWE	3	B+	BBB

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Table 9-03 (continued)
Electric and Gas Comparison Group Statistics

Firm	Ticker	Value Line Safety	Value Line Financial Strength	S&P Bond Rating
(1)	(2)	(3)	(4)	(5)
PEPCO Holdings	POM	3	B+	BBB+
PG&E Corp	PCG	3	B+	BBB
Public Service Enterprise	PEG	1	A++	BBB+
SCANA Corp	SCG	2	B++	BBB+
Sempra Energy	SRE	2	A	BBB+
TECO Energy	TE	2	B++	BBB+
UIL Holdings	UIL	2	B++	BBB
Vectren Corp	VVC	2	A	A-
Wisconsin Electric	WEC	1	A+	A-
XCEL Energy	XEL	1	A	A-

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Sources:

Columns (3) and (4): Value Line Investment Survey, September 18, 2015, July 31, 2015,
August 21, 2015.

Column (5): McGraw-Hill Financial.

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**Table 9-04
Value Line Electric Utility West Group Statistics**

Firm	Ticker	Value Line Safety	Value Line Financial Strength	S&P Bond Rating
(1)	(2)	(3)	(4)	(5)
Avista Corp	AVA	2	A	BBB
Black Hills	BKH	2	B++	BBB
Edison International	EIX	2	A	BBB+
El Paso Electric	EE	2	B++	BBB
Hawaiian Electric	HE	2	A	BBB-
IDA Corp	IDA	2	B++	BBB
Northwestern Corp	NEW	3	B+	BBB
PG&E Corp	PCG	3	B+	BBB
Pinnacle West	PNW	1	A+	A-
PNM Resources	PNM	3	B	BBB
Portland General	POR	2	B++	BBB
Sempra Energy	SRE	2	A	BBB+
Xcel Energy	XEL	1	A	A-

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Sources: Columns (3) and (4): Value Investment Survey, July 31, 2015.

Column (5): McGraw-Hill Financial

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2. Capital Structure

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Liberty Utilities proposes a capital structure consisting of 45% debt and 55% equity. As of December 31, 2014 Liberty Utilities' actual capital structure consists of 51.63% debt and 48.37% equity. Liberty Utilities argues that an increase in its equity share will "ensure that Liberty Utilities can remain a low risk for debt financing and thus continue to attract debt financing at competitive low rates."² In its 2013 test year General Rate Case, GRC, Liberty also proposed raising the equity share in its capital structure. In its 2013 GRC filing Liberty Utilities (CalPeco) proposed a capital structure of 45.01% debt and 54.99% equity.

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3. Cost of Equity

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Liberty Utilities recommends a cost of equity of 10.5%. Liberty Utilities based this recommendation on the results obtained from several standard financial models. Specifically, Liberty Utilities relied upon (1) The Single-Stage Discounted Cash Flow (DCF), (2) The Capital Asset Pricing Model, (CAPM), (3) The Empirical Capital Asset Pricing Model (ECAPM), (4) The Historic Risk Premium Model (HRP), and (5) An Allowed Risk Premium Model.³ The results obtained from these financial models were then "adjusted upward by 40 basis points to account for the Company's higher than average investment risk compared to other regulated utilities."⁴

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a. Single-Stage DCF Model

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The conventional DCF model relates a firm's security price to the next period's dividends, the investor's required return, and future dividend growth. The DCF model may be expressed as:

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$$(1) \quad P_0 = D_1 / (k - g)$$

² Liberty Utilities, Exhibit 2 p. 6 of 241, lines 15-17, May 1, 2015.

³ Liberty Utilities also includes an adjustment for flotation costs. This slightly raises the cost of equity derived from the financial models.

⁴ Liberty Utilities, Exhibit 2, p. 21 of 241, lines 14-16, May 1, 2015.

1 Where:

2 P_0 = The current share price.

3 D_1 = The next period's dividends.

4 k = The required return.

5 g = The growth in dividends.

6 Solving equation (1) for the required return (k), yields:

7 (2) $k = D_1/P_0 + g$

8 Estimates of future dividends, (D_1), are typically derived by multiplying the current
9 dividend by one plus the growth rate, or, $D_1 = D_0(1+g)$. Substituting this
10 relationship in (2) yields:

11 (3) $k = D_0/P_0(1+g) + g$

12 where D_0/P_0 represents the current dividend yield.

13 Deriving estimates of the cost of equity from this model requires estimates of
14 the current dividend yield and the expected growth in dividends. Liberty Utilities
15 relies upon dividend yields taken from the Value Line Investment Analyzer.

16 Specifically, Liberty Utilities "used the dividend yields reported in the Value Line
17 Analyzer (VLIA) on-line data base as of January 2015. Basing dividend yields on
18 average results from a large group of companies reduces the concerns that the
19 vagaries of individual company stock prices will result in an unrepresentative
20 dividend yield."⁵

21 The single-stage DCF model also requires forecasts of future dividend
22 growth. The standard approach is to rely on professional forecasts of earnings
23 growth as a proxy for dividend growth. Liberty Utilities adopted this approach
24 explaining that it "used analysts' long-term growth forecasts contained in Yahoo
25 Finance as proxies for investors' growth expectations in applying the DCF model. I
26 also used Value Line's growth forecasts as additional proxies."⁶

⁵ Liberty Utilities, Exhibit 2, p. 38 of 241, lines 1-4, May 1, 2015.

⁶ Liberty Utilities, Exhibit 2, pp. 38 (line 20) to 39 (line 1) of 241, May 1, 2015.

1 Table 9-05 summarizes Liberty Utilities single-stage DCF results.

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Table 9-05⁷
Liberty Utilities
Single-Stage Discounted Cash Flow
Cost of Equity

DCF Study	Return On Equity
Electric & Gas Value Line Growth	9.2 %
Electric & Gas Analysts Growth ⁸	9.4 %
Western Electric Value Line Growth	9.2 %
Western Electric Analysts Growth	9.5 %
Average	9.3

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10 **b. Capital Asset Pricing Model (CAPM)**

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12 The Capital Asset Pricing Model, (CAPM), relates the required return on an
13 asset to the risk-free rate, (Rf), the riskiness of the asset relative to the entire
14 market, as measured by (β), and a measure of the market risk premium, (Rm-Rf).
15 The market or equity risk premium is measured as the difference between the
16 market rate of return (Rm), and the risk-free rate, (Rf). The CAPM model measures
17 the cost of equity as:

18 (4) $k = R_f + \beta^*(R_m - R_f)$

19 Three inputs are required to implement the CAPM. The risk-free rate (Rf), a
20 measure of β , and an estimate of the market risk premium, (Rm-Rf).

21 To measure the risk-free rate Liberty Utilities relies on forecasts of the 30-year
22 Treasury yield. Liberty Utilities explains that: "Global Insight's long-term forecast for

⁷ Liberty Utilities, Exhibit 2, p. 47 of 241, lines 6-11.

⁸ Analyst's growth forecasts are taken from Yahoo Finance.

1 30-year bonds is 4.9 percent. Value Line’s is 4.8 percent. CBO’s [Congressional
2 Budget Office] is five percent, and the Wall Street Economic Forecasting Survey is
3 4.5 percent....The average 30-year long-term bond yield for the next several years
4 from the four sources is 4.8 percent.”⁹

5 The final input into the CAPM is the market (MRP) or equity risk premium
6 (ERP). Liberty Utilities relies upon a market or equity risk premium of 7%. Liberty
7 Utilities’ estimate of the MRP is based on the average of an historical MRP coupled
8 with a forecasted MRP. Liberty Utilities measures the historical MRP from “the
9 results obtained in the Morningstar (formerly Ibbotsen Associates) study, *Stocks,*
10 *Bonds, Bills, and Inflation, 2014 Classic Yearbook*. This study, which compiles
11 historical returns from 1926 to 2013, shows that a broad market sample of common
12 stocks outperformed long-term U.S. Treasury bonds by 6.2 percent over that long-
13 period. The historical MRP over the income component of long-term bonds than
14 over the total return is seven percent.”¹⁰ Liberty Utilities then combines this
15 historical MRP with a forecasted MRP derived from data obtained from Value Line
16 Investment Services. Liberty Utilities explains that: “The dividend yield on the
17 dividend- paying stocks covered in Value Line’s full data base is currently 1.93
18 percent (VLIA 01/2015 edition) and the average long-term growth rate is 10 percent.
19 Adding the dividend yield to the growth component produces an expected market
20 return on aggregate equities of 11.93 percent. Subtracting the risk free rate of 4.80
21 percent from the latter, the implied risk premium is 7.13 percent over long-term U.S.
22 Treasury bonds.”¹¹ Liberty Utilities then averages the historical and forecast MRP
23 estimates to arrive at a recommended MRP of 7%. Combining a risk-free rate of
24 4.9% with an average β of 0.75 and an MRP of 7% yields a CAPM cost of equity of
25 10.4%.

⁹ Liberty Utilities, Exhibit 2, p. 52 of 241, lines 9-14, May 1, 2015.

¹⁰ Liberty Utilities, Exhibit 2, p. 54 (line 16) to p. 55 (line 2) of 241, May 1, 2015.

¹¹ Liberty Utilities, Exhibit 2, p. 58 of 241, lines 4-9, May 1, 2015.

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**c. Empirical Capital Asset Pricing Model
(ECAMP)**

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The empirical capital asset pricing model (ECAPM) is an extension of the traditional CAPM model. Liberty Utilities explains that while empirical tests of the CAPM model “support the idea that beta is related to security returns, that the risk-return tradeoff is positive, and that the relationship is linear. The contradictory finding is that the risk-return tradeoff is not as steeply sloped as the predicted CAPM. That is, empirical research has long-shown that low-beta securities earn returns somewhat higher than the CAPM would predict and high-beta securities earn less than predicted.”¹² The suggested solution found in the academic finance literature is to adjust the traditional CAPM with a term α . This term represents a constant on the risk-return line and “flattens out” the risk-return line. The ECAPM is then written as:

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$$(5) \quad K_e = R_f + \alpha + \beta \times (R_m - R_f - \alpha)$$

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Based on a review of the literature Liberty Utilities adopts an estimate of α of 0.75, and estimates the ECAPM from:

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$$(6) \quad K_e = R_f + 0.25 * (R_m - R_f) + 0.75 * \beta * (R_m - R_f)$$

Adopting a risk-free rate of 4.8%, a β of 0.75, and an MRP of 7% yields an ECAP estimate of the cost of equity of 10.8%.

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d. Historical Risk Premium (HRP)

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The historic risk premium method to determining the cost of equity explicitly “recognizes that common equity capital is more risky than debt from an investor’s

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¹² Liberty Utilities, Exhibit 2. P. 59 of 241, lines 14-18, May 1, 2015.

1 standpoint, and that investors require higher returns on stocks than on bonds to
2 compensate for the additional risk.”¹³ Liberty Utilities develops two estimates of
3 the cost of equity based on the HRP approach. The first HRP is based on
4 comparing the realized return on the Standard & Poor’s (S&P) Utility Index to the
5 yield on long-term Treasury bonds. The HRP model is based on an econometric
6 model which relates allowed electric utility rates of return to interest rates.

7 Liberty Utilities concludes that over the period from 1931 through 2014 the
8 difference between the total return on the S&P Utility Index and the long-term
9 government bond yield average 5.7%. Combining this historic risk premium with
10 Liberty Utilities’ forecast of the 30 year treasury yields the estimated cost of equity.
11 In other words, the cost of equity equals 5.7% + 4.8% = 10.5%.¹⁴

12 Liberty Utilities second HRP model establishes a statistical relationship
13 between the equity risk premium and long-term interest rates. In this model the
14 equity or market risk premium is defined as the difference between regulator
15 approved returns on equity (ROE) and the long-term Treasury bond. This risk
16 premium is regressed on long-term Treasury bond yields. Liberty Utilities obtains
17 the following results.

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19 (7) $RP = 0.0870 - 0.5427 \text{ YIELD}$ ¹⁵

20 To arrive at an estimate of the cost of equity, a forecast of the risk-free rate is
21 inserted into equation (7). Utilizing Liberty Utilities’ forecast of the long-term
22 Treasury yield of 4.8 percent yields a “risk premium estimate of 6.1 percent, implying
23 a cost of equity of 10.9 percent.”¹⁶

¹³ Morin, R.A., “The New Regulatory Finance”, Public Utility Reports, Inc. Vienna, Virginia (2006), pp. 107-108.

¹⁴ When flotation costs are added the cost of equity equals 10.8%.

¹⁵ Liberty Utilities, Exhibit 2, p. 66 of 241, line 9, May 1, 2015.

¹⁶ Liberty Utility, Exhibit 2, p. 67 of 241, lines 3-4, May 1, 2015.

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B. ORA's Analysis

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1. Comparison Groups

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D.07-12-049 established the guidelines for selecting the appropriate comparison groups in regulatory cost of capital proceedings. D.07-12-049 that: "Three basic screens should be used in selecting a comparable proxy group. Those screens are: (1) to exclude companies that do not have investment grade credit ratings; (2) exclude companies that do not have a history of paying dividends and (3) exclude companies undergoing a restructuring or a merger. Additional screens may be used to the extent that justification is provided."¹⁷ The results reported in Tables 9-02 and 9-03 suggest that Liberty Utilities comparison group methodology satisfies the criteria set forth in D.07-12-049. As a result ORA has relied upon Liberty Utilities comparison groups for purposes of its cost of capital analysis in this proceeding.

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2. Capital Structure

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ORA recommends for the test year 2016 that the Commission adopt Liberty Utilities' 2015 recorded capital structure of 51.63% debt and 48.37% equity. This capital structure is close and comparable to Liberty Utilities historic average capital structure. Table 9-06 reports the average capital structures of the comparison groups over the period 2011 through 2014. Over the period 2011 through 2015 Liberty Utilities average recorded capital structure equaled 51.22 % debt and 48.78% equity. Liberty Utilities actual 2015 recorded capital structure is also very close to the historic capital structures of the electric and gas comparison group and the western electric utility group. ORA compared Liberty Utilities proposed capital structure to the historic average capital structures of the comparison groups over the

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¹⁷ D.07-12-049, Mimeo, p. 15.

1 period from 2010 through 2014. The results of this comparison are reported in Table
 2 9-07.

3 **Table 9-06**
 4 **Historic Capital Structures**
 5 **2011-2014**
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Comparison Group	2011	2012	2013	2014
	(1)	(2)	(3)	(4)
Electric & Gas				
Debt	51.13 %	50.77 %	51.03 %	51.33 %
Preferred Equity	0.48 %	0.41 %	0.37 %	0.34 %
Common Equity	48.40 %	48.82 %	48.60 %	48.33 %
Total	100.0 %	100.0 %	100.0 %	100.0 %
Electric Utility West				
Debt	49.85 %	48.95 %	48.92 %	48.93 %
Preferred Equity	0.55 %	0.89 %	0.80 %	0.82 %
Common Equity	49.60 %	50.15 %	50.28 %	50.25 %
Total	100.0 %	100.0 %	100.0 %	100.0 %

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8 Sources: Value Line Investment Services, September 18, 2015,

9 July 31, 2015, August 21, 2015.

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Table 9-07
Historic and Proposed Capital Structures 2010-2014

Capital Structure	Electric & Gas Group	Electric Utility West Group	Liberty Utilities 2015 Recorded	Liberty Utility Proposed
(1)	(2)	(3)	(4)	(5)
Long Term Debt	51.31 %	49.46 %	51.63 %	45.00 %
Preferred Equity	0.43 %	0.74 %	0.00 %	0.00 %
Common Equity	48.26 %	49.80 %	48.37 %	55.00 %
Total	100 %	100 %	100 %	100 %

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Sources: Column (2): Value Line Investment Survey September 18, 2015, July 31, 2015, August 21, 2015.

Column (3): Value Line Investment Survey, July 31, 2015.

10 The results reported in Table 9-07 show that Liberty Utilities actual recorded
11 capital structure is very similar to the historic capital structures of the electric and
12 gas comparison group and the electric utility west comparison group. Relying upon
13 its actual recorded capital structure would put Liberty Utilities on an equal footing
14 with its peers.

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3. Cost of Equity

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17 ORA recommends a cost of equity of 9.64%. Analogous to Liberty Utilities'
18 approach to estimating the cost of equity ORA relied upon (1) The Single-Stage
19 Discounted Cash Flow (DCF), (2) The Capital Asset Pricing Model (CAPM), (3) The
20 Empirical Capital Asset Pricing (ECAPM), (4) The Historic Risk Premium and (5) An

1 Allowed Risk Premium Model.¹⁸ ORA's results differ from Liberty Utilities primarily
2 because ORA relied upon differing forecast assumptions.

3 **a. Single-Stage Discounted Cash Flow (DCF)**

4
5 Deriving estimates of the cost of equity from the DCF model requires
6 estimates of the current dividend yield and expected growth rates. ORA calculated
7 the dividend yields for each firm in the comparison groups by dividing the most
8 recent estimates of quarterly dividends reported by Value Line with the most recent
9 30 day average of security prices.¹⁹ In past Cost of Capital proceedings the use of
10 one month, three month, and six month average stock prices to determine the yield
11 is quite common.²⁰ Quarterly dividends were transformed to annual dividends by
12 multiplying the quarterly dividends by four. Liberty Utilities estimates that the
13 average dividend yield for the electric and gas comparison was 3.42%. ORA's
14 average dividend yield for the electric and gas proxy group is 3.95%. For the
15 western electric comparison group ORA relied upon higher dividend yields than did
16 Liberty Utilities. ORA's average dividend yield for this proxy group is 3.55% while
17 Liberty Utility estimated an average dividend yield of 3.05%. ORA also calculated
18 average yields based on an average of the past sixty days of closing stock prices.

¹⁸ ORA financial model results also include a Flotation Cost adjustment.

¹⁹ Specifically, ORA relied upon the Value Investment Survey issues of September 18, 2015, July 31, 2015, and August 21, 2015. Daily closing security prices were downloaded directly from Yahoo Finance.

²⁰ See, for example, Pacific Gas and Electric Company, Cost of Capital 2013, Prepared Testimony, A.12-04-018, April 20, 2012, p. 2-21. Before the Public Utilities Commission of the State of California, Bear Valley Electric Service, Volume V, Direct Testimony, Cost of Capital, February 2012, p.13. Testimony Supporting Southern California Edison Company's Application for Authority to Establish Its Authorized Cost of Capital for Utility Operations for 2013 and to Reset the Annual Cost of Capital Adjustment Mechanism, A.12-04-015, April 20, 2012, p. 56.

1 The results were little different from relying upon the average of the past thirty days
2 of stock prices.²¹

3 Deriving estimates of the cost of equity from the single-stage DCF model also
4 requires estimates of the growth rate. The standard practice in cost of capital
5 studies is to base the growth rate upon securities analysts' forecasts of future
6 earnings per share (EPS). Dr. Roger Morin, for example, has noted that: "Published
7 studies in the academic literature demonstrate that growth forecasts made by
8 security analysts represent an appropriate source of DCF growth rates, are
9 reasonable indicators of investor expectations and are more accurate than forecasts
10 based on historical growth."²² Dr. Thomas Zepp, adds that: "even if the analysts
11 forecasts were not perfect, those forecasts should be used to determine the cost of
12 capital because investors rely on them."²³ ORA notes that both Southern California
13 Edison and Pacific Gas and Electric in 2012 Cost of Capital filings before this
14 Commission based their single-stage estimates of the growth rate on analysts'
15 forecasts of future EPS growth.

16 As explained previously, Liberty Utilities based their single-stage DCF growth
17 forecasts on information taken from Value Line Investment Services and Yahoo
18 Finance. ORA followed the same procedure. ORA' forecasts of EPS growth rates
19 taken from these sources are more recent than Liberty Utilities' forecasts. ORA
20 relied upon the Value Line Investment Services issues of September 18, 2015, July
21 31, 2015, and August 31, 2015. The forecasts taken from Yahoo Finance are as of
22 September 24, 2015.

²¹ Relying upon the past sixty days of closing stock prices results in a an average yield of 3.92% for the electric and gas comparison group and an average yield of 3.52% for the Electric Utility West proxy group.

²² Morin, R.A. "The New Regulatory Finance", Public Utility Reports, Virginia (2006) p. 298.

²³ Bear Valley Electric Service, Volume 5, Direct Testimony, Cost of Capital, February 2012, p. 13.

1 ORA’s approach to the single-stage DCF model differs from Liberty Utilities’
2 approach in one important respect. ORA adjusted the expected growth rate to
3 account for the quarterly payment of dividends. This approach has been adopted by
4 several cost of capital studies. Southwest Gas, for example, explains that: “Since
5 utility companies tend to increase their quarterly dividends at different times
6 throughout the year, it is reasonable to assume that dividend increases will be
7 evenly distributed over calendar quarters. Given that assumption, it is appropriate to
8 calculate the expected dividend yield by applying one-half of the of the long-term
9 growth rate to the current dividend yield.”²⁴ This approach has also been adopted
10 by Dr. J. Randall Woolridge of the Pennsylvania State University as well as by
11 analysts at the Federal Energy Regulatory Commission (FERC).²⁵

12 Table 9-08 reports Liberty Utilities expected EPS growth rates for each firm in
13 the Electric and Gas proxy group. ORA’s forecasted EPS growth rates for this proxy
14 group are reported in Table 9-09. The results reported in these tables show that
15 ORA’s Value Line EPS growth rate exceeds Liberty Utilities and Liberty Utilities
16 Yahoo Finance EPS growth exceeds ORA’s.

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²⁴ Direct Prepared Testimony of Robert B. Hevert On Behalf of the Southwest Gas Corporation, A.12-12-024, Volume 3, p. 20.

²⁵ DRA Report on the Cost of Capital for Test Year 2013 (2012), p. 4-33. Prepared Direct and Answering Testimony of Staff Witness, Midwest System Operator, Inc. and Ameren Illinois C0. FERC, No. ER11-277-00 at Appendix B, February 17, 2012.

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Table 9-08
Liberty Utilities EPS Growth Forecasts
Electric and Gas Proxy Group

Firm	Ticker	Value Line	Yahoo Finance
(1)	(2)	(3)	(4)
Alliant Energy	LNT	5.0 %	4.9 %
Ameren	AEE	4.5 %	8.9 %
Avista	AVA	5.5 %	5.0 %
Black Hills	BKH	9.5 %	7.0 %
CenterPoint Energy	CNP	5.5 %	3.5 %
CMS Energy	CMS	6.5 %	6.6 %
Consol. Edison	ED	2.0 %	2.4 %
Dominion Resources	D	5.0 %	6.5 %
DTE Energy	DTE	5.5 %	6.2 %
Duke Energy	DUK	5.0 %	4.8 %
Empire District Electric	EDE	4.0 %	3.0 %
Entergy	ETR	1.5 %	0.3 %
MGE Energy	MGEE	9.0 %	4.0 %
Eversource	ES	8.0 %	5.9 %
NorthWestern	NEW	3.5 %	7.1 %
PEPCO Holdings	POM	7.0 %	7.8 %
PG&E Corp	PCG	5.0 %	8.8 %
Public Service Electric & Gas	PEG	2.0 %	2.7 %

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Table 9-08 (continued)
Liberty Utilities EPS Growth Forecasts
Electric and Gas Proxy Group

Firm	Ticker	Value Line	Yahoo Finance
(1)	(2)	(3)	(4)
SCANA Corp	SCG	5.0 %	5.4 %
SEMPRA	SRE	7.0 %	7.6 %
TECO	TE	4.0 %	6.4 %
UIL Holdings	UIL	4.5 %	5.4 %
Vectren Corp	VVC	9.0 %	4.5 %
Wisconsin Electric	WEC	5.5 %	5.4 %
Xcel Energy	XEL	5.5 %	4.3 %
Average		5.21 %	5.36 %

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Sources: Column (3): Liberty Utilities, Exhibit-09, p.84 of 241.

Column (4): Liberty Utilities, Exhibit-09, p.86 of 241.

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**Table 9-09
ORA EPS Growth Forecasts
Electric and Gas Proxy Group**

Firm	Ticker	Value Line	Yahoo Finance
(1)	(2)	(3)	(4)
Alliant Energy	LNT	6.00 %	5.75 %
Ameren	AEE	7.00 %	6.25 %
Avista	AVA	5.00 %	5.00 %
Black Hills	BKH	4.50 %	3.48 %
CenterPoint Energy	CNP	---	1.43 %
CMS Energy	CMS	5.50 %	6.76 %
Consol. Edison	ED	3.00 %	2.72 %
Dominion Resources	D	8.00 %	5.38 %
DTE Energy	DTE	5.00 %	4.88 %
Empire District Electric	EDE	3.00 %	3.00 %
Entergy Corp	ETR	--	--
MGE Energy	MGEE	7.00 %	4.00 %
EverSource	ES	8.50 %	6.21 %
NortWestern	NEW	6.50 %	5.28 %
PEPCO Holdings	POM	8.00 %	0.65 %
PG&E Corp	PCG	10.50 %	5.86 %
Public Service Electric & Gas	PEG	3.50 %	2.18 %

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Table 9-09 (continued)
ORA EPS Growth Forecasts
Electric and Gas Proxy Group

Firm	Ticker	Value Line	Yahoo Finance
(1)	(2)	(3)	(4)
SCANA Corp	SCG	4.50 %	4.30 %
Sempra	SRE	8.50 %	11.00 %
TECO	TE	5.50 %	6.78 %
UIL Holdings	UIL	5.00 %	8.86 %
Vectren Corp	VVC	9.50 %	5.50 %
Wisconsin Energy	WEC	6.00 %	7.55 %
Xcel Energy	XEL	4.50 %	4.68 %
Average		6.07 %	5.08 %

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Sources: Column (3): Value Line Investment Survey, September 18, 2015, July 31, 2015, August 31, August 31, 2015.

Column (4): Yahoo Finance, September 24, 2015.

1 Table 9-10 reports Liberty Utilities' EPS growth forecasts for the Electric West
 2 proxy group. Similar, results are reported in Table 9-11 for ORA.

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 4 **Table 9-10**
 5 **Liberty Utility EPS Forecasts**
 6 **Electric Utility West**
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Firm	Ticker	Value Line	Yahoo Finance
(1)	(2)	(3)	(4)
Avista	AVA	5.50 %	5.00 %
Black Hills	BKH	9.50 %	7.00 %
Edison Intnl	EIX	2.50 %	3.50 %
El Paso Electric	EE	3.00 %	7.00 %
Hawaiian Electric	HE	4.00 %	3.40 %
IDA Corp	IDA	1.50 %	4.00 %
NorhtWestern Corp	NEW	3.50 %	7.10 %
PG&E Corp	PCG	5.00 %	8.80 %
Pinnacle West	PNW	4.00 %	3.70 %
PNM Resources	PNM	11.00 %	9.90 %
Portland General	POR	5.00 %	8.00 %
Sempra Energy	SRE	7.0 %	7.60 %
Xcel Energy	XEL	5.50 %	4.30 %
Average		5.15 %	6.10 %

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**Table 9-11
ORA EPS Forecasts
Electric Utility West**

Firm	Ticker	Value Line	Yahoo Finance
(1)	(2)	(3)	(4)
Avista	AVA	5.00 %	5.00 %
Black Hills	BKH	4.50 %	3.48 %
Edison Intl	EIX	3.00 %	2.41 %
El Paso Electric	EE	3.50 %	7.00 %
Hawaiian Electric	HE	3.50 %	3.80 %
IDA Corp	IDA	1.00 %	4.00 %
NorhtWestern Corp	NEW	6.50 %	5.28 %
PG&E Corp	PCG	10.50 %	5.86 %
Pinnacle West	PNW	4.00 %	5.37 %
PNM Resources	PNM	9.00 %	8.56 %
Portland General	POR	6.00 %	4.07 %
Sempra Energy	SRE	8.50 %	11.00 %
Xcel Energy	XEL	4.50 %	4.68 %
Average		5.35 %	5.42 %

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Sources: Column (3): Value Line Investment Survey, July 31, 2015.

Column (4): Yahoo Finance, September 24, 2015.

The results reported in Tables 9-10 and 9-11 show that ORA's forecasted EPS growth rates exceed Liberty Utilities forecasted growth rates for the Electric West proxy group.

Coupling the yields with the growth rates allows one to estimate of the cost of equity from the single-stage DCF model. Table 9-12 reports ORA's and Liberty Utilities recommended cost of equity derived from the single-stage DCF model.

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**Table 9-12
ORA and Liberty Utilities
DCF Cost of Equity**

DCF Study	ORA	Liberty Utilities
(1)	(2)	(3)
Electric & Gas Value Line	10.22 %	9.20 %
Electric & Gas Yahoo Finance	9.28 %	9.40 %
Electric & Gas Zacks	9.88 %	---
Western Electric Value Line Growth	9.18 %	9.20 %
Western Electric Yahoo Growth	9.26 %	9.50 %
Western Electric Zacks	9.51 %	--
Average	9.50 %	9.33 %

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ORA's higher single-stage DCF estimates can be explained by the fact that
ORA's estimated yields are higher than Liberty Utilities' and in some cases ORA's
forecasted EPS growth rates are higher than Liberty Utilities'.

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b. Capital Asset Pricing Model (CAPM)

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Following Liberty Utilities cost of equity analysis, ORA developed cost of
equity estimates based on the standard CAPM model. While ORA followed Liberty
Utilities methodology, ORA relied upon a different set of inputs than did Liberty
Utilities.

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First, ORA relied upon more recent estimates of β . The estimates of β relied
upon by ORA for the Electric & Gas proxy group as well as for the Western Electric
proxy group were little changed from Liberty Utilities original filing. For example, in

1 the case of the Electric and Gas group, Liberty Utilities relied upon an average β of
2 0.73. ORA's updated β is 0.74. Similarly, for the Electric West group Liberty Utilities
3 relied upon an average β of 0.76. ORA's updated β equals 0.77. In short, ORA and
4 Liberty Utilities are using similar estimates of β in their respective CAPM analysis.

5 ORA's forecast of the 30 year Treasury yield is much lower than that
6 recommended by Liberty Utilities. Liberty Utilities recommended a 30 year Treasury
7 yield of 4.8%. ORA recommends a 30 year Treasury yield of 3.82 %. ORA's
8 forecast of the 30 year Treasury yield is taken from the September IHS Global
9 Insight September 2015 Review of the U.S. Economy. To arrive at a forecast of the
10 risk-free rate ORA averaged Global Insight's forecast of the 30 year Treasury yield
11 over the period 2016 through 2025. Value Line's September 2015 forecast for the
12 30 year Treasury yield over the period 2015 through 2019 is 3.91%. This is nearly
13 identical to Global Insight's forecast. Furthermore, since January 2015 Global
14 Insight has been lowering its forecast of the 30 year Treasury yield. In January
15 2015, for example, Global Insight was forecasting that the 30 year Treasury yield
16 would average 4% over the 2015 – 2025 forecast horizon. By July 2015 Global
17 Insight forecasted that over the 2015 – 2025 period the 30 year Treasury yield would
18 average 3.95%. The actual 30 year Treasury yield in 2014 equaled 3.34%.

19 The final input required to implement the CAPM is an estimate of the market
20 or equity risk premium. The two most important issues in estimating the MRP are:
21 first, the appropriate historical time frame to estimating the MRP, and, second the
22 correct statistical technique.

23 Liberty Utilities argues that the MRP should be based upon the longest
24 possible period for which data is available. The rationale behind this argument is
25 that since "realized returns can be substantially different from prospective returns
26 anticipated by investors when measured over short periods, it is important to employ
27 returns realized over long time periods rather than returns realized over more recent
28 time periods when estimating the MRP with historical returns...Only over long time

1 periods will investor return expectations and realizations converge.”²⁶ Additionally,
2 the use of a long period MRP “minimizes subjective judgment and encompasses
3 many diverse regimes of inflation, interest rate cycles, and economic cycles.”²⁷

4 While there is some debate in the academic literature over the appropriate
5 time frame used to estimate the MRP, the majority of academic opinion indicates a
6 preference for the long-period approach. Aswath Damodaran, for example, notes
7 that: “the most widely used approach to estimating equity risk premiums is the
8 historical approach, where the actual returns earned on stocks over a long time
9 period is estimated, and compared to the actual returns on a default-free (usually
10 government security). The difference, on an annual basis, between the two returns
11 is computed and represents the historical risk premium.”²⁸ Damodaran also
12 provides evidence that long-run equity risk premiums display lower standard
13 deviations than short period risk premiums.²⁹ In past testimony ORA has also relied
14 upon the long-period approach for its estimate of the MRP.³⁰

15 The second major issue in calculating the MRP is whether to use an
16 arithmetic or geometric mean.³¹ Liberty Utilities argues for reliance upon the
17 arithmetic mean because the MRP “follows what is known in statistics as a random
18 walk.”³² While there has been some debate in the academic literature as to whether

²⁶ Liberty Utilities, Exhibit 2, p. 55 (line 19) to p. 56 (line 5) of 241, May 1, 2015.

²⁷ Liberty Utilities, Exhibit- 2, p. 56 of 241, lines 9-10, May 1, 2015.

²⁸ Damodaran, A., “Equity Risk Premiums (ERP): Determinants, Estimation and Implications – The 2015 Edition”, Stern School of Business, Updated-March 2015, p. 24.

²⁹ Damodaran, A., “Equity Risk Premiums (ERP): Determinants, Estimation and Implications – The 2015 Edition”, Stern School of Business, Updated-March 2015, p. 25.

³⁰ Report on the Cost of Capital for California Pacific Electric Company, General Rate Case, Test Year 2013, July 27, 2012. Report on the Cost of Capital for Southwest Gas Corporation, General Rate Case, Test Year 2014, June 3, 2013.

³¹ The geometric mean of a time series of observations is defined as $g = \prod (A_i)^{1/n} \quad i = 1 \dots n$

³² Liberty Utilities, Exhibit 2, p. 56 of 241, lines 11-12, May 1, 2015.

1 MRP's follows a random walk, the consensus appears to be that it does and
2 therefore one should rely on the arithmetic mean of the long-period MRP.

3 ORA's estimated MRP is based on the difference between large company
4 stock returns and the income returns on government bonds over the period 1950
5 through 2014. ORA arrived at an historic MRP of 6.90%. ORA excludes the period
6 from 1926 through 1949 because this period includes the Great Depression of the
7 1930s and World War II. There is some evidence that there were some distinct
8 differences between the pre- and post-War II economy. J. Bradford DeLong and
9 Lawrence Summers, for example, have noted that: "the amplitude of cyclical
10 fluctuations is much lower than it was before World War II."³³ In a study of U.S.
11 stock returns over the period 1927 – 1991, Kim, Nelson, and Starz, concluded that
12 the pattern of stock returns differed before and after World War II. According to
13 these authors, "The evidence suggests a change in the structure of returns at the
14 end of World War II."³⁴

15 ORA estimated the CAPM cost of equity for the electric and gas and electric
16 utility west comparison groups separately. For the electric utility west comparison
17 group ORA arrives at a CAPM cost of equity of 9.41%. This is based on a risk-free
18 rate of 3.82%, a MRP of 6.90%, and an average beta of 0.77. For the electric and
19 gas proxy group ORA arrives at a CAPM based on cost of equity of 9.20%.³⁵ This
20 estimate is based on a risk-free rate of 3.91%, an MRP of 6.90%, and an average
21 beta of 0.74.

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³³ DeLong, J.B., and Summers, L.H., "The Changing Variability of Economic Activity in the United States". (1984) National Bureau of Economic Research Working Paper No. 1450, p. 1.

³⁴ Kim, J.K., Nelson C.R., and Starz, R. "Mean Reversion in Stock Prices ? A Reappraisal of the Empirical Evidence", (1991), Review of Economic Studies, Vol. 58, p. 516.

³⁵ ORA's CAPM estimates have both been adjusted for flotation costs.

1 **c. Empirical Capital Asset Pricing Model**
 2 **(ECAPM)**

3 In developing its estimates of the cost of equity from ECAPM ORA adopted
 4 Liberty Utilities estimate of α of 0.25, but relied upon its own estimates of beta, the
 5 risk-free rate, and the MRP. That is, a risk-free rate of 3.91%, an MRP of 6.90%, an
 6 average beta of 0.77 for the electric utility west proxy group and an average beta of
 7 0.74 for the electric and gas comparison group. For the electric utility west group
 8 ORA estimates an ECAP cost of equity of 9.92% and for the electric and gas group
 9 the ECAPM cost of equity is 9.77%.³⁶

10 Table 9-11 reports a comparison of ORA's and Liberty Utilities cost of equity
 11 derived from the CAPM and ECAPM models.

12 **Table 9-13**
 13 **ORA and Liberty Utilities**
 14 **CAPM and ECAPM Cost of Equity**
 15

Model	ORA	Liberty Utilities
(1)	(2)	(3)
CAPM	9.31 %	10.4 %
ECAPM	9.84 %	10.8 %
Average	9.57 %	10.60 %

16
 17 **d. Risk Premium Models (HRP)**

18
 19 ORA's estimated cost of capital from the risk premium models follow Liberty
 20 Utilities approach. Liberty Utilities first HRP model derived a measure of the historic
 21 risk premium from the relationship between the total return of the S&P Utility index
 22 and the long-term Treasury yield. The second HRP model was based on a
 23 regression of allowed risk premiums and long-term interest rates.

³⁶ Both ORA's ECAPM estimates have been adjusted for flotation costs.

1 Under the first approach Liberty Utilities found an historic risk premium of
 2 5.67%. Adding a forecast of the 30 year Treasury yield to the historic risk premium
 3 yields an estimate of the cost of capital. For purposes of this model, ORA added its
 4 forecast of the 30 year Treasury yield to arrive at an HRP cost of equity of 9.80%.

5 For the econometrically based allowed HRP model, ORA first replicated
 6 Liberty Utilities regression coefficients and then relied upon its forecast of the 30
 7 year Treasury yield. This produced an estimate of the cost of capital of 10.45%.³⁷
 8 Table 9-14 reports a comparison of ORA’s and Liberty Utilities HRP based cost of
 9 equity.

10 **Table 9-14**
 11 **ORA and Liberty Utilities**
 12 **Risk Premium Cost of Equity**
 13

Model	ORA	Liberty Utilities
(1)	(2)	(3)
Historic Risk Premium	9.88 %	10.8 %
Allowed Risk Premium	10.49 %	10.9 %
Average	10.19 %	10.85 %

14
 15 **4. Risk Adjustment**

16 Liberty Utilities recommends that its calculated cost of equity be adjusted
 17 upwards by 40 basis points to account for its additional firm-specific risks. Including
 18 this adjustment yields a recommended cost of equity of 10.5%. Liberty Utilities
 19 argues that its faces two sets of risk factors. First, its prospective large construction
 20 budget, and second, its small size relative to other firms in the proxy groups.

³⁷ As in the case of the other financial models used in this report, ORA adjusted its HRP estimates for flotation costs.

1 Liberty Utilities explains that: “construction risk refers to the financial risks
2 caused by the magnitude of a company’s capital budget relative to its size and its
3 cash flow generating ability...a large construction program increases both financial
4 and regulatory risks.”³⁸ Regulatory risk concerns the extent to which the
5 Commission will disallow future construction expenditures and the financial risk
6 arises from the need for additional debt financing. One method of addressing
7 regulatory risk is to evaluate the regulatory stringency in which a utility operates.
8 Value Line Investment Services identifies the regulatory climate in California to be
9 “Above Average.”³⁹ An above average regulatory climate indicates a lower level of
10 regulatory risk relative to a firm operating in a more stringent regulatory environment.
11 Furthermore, Liberty Utilities is a wholly owned subsidiary of Algonquin Power and
12 Utilities Corporation (APUC). Any increased debt would be the responsibility of
13 APUC. Currently, APUC has a capital structure of 45.7% debt and 54.3% equity.⁴⁰
14 APUC also has a bond rating of BBB. Standard and Poor’s (S&P) has noted that:
15 “The stable outlook reflects our assessment of relatively stable cash flows,
16 supported by regulated cash flow from Liberty’s regulated utility business, and
17 APCO’s largely contracted power asset portfolio...We expect APUC to achieve
18 AFFO-to-total debt of greater than 15% within the next 12 to 24 months, with at least
19 45% of its consolidated cash flows supported by regulatory cash flows from
20 Liberty.”⁴¹ S&P then takes a positive view on Liberty’s ability to finance new
21 construction.

³⁸ Liberty Utilities, Exhibit 2, p.76 of 241, lines 8-9 and 15-16, May 1, 2015.

³⁹ Value Line Investment Services, July 31, 2015.

⁴⁰ Liberty Utilities response to ORA Data Request No. ORA-21-TMR, July 29,2015.

⁴¹ Algonquin Power & Utilities Corp, Liberty Utilities Co, and Algonquin Power Co. Upgraded to ‘BBB’ on Higher Cash Flow, Standard & Poor’s Ratings Services, McGraw-Hill Financial, October 11, 2013. (http://www.standardandpoors.com/en_US/Web/guest/article/-/view/type/HTML/id/12022834).

1 Liberty Utilities further argues that: “the size phenomenon is well documented
2 in the finance literature...Small companies have very different returns than large
3 ones and on average those returns have been higher. Small companies have very
4 different returns and on average those returns have been higher...The average
5 small stock premium is well in excess of the average stock, more than could be
6 expected by risk differences alone...”⁴² Aswath Damodaran, however, has cast
7 some doubts on the notion of a small cap premium. Damodaran notes that: “The
8 average premium for stocks in the smallest companies, in terms of market
9 capitalization, between 1926 and 2013 was 4.33%, but the standard error in that
10 estimate is 1.96%...,much of the premium is generated in one month of the year:
11 January...eliminating that month from our calculations would essentially dissipate
12 the entire small stock premium. That would suggest that size itself is not the source
13 of risk, since small firms in January remain small firms in the rest of the year, but that
14 the small firm premium, if it exists, comes from other source of risk that is more
15 pronounced or prevalent in January than in the rest of the year.”⁴³

16 **5. Cost of Equity Summary**

17 Table 9-15 reports ORA’s and Liberty Utilities recommended cost of equity
18 derived from the various financial models. Liberty Utilities’ financial models average
19 10.1%. Adding the suggested firm-specific risk premium yields a recommended cost
20 of equity of 10.5%. Averaging the results from ORA’s financial models yields a
21 recommended cost of equity of 9.71%.

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⁴² Liberty Utilities, Exhibit 2, p. 78 (lines 16-17, 19-21) p. 79 (line 1) of 241, May 1, 2015.

⁴³ Damodaran, A., “Equity Risk Premiums (ERP): Determinants, Estimation, and Implications-The 2015 Edition”, Updated: March 2015, Stern School of Business, p.38.

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Table 9-15
ORA and Liberty Utilities
Financial Model Summary

Financial Model	ORA	Liberty Utilities
(1)	(2)	(3)
DCF	9.50 %	9.33 %
CAPM	9.31 %	10.40 %
ECAPM	9.84 %	10.80 %
HRP	10.19 %	10.70 %
Average	9.71 %	10.10 %

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