

BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

In the Matter of the Application of	)	
Rocky Mountain Power for Authority to	)	Docket No. 20-035-04
Increase its Retail Electric Utility Service	)	
Rates in Utah and for Approval of its	)	
Proposed Electric Service Schedules and	)	Phase I – Cost of Capital
Electric Service Regulations	)	

DIRECT TESTIMONY OF

J. RANDALL WOOLRIDGE

FOR THE

OFFICE OF CONSUMER SERVICES

AUGUST 20, 2020

PacifiCorp d/b/a Rocky Mountain Power

Docket No. 20-035-04

Direct Testimony of Dr. J. Randall Woolridge

TABLE OF CONTENTS

I.	Introduction and Summary of Testimony	1
	A. Utility Rate of Return	2
	B. Summary of Positions	3
	C. Primary Rate of Return Issues in this Case	7
II.	Capital Cost Conditions and Utility Authorized ROEs	12
	A. Capital Market Conditions	12
	B. Authorized ROEs	21
III.	Proxy Group Selection	23
IV.	Capital Structure Ratios and Debt Cost Rates	26
V.	The Cost of Common Equity Capital	34
	A. DCF Approach	34
	B. Capital Asset Pricing Model.	48
	C. Equity Cost Rate Summary	63
VI.	Critique of RMP's Rate of Return Testimony	65
	A. The Company's DCF Approach	69
	1. The Asymmetric Elimination of Low-End DCF Results.	70
	2. Analysts' EPS Growth Rate Forecasts	72
	3. Projected DCF Model	75
	4. The DCF Model Understates the Cost of Equity Capital	76
	B. CAPM Approach	76
	1. The ECAPM Approach	77
	2. The Projected Risk-Free Interest Rate	78
	3. Market Risk Premium	79
	C. Bond Yield Risk Premium Approach	85
	1. The LongTerm Projected Risk-Free Interest Rate	86
	2. Risk Premium	86
	D. Expected Earnings Approach.	87
VII.	Summary and Conclusions	94
	Appendix A - Qualifications of J. Randall Woolridge	A-1 to A-2
	Appendix B - Projected EPS and GDP Growth and the Market Risk Premium	B-1 to B-10

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List of Exhibits

<u>Exhibit</u>	<u>Title</u>
JRW-1	Recommended Cost of Capital
JRW-4	Summary Financial Statistics for Proxy Groups
JRW-3	Capital Structure and Debt Cost Rate
JRW-4	The Relationship Between Estimated ROE and Market-to-Book Ratios
JRW-5	Utility Capital Cost Indicators
JRW-6	DCF Model
JRW-7	DCF Study
JRW-8	CAPM Study
JRW-9	RMP's Rate of Return Recommendation
JRW-10	GDP and S&P 500 Growth Rates

1 **Q. PLEASE STATE YOUR FULL NAME, ADDRESS, AND OCCUPATION.**

2 A. My name is J. Randall Woolridge, and my business address is 120 Haymaker Circle,
3 State College, PA 16801. I am a Professor of Finance and the Goldman, Sachs & Co.
4 and Frank P. Smeal Endowed University Fellow in Business Administration at the
5 University Park Campus of Pennsylvania State University. I am also the Director of
6 the Smeal College Trading Room and President of the Nittany Lion Fund, LLC. A
7 summary of my educational background, research, and related business experience is
8 provided in Appendix A.

9

10 **I. INTRODUCTION AND SUMMARY OF TESTIMONY**

11

12 **Q. WHAT IS THE SCOPE OF YOUR TESTIMONY IN THIS PROCEEDING?**

13 A. I have been asked by the Utah Office of Consumer Services (OCS) to provide an opinion
14 as to the fair rate of return or cost of capital for PacifiCorp d/b/a Rocky Mountain Power
15 (“RMP” or the “Company”), including the market cost of equity capital.

16 **Q. HOW IS YOUR TESTIMONY ORGANIZED?**

17 A. First, I summarize my cost of capital recommendation for the Company, and review the
18 primary areas of contention on the Company’s position. Second, I provide an overview
19 of capital market conditions and utility authorized ROEs. Third, I discuss the proxy
20 groups that I have used to estimate an equity cost rate for RMP. Fourth, I provide my
21 recommendations on the Company’s appropriate capital structure and senior capital cost
22 rates. Fifth, I estimate the equity cost rate for the Company. Finally, I critique RMP’s
23 rate of return analysis and testimony. In Appendix A, I provide a summary of my

educational and professional background.

A. Utility Rate of Return

Q. WHAT COMPRISES A UTILITY’S “RATE OF RETURN”?

A. A company’s overall rate of return consists of three main categories: (1) capital structure (i.e., ratios of short-term debt, long-term debt, preferred stock and common equity); (2) cost rates for short-term debt, long-term debt, and preferred stock; and (3) common equity cost, otherwise known as ROE.

Q. WHAT IS A UTILITY’S ROE INTENDED TO REFLECT?

A. An ROE is most simply described as the allowed rate of profit for a regulated company. In a competitive market, a company’s profit level is determined by a variety of factors, including the state of the economy, the degree of competition a company faces, the ease of entry into its markets, the existence of substitute or complementary products/services, the company’s cost structure, the impact of technological changes, and the supply and demand for its services and/or products. For a regulated monopoly, the regulator determines the level of profit available to the utility. The United States Supreme Court established the guiding principles for establishing an appropriate level of profitability for regulated public utilities in two cases: (1) *Bluefield*¹ and (2) *Hope*.² In those cases, the Court recognized that the fair rate of return on equity should be: (1) comparable to returns investors expect to earn on investments with similar risk;

¹ *Bluefield Water Works and Improvement Co. v. Public Service Commission of West Virginia*, 262 U.S. 679 (1923) (“Bluefield”).

² *Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591 (1944) (“Hope”).

(2) sufficient to assure confidence in the company's financial integrity; and
(3) adequate to maintain the company's credit and to attract capital.

Thus, the appropriate ROE for a regulated utility requires determining the market-based cost of capital. The market-based cost of capital for a regulated firm represents the return investors could expect from other investments, while assuming no more and no less risk. The purpose of all of the economic models and formulas in cost of capital testimony (including those presented later in my testimony) is to estimate, using market data of similar-risk firms, the rate of return equity investors require for that risk-class of firms in order to set an appropriate ROE for a regulated firm.

B. Summary of Positions

Q. PLEASE REVIEW THE COMPANY'S PROPOSED RATE OF RETURN OR COST OF CAPITAL.

A. RMP witness Ms. Nikki L. Kobliha recommends a capital structure consisting of 46.32% long-term debt, 0.01% preferred stock and 53.67% common equity, and long-term debt and preferred stock cost rates of 4.81% and 6.75%. RMP witness Ms. Ann E. Bulkley has recommended a common equity cost rate of 10.20% for RMP. The Company's overall proposed rate of return is 7.70%.

Q. PLEASE REVIEW YOUR RECOMMENDATIONS REGARDING THE APPROPRIATE MARKET-BASED RATE OF RETURN FOR RMP.

67 A. I have reviewed the Company's proposed capital structure and overall cost of capital.
68 RMP's proposed capitalization has more equity and less financial risk than the average
69 current capitalizations of electric utilities. I am using a capital structure that is more
70 reflective of the capital structures of electric utility companies. I am using a capital
71 structure consisting of 50.0% debt/preferred stock and 50.00% common equity. To
72 estimate an equity cost rate for the Company, I have applied the Discounted Cash Flow
73 Model ("DCF") and the Capital Asset Pricing Model ("CAPM") to my proxy group
74 of electric utility companies ("Electric Proxy Group"). I have also applied my analysis
75 to Ms. Bulkley's Proxy Group ("Bulkley Proxy Group"). My DCF and CAPM
76 analyses indicate an equity cost rate range of 7.60% to 8.95%.

77 **Q. WHAT IS YOUR PRIMARY RATE OF RETURN RECOMMENDATION FOR**
78 **RMP?**

79 A. As noted, my equity cost rate studies indicate of ROE between 7.60% and 8.95%. I
80 believe that this range accurately reflects current capital market data. However, I
81 recognize that this range is below the authorized ROEs for electric utility companies
82 nationally. Therefore, as a primary ROE for RMP, I am recommending 9.0%. This
83 recommendation: (1) gives weight to the higher authorized ROEs for electric utility
84 companies; and (2) recognizes the concept of 'gradualism' in which authorized ROEs
85 are adjusted on a gradual basis to reflect capital market data. Given my recommended
86 capitalization ratios and senior capital cost rates and using RMP's proposed long-term
87 debt and preferred stock rates (4.81% and 6.75%), my primary rate of return or cost
88 of capital recommendation for the Company is 6.91% and is summarized in Table 1
89 and Panel A of Exhibit JRW-1.

Table 1
OCS' Primary Rate of Return Recommendation

Capital Source	Capitalization Ratios	Cost Rate	Weighted Cost Rate
Long-Term Debt	49.99%	4.81%	2.40%
Preferred Stock	0.01%	6.75%	0.00%
Common Equity	<u>50.00%</u>	<u>9.00%</u>	<u>4.50%</u>
Total Capital	100.00%		6.91%

Q ARE YOU ALSO PROVIDING AN ALTERNATIVE RATE OF RETURN RECOMMENDATION FOR RMP?

A. Yes. My alternative rate of return recommendation uses RMP's proposed capital structure of 46.32% long-term debt, 0.01% preferred stock, and 53.67% common equity as well as RMP's proposed long-term debt cost and preferred stock cost rates of 4.81% and 6.75%. With respect to the equity component of my recommendation for rate of return, my alternative ROE recommendation is 8.75%, which is at the high end of my equity cost rate range of 7.60% to 8.95%. Given my alternative capitalization ratios and senior capital cost rates, based on the Company's proposed capital structure, my alternative rate of return or cost of capital recommendation for the Company is 6.92% and is summarized in Table 2 and Panel B of Exhibit JRW-1.

Table 2
OCS' Alternative Rate of Return Recommendation

Capital Source	Capitalization Ratios	Cost Rate	Weighted Cost Rate
Long-Term Debt	46.32%	4.81%	2.23%
Preferred Stock	0.01%	6.75%	0.00%
Common Equity	<u>53.67%</u>	<u>8.75%</u>	<u>4.70%</u>
Total Capital	100.00%		6.92%

107 **Q. PLEASE REVIEW THE COMMISSION'S ORDER IN RMP'S LAST ROE**
108 **CASE.**

109 A. On August 29, 2014, the Commission approved a settlement between the Company
110 and intervenors in Docket No, 13-035-184. The settlement included a capital structure
111 of 48.55% long-term debt, 0.02% preferred stock, and 51.43% common stock equity, debt
112 and preferred cost rates of 5.20% and 6.75%, and a ROE of 9.80%. The overall rate of
113 return on rate base was 7.57%.³

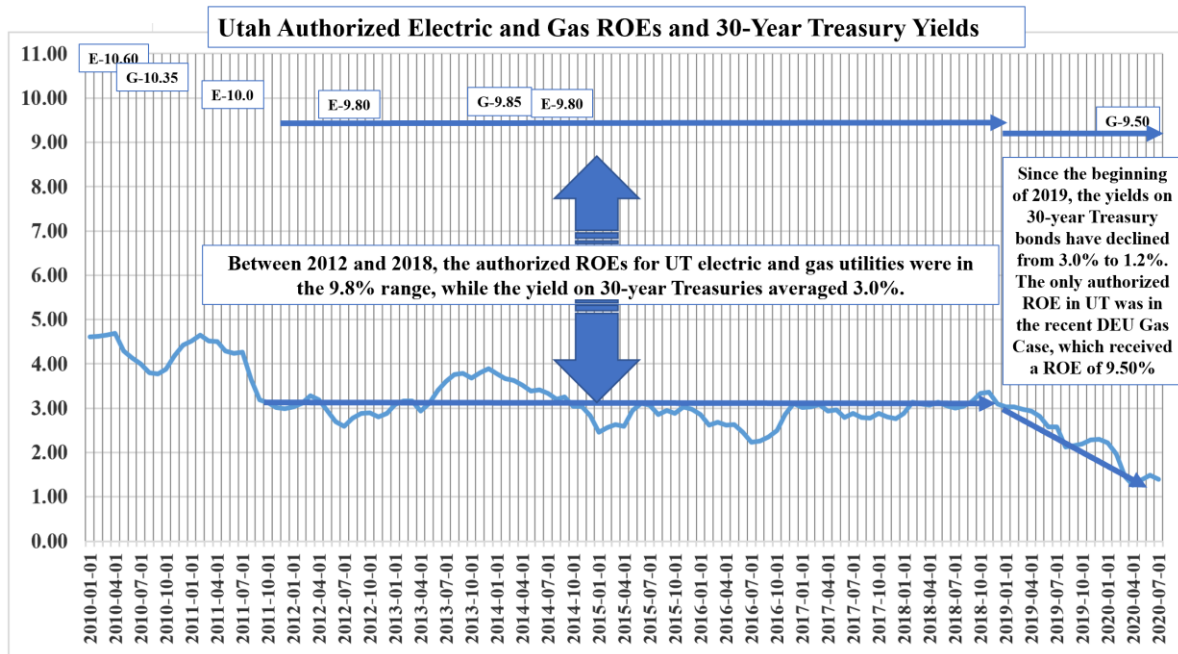
114 **Q. HAVE CAPITAL COSTS INCREASED OR DECREASED SINCE THE**
115 **COMPANY'S LAST RATE CASE?**

116 A. Interest rates and capital costs have declined since the last case. Figure 1 shows the
117 authorized electric and gas ROEs in Utah and the 30-year Treasury yield. The 30-year
118 Treasury yield averaged about 3.0% between 2012 and 2018. During that time, the
119 authorized ROEs in Utah were in the 9.80% range. However, the economy slowed in
120 2019, and interest rates began to decline. Eventually, the 30-year Treasury yield
121 traded at a record low level below 2.0% in August of 2019, and the Federal Reserve
122 was forced to cut the federal funds rate three times by year-end. These yields
123 continued to decline in 2020, and then the novel coronavirus hit in late February,
124 significantly impacting the world's population and economy. The coronavirus has
125 had a huge impact on the financial markets, with lower interest rates, highly volatile
126 stock prices, and uncertainty about future economic growth. This issue is addressed
127 below. The only recent ROE determination in Utah was for the gas distribution service

³ *In the Matter of the Application of Rocky Mountain Power Company for authority to Increase its Retail Electric Utility Service Rates in Utah and for Approval for its Proposed Electric Service Schedules and Electric Service Regulations, August 29, 2014.*

of Dominion Energy Utah, which was awarded a 9.5% ROE in a fully-litigated case. The Order in that case was dated February 25, 2020, which is effectively pre-coronavirus.

Figure 1
Utah Authorized ROEs and 30-Year Treasury Yields
2010-2020



C. Primary Rate of Return Issues in this Case

Q. PLEASE PROVIDE AN OVERVIEW OF THE PRIMARY ISSUES REGARDING RATE OF RETURN IN THIS PROCEEDING.

A. The primary issues related to the Company's rate of return include the following:
Capital Structure - The Company has proposed a capital structure that includes a common equity ratio of 53.67%. This capital structure includes a higher common equity ratio and therefore lower financial risk than the Company's parent, Berkshire

Hathaway Energy (“BHE”), and the average common equity ratios employed by the two proxy groups (mine and Ms. Bulkley’s);

Capital Market Conditions – Ms. Bulkley’s analyses, ROE results, and recommendations are based on assumptions of higher interest rates and capital costs. However, interest rates and capital costs have remained at low levels in recent years. In 2019, interest rates fell due to slow economic growth and low inflation and, as discussed below, interest rates have fallen even further to record low levels in 2020 due to the impact of the novel coronavirus on the world’s population and economy.

RMP’s Investment Risk is Below the Averages of the Two Proxy Groups –RMP’s S&P and Moody’s credit ratings of A and A3 are better than the averages of the proxy groups, which indicates the Company’s investment risk is less than that of the two proxy groups.

DCF Approach – Ms. Bulkley and I have both employed the traditional constant-growth DCF model. Ms. Bulkley’s has seriously overstated her reported DCF results in four ways: (1) she selectively eliminated low-end DCF results; (2) she has exclusively used the overly optimistic and upwardly biased EPS growth rate forecasts of Wall Street analysts and *Value Line*; (3) she has created her own new version of the DCF model – the projected constant-growth DCF model - in which she projects DCF inputs into the future; and (4) she has claimed that the DCF results underestimate the market-determined cost of equity capital due to high utility stock valuations and low dividend yields. On the other hand, when developing the DCF growth rate that I have used in my analysis, I have reviewed thirteen growth rate measures including historical and projected growth rate measures and have evaluated growth in dividends, book value,

and earnings per share. In addition, Ms. Bulkley's errors are magnified by the fact that she has used a small proxy group.

CAPM Approach – The CAPM approach requires an estimate of the risk-free interest rate, beta, and the market or risk premium. There are three issues with Ms. Bulkley's CAPM analysis: (1) her long-term projected (3.20%) 30-year Treasury yields are well in excess of current market yields; (2) she has employed the Empirical CAPM ("ECAPM") version of the CAPM, which makes inappropriate adjustments to the risk-free rate and the market risk premium; and (3) most significantly, she has computed a market risk premium of 12.49%. The 12.49% market risk premium is much larger than: (1) indicated by historic stock and bond return data; and (2) found in the published studies and surveys of the market risk premium. In addition, I demonstrate that the 12.49% market risk premium is based on totally unrealistic assumptions of future economic and earnings growth and stock returns. To compute her market risk premium, Ms. Bulkley has applied the DCF to the S&P 500 and employed analysts' three-to-five-year earnings per share ("EPS") growth-rate projections as a growth rate to compute an expected market return and market risk premium. As I demonstrate later in my testimony, the EPS growth-rate projection used for the S&P 500 and the resulting expected market return and market risk premium include totally unrealistic assumptions regarding future economic and earnings growth and stock returns.

As I highlight in my testimony, there are three commonly-used procedures for estimating a market risk premium – historic returns, surveys, and expected return models. I have used a market risk premium of 6.00%, which: (1) factors in all three approaches – historic returns, surveys, and expected return models – to estimate a

market premium; and (2) employs the results of many studies of the market risk premium. As I note, the 6.00% figure reflects the market risk premiums: (1) determined in recent academic studies by leading finance scholars; (2) employed by leading investment banks and management consulting firms; and (3) found in surveys of companies, financial forecasters, financial analysts, and corporate CFOs.

Alternative Risk Premium Model - Ms. Bulkley also estimates an equity cost rate using an alternative risks premium model which she calls the Bond Yield Risk Premium (“BYRP”) approach. There are two issues with this approach: (1) the base interest rates; and (2) the risk premium. With respect to the base rates, her long-term projected (3.20%) 30-year Treasury rates yield is well in excess of current market yields. The risk premium in her BYRP method is based on the historical relationship between the yields on long-term Treasury yields and authorized ROEs for electric utility companies. There are several issues with this approach: (1) This approach is a gauge of commission behavior and not investor behavior. Capital costs are determined in the market place through the financial decisions of investors and are reflected in such fundamental factors as dividend yields, expected growth rates, interest rates, and investors’ assessment of the risk and expected return of different investments; (2) Ms. Bulkley’s methodology produces an inflated measure of the risk premium because her approach uses historical authorized ROEs and Treasury yields, and the resulting risk premium is applied to projected Treasury yields; and (3) the risk premium is inflated as a measure of investor’s required risk premium, because electric utility companies have

212 been selling at market-to-book ratios in excess of 1.0.⁴ This indicates that the
213 authorized rates of return have been greater than the return that investors require.

214 Expected Earnings Approach - Ms. Bulkley also uses the Expected Earnings approach
215 to estimate an equity cost rate for the Company. Ms. Bulkley computes the expected
216 ROE as forecasted by *Value Line* for her proxy group of electric utilities. As I discuss
217 in my critique of Ms. Bulkley's presentation, the so-called "Expected Earnings"
218 approach does not measure the market cost of equity capital, is independent of most
219 cost of capital indicators, ignores the research on the upward bias in *Value Line's*
220 earnings projections, and has several other empirical issues. Therefore, the
221 Commission should ignore Ms. Bulkley's "Expected Earnings" approach in
222 determining the appropriate ROE for RMP.

223 Regulatory and Business Risk Factors - Ms. Bulkley also considers several other risk
224 factors in arriving at her 10.20% ROE recommendation. She claims that (1) RMP's
225 higher than average capital expenditures increase its risk relative to the proxy utility
226 companies; (2) RMP's regulatory risk is high due to operating in Utah; (3) RMP's
227 generation ownership and fuel sources makes it riskier than other utilities. Ms.
228 Bulkley's conclusion that these factors make RMP riskier are erroneous. Each of these
229 three factors are risk factors that are already considered in the credit-rating process
230 used by major rating agencies. As I noted above, the S&P and Moody's issuer credit
231 ratings for RMP of A and A3 indicate that the Company is less risky than the electric
232 utilities in the proxy groups. In addition, in terms of Utah regulatory risk, Ms. Bulkley

⁴ As discussed later in my testimony, a market-to-book ratio in excess of 1.0 indicates that a utility's earned ROE is above its cost of equity capital.

claims that Utah ROEs are below those of other states. This is erroneous. For example, consider the Commission approved a ROE of 9.50% for the gas distribution operations of Dominion Energy Utah in February of this year. This compares to a national average gas distribution ROE of 9.40% in 2020.⁵ In addition, Ms. Bulkley also performs a study which she says supports the Company's proposed capital structure with a common equity ratio of 53.67%. I show that her study is erroneous since she uses the subsidiary operating electric utilities in her study and not the parent holding companies who are the proxy utilities since they have common stock that is traded in the markets.

II. CAPITAL MARKET CONDITIONS AND UTILITY AUTHORIZED ROES

A. Capital Market Conditions

Q. PLEASE PROVIDE A SUMMARY OF THE UTILITY CAPITAL MARKET INDICATORS IN EXHIBIT JRW-5

A. Page 1 of Exhibit JRW-5 shows the yields on A rated public utility bonds. These yields declined with interest rates in general in the year 2019, falling from 4.25% to 3.25%. They bounced around during the months of March and April, and are currently at 2.90%.

Page 2 of Exhibit JRW-5 shows that the average dividend yield for publicly-held electric utilities is just above 3.0% as of year-end 2019. The average earned ROE

⁵ S&P Global Market Intelligence, RRA *Regulatory Focus*, 2020.

and market-to-book ratio for publicly-held electric utilities as of year-end 2019, as shown on page 3 of Exhibit JRW-5, were 10.2% and 2.02X.

Page 4 of Exhibit JRW-5 is an updated study of industry betas. I update this study each year, and in my January 2020 update, the average electric, gas and water utility betas were 0.58, 0.67, and 0.70 respectively. However, as discussed below, utility stocks were more volatile than the overall market during March and April 2020 when the financial markets were especially volatile. *Value Line* updates betas for companies on a quarterly basis. After their most recent study following the market volatility, I updated my industry beta study and now the average electric, gas and water utility betas were 0.86, 0.85, and 0.78, respectively. As such, this short period when utility stocks were more volatile than the market resulted in a significant increase in utility betas as published by *Value Line*. In fact, the betas of most of the low beta industries increased in the update. Nonetheless, utilities are still among the lowest risk industries as measured by beta. In addition, this issue is discussed later in this testimony, as there are some measurement problems with *Value Line* betas.

Q. PLEASE REVIEW THE FINANCIAL MARKETS IN 2020.

A. The financial markets began the year in good form – stock prices rose about five percent in the first six weeks of the year and interest rates declined. Then came weeks of chaos. In the middle of February, the spread of the coronavirus went global and the virus became a major risk factor for the world's population and global economy. The coronavirus disease 2019 (COVID-19), has spread to over 180 countries around the world and was officially identified by the World Health Organization as a global pandemic in mid-March.

Investors around the world began to focus on the potential economic consequences of the coronavirus in the middle of January.⁶ However, the markets largely ignored the impact of the virus until the third week of February. In the following month, the S&P 500 market declined 35% and investors fled to low risk financial assets, most notably long-term Treasury bonds. The yield on the benchmark 30-year Treasury bond declined from 2.0% to 1.3%, but even traded as low as 0.9%, an all-time low. Furthermore, the day-to-day volatility of prices in financial markets has been at extremes. The VIX, which is the CBOE volatility index and is known as Wall Street's Fear Index, increased from 15 and traded over 50, a level which has not been seen since the financial crisis in 2008.

Figure 2
S&P 500, 30-Year Treasury Yields,
The VIX, and Dow Jones Utilities (DJU)
YTD-2020



The stock market began its recovery in the third week of March. Despite the ongoing spread of COVID-19 and an economic crisis created by the virus that includes

⁶ Akane Otane, "Coronavirus Tests Market's Faith in Global Economy" *Wall Street Journal*, January 28, 2020.

record unemployment, the S&P 500 has come back strong and is within 5% of its previous all-time high in February. The 30-year Treasury yield, which was about 2.0% in mid-February, dropped to record low levels below 1.0% and now has come back to about 1.4%. The VIX, which topped out over 50, is now in the 20-25 range. And utility stocks, which declined with the market by about 35% from Mid-February to mid-March, have come back, but less so than the overall market.

Q. HOW HAVE UTILITY STOCKS FARED IN THIS MARKET?

A. Given their regulated nature, utility stocks have traditionally been very low risk and would be expected to outperform the overall market in a downturn. However, these stocks lost that identity in March and April of this year due to the economic crisis brought on by the novel coronavirus. This was recently highlighted in the *Wall Street Journal*.⁷ The article noted that utility stocks were more volatile than the overall market in March and April, a rare occurrence. The only other time this has happened in the past two years is during a bout of market volatility in February 2018. Investors' concerns appear to be related to several factors unique to public utilities: (1) the potential falling power demand; (2) with the loss of jobs, customers may not be able to pay their bills; (3) a slower economy will result in lower power demand for commercial and industrial customers; and (4) perhaps reflecting the lower demand, wholesale power prices fell 20% in March. The bottom line is that utility investors are not used to the uncertainty associated with events like the coronavirus. The article also noted that, despite these issues, nearly all major U.S. utilities have reaffirmed

⁷ Anna Hirtenstein – “Safe Utilities Have Been More Volatile Than Broader Stock Market,” *Wall Street Journal*, June 14, 2020.

their full-year guidance, only CenterPoint has reduced its dividend, and to date, there have not been any credit downgrades from S&P or Moody's. Along these lines, the article also noted that the stability of the earnings is not really an issue with utilities, but that may be hurting utilities now as investors, in the market bounce back, are looking for companies and industries that will recover when the economy rebounds.

Q. HOW HAVE THESE MARKET DEVELOPMENTS IMPACTED ESTIMATING THE COST OF EQUITY CAPITAL FOR A PUBLIC UTILITY?

A. Traditionally, there are three models used to estimate an equity cost rate for a public utility – the DCF, CAPM, and risk premium models. The issues with using these models in the markets today are summarized below:

1. DCF Model – The ROE from the DCF model is the sum of the dividend yield and expected long-term growth rate. The dividend yield is observable, and dividend yields have increased due to the decline in utility stock prices. However, day-to-day stock prices are volatile, and dividend levels may change. But the big factor is the long-term growth rate. The long-term growth rate is usually based, in part, on analysts' three-to-five-year EPS growth rate estimates. It is likely that these projected growth rates will be lowered at some point due to the significant slowdown in economic growth associated with the coronavirus.

2. CAPM Approach – The CAPM has three components – the risk-free interest rate, beta, and the market risk premium ("MRP"). The impact of the decrease in the risk-free interest rate yield is directly observable, but it can be volatile on a daily basis. Betas are measured using historical returns and, with the inclusion of the recent volatility in

utility stocks, utility betas have increased. The highly uncertain element of the CPAM is the impact of the current environment on the market risk premium. The market risk premium is measured as the expected return on the stock market ($E(RM)$) minus the risk-free rate of interest (RF). The market risk premium increases due to the lower level of the risk-free interest rate. However, the impact of the current environment on the expected stock market return ($E(RM)$) is uncertain. Historical return and survey approaches to estimating the MRP would not capture the changes over the past several months. And the expected return models would suffer from the same issue as the DCF model. Namely, estimates of the $E(R)$ are uncertain, since these models normally rely, in large part, on analysts' forecasts of three-to-five-year EPS growth rates and, these forecasts would appear to be very difficult to make given the uncertain economic environment. I believe that this is even more true for the S&P 500 as opposed to regulated utilities given the huge impact of the virus on such industries as travel, restaurants, hotels, aviation, autos, and other sectors tied to retail spending.

3. Risk Premium Approach – The ROE from a risk premium approach is the sum of the risk-free interest rate and a risk premium. As noted, the risk-free rate component is directly observable, and is lower in the current environment. The risk premium component of the model is usually computed using historical utility stock and bond returns or historical authorized utility ROEs minus the risk-free interest rate. Since both the stock and bond returns and the authorized ROEs approaches to estimating the risk premium component use historical data and hence do not change with the current environment, the risk premium is not impacted by the current environment. But,

whether a risk premium model produces a high or a lower equity cost rate rests on the relationship between the lower level on interest rates relative to the risk premium.

Q. PLEASE SUMMARIZE YOUR OBSERVATIONS ON THE APPLICATION OF THE DCF, CAPM, AND RISK PREMIUM MODELS TO ESTIMATE THE COST OF EQUITY CAPITAL IN THE CURRENT FINANCIAL MARKET.

A. The changes in the financial markets due to the coronavirus have resulted in different signals concerning a utility's equity cost rate. A lower equity cost rate is indicated by lower interest rates (CAPM and risk premium) and lower economic growth (DCF and CAPM). A higher equity cost rate is suggested by lower stock prices (higher dividend yield in DCF). But also the great level of uncertainty about economic growth provides mixed signals for the DCF and CAPM models. In the end, the developments in the markets in recent months have some positive and some negative effects on the DCF, CAPM, and risk premium equity cost rate results.

Q. CAN YOU ADDRESS THE FORECASTS OF HIGHER INTEREST RATES AND CAPITAL COSTS USED BY MS BULKLEY?

A. As noted, Ms. Bulkley has used the interest rates forecasts of economists in her CAPM and BYRP equity cost rate approaches and in her discussion of capital market conditions. On this topic, it is important to note that economists have consistently forecast higher interest rates over the past decade, and they have consistently been wrong. This is supported by the following: (1) After the announcement of the end of Quantitative Easing III ("QEIII") program in 2014, all the economists in Bloomberg's interest rate survey forecasted interest rates would increase in 2014, and 100% of the

economists were wrong;⁸ (2) *Bloomberg* reported that the Federal Reserve Bank of New York has gone as far as stopping the use of interest rate estimates of professional forecasters in its interest rate model;⁹ (3) A study entitled “How Interest Rates Keep Making People on Wall Street Look Like Fools,” which evaluated economists’ forecasts for the yield on ten-year Treasury bonds at the beginning of the year for the last ten years,¹⁰ demonstrated that economists consistently predict that interest rates will go higher, and interest rates have not fulfilled the predictions; and (4) A study that tracked economists’ forecasts for the yield on ten-year Treasury bonds on an ongoing basis from 2010 until 2015.¹¹ The results of this study, which was entitled “Interest Rate Forecasters Are Shockingly Wrong Almost All of the Time,” demonstrate how economists continually forecast that interest rates are going up, and they do not.

More recently, in an end-of-decade financial markets review series in the *Wall Street Journal*, Gregory Ip highlighted how economists’ forecasts of higher interest rates over the 2010s continued to be erroneous. He provided evidence that economists forecast that short-term and long-term interest rates would go up, and these forecasts were consistently wrong. The article provides insights as to why the longest economic expansion on record that has resulted in a record-breaking stock market run and a 50-year low unemployment rate, was coupled with inflation that consistently ran below

⁸ Ben Eisen, “Yes, 100% of economists were dead wrong about yields, *Market Watch*,” October 22, 2014.

⁹ Susanne Walker and Liz Capo McCormick, “Unstoppable \$100 Trillion Bond Market Renders Models Useless,” *Bloomberg.com* (June 2, 2014). <http://www.bloomberg.com/news/2014-06-01/the-unstoppable-100-trillion-bond-market-renders-models-useless.html>.

¹⁰ Joe Weisenthal, “How Interest Rates Keep Making People on Wall Street Look Like Fools,” *Bloomberg.com*, March 16, 2015. <http://www.bloomberg.com/news/articles/2015-03-16/how-interest-rates-keep-making-people-on-wall-street-look-like-fools>.

¹¹ Akin Oyedele, “Interest Rate Forecasters Are Shockingly Wrong Almost All of the Time,” *Business Insider*, July 18, 2015. <http://www.businessinsider.com/interest-rate-forecasts-are-wrong-most-of-the-time-2015-7>.

the Fed's 2% target and record low interest rates.¹² The bottom line – over the past decade - economists have consistently forecasted higher interest rates, and they have consistently been wrong!

Q. WHAT DO YOU RECOMMEND THE COMMISSION DO REGARDING THE FORECASTS OF HIGHER INTEREST RATES AND CAPITAL COSTS?

A. I suggest that the Commission set an equity cost rate based on current market cost rate indicators and not speculate on the future direction of interest rates. As the studies discussed above indicate, economists are always predicting that interest rates are going up, and yet they are almost always wrong. Obviously, investors are well aware of the consistently wrong forecasts of higher interest rates, and therefore place little weight on such forecasts. Investors would not be buying long-term Treasury bonds or utility stocks at their current yields if they expected interest rates to suddenly increase, thereby producing higher yields and negative returns. For example, consider a utility that pays a dividend of \$2.00 with a stock price of \$50.00. The current dividend yield is 4.0%. If, as Ms. Bulkley suggests, interest rates and required utility yields increase, the price of the utility stock would decline. In the example above, if higher return requirements led the dividend yield to increase from 4.0% to 5.0% in the next year, the stock price would have to decline to \$40, which would be a -20% return on the stock. Obviously, investors would not buy the utility stock with an expected return of -20% due to higher dividend yield requirements.

In sum, it is practically impossible to accurately forecast rates and prices of

¹² Gregory Ip, "Economists Got it Wrong for a Decade. They're Trying to Figure Out Why," *Wall Street Journal*, (December 14, 2019). P. C1.

investments that are determined in the financial markets, such as interest rates, and prices for stocks and commodities. For interest rates, I have never seen a study that suggests one forecasting service is consistently better than others or that interest rate forecasts are consistently better than just assuming the current interest rate will be the rate in the future. As discussed above, investors would not be buying long-term Treasury bonds or utility stocks at their current yields if they expected interest rates to suddenly increase, thereby producing higher yields and negative returns.

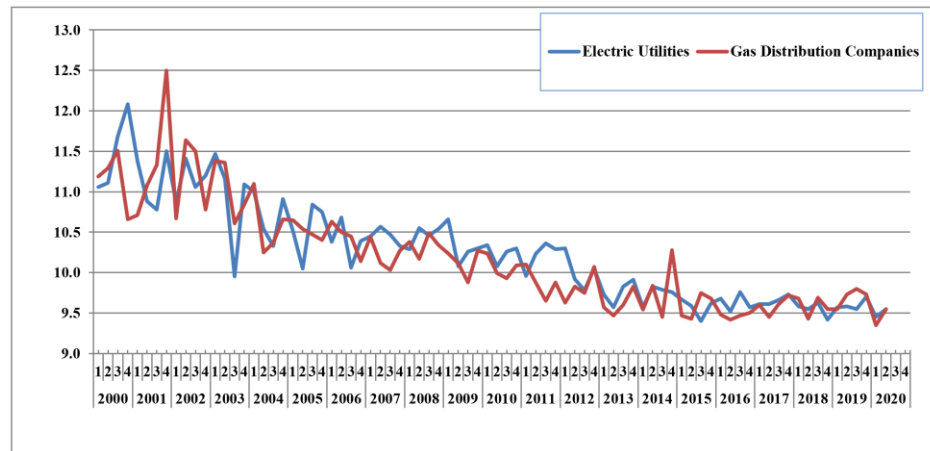
B. Authorized ROEs

Q. PLEASE DISCUSS THE TREND IN AUTHORIZED ROES FOR ELECTRIC AND GAS COMPANIES.

A. Over the past five years, a period during which we have witnessed historically low interest rates, authorized ROEs for electric utility and gas distribution companies have slowly declined to reflect the low capital cost environment. In Figure 3, I have graphed the quarterly authorized ROEs for electric and gas companies from 2000 to 2020. There is clearly a downward trend in the data. On an annual basis, these authorized ROEs for electric utilities have declined from an average of 10.01% in 2012, 9.8% in 2013, 9.76% in 2014, 9.58% in 2015, 9.60% in 2016, 9.68% in 2017, 9.56% in 2018, 9.64% in of 2019, and 9.47% in the first half of 2020, according to Regulatory Research Associates.¹³

¹³ S&P Global Market Intelligence, RRA *Regulatory Focus*, 2020.

Figure 3
Authorized ROEs for Electric Utility and Gas Distribution Companies
2000-2020



Q. DO YOU BELIEVE THAT YOUR ROE RECOMMENDATION MEETS *HOPE* AND *BLUEFIELD* STANDARDS?

A. Yes, I do. As previously noted, according to the *Hope* and *Bluefield* decisions, returns on capital should be: (1) comparable to returns investors expect to earn on other investments of similar risk; (2) sufficient to assure confidence in the company's financial integrity; and (3) adequate to maintain and support the company's credit and to attract capital. As provided in response to OCS 2.28, the Company has earned an average ROE over the past three fiscal years of just over 9.00% in UT, ID, WY, and OR.¹⁴ The Company's S&P and Moody's credit ratings of A and A3 are two notches and one notch above the average of my Electric Proxy Group and Ms. Bulkley's Proxy Group. While my recommendation is below the average authorized ROEs for electric utility companies, it reflects the downward trend in authorized and earned ROEs of electric utility companies. Therefore, I do believe that my ROE recommendation

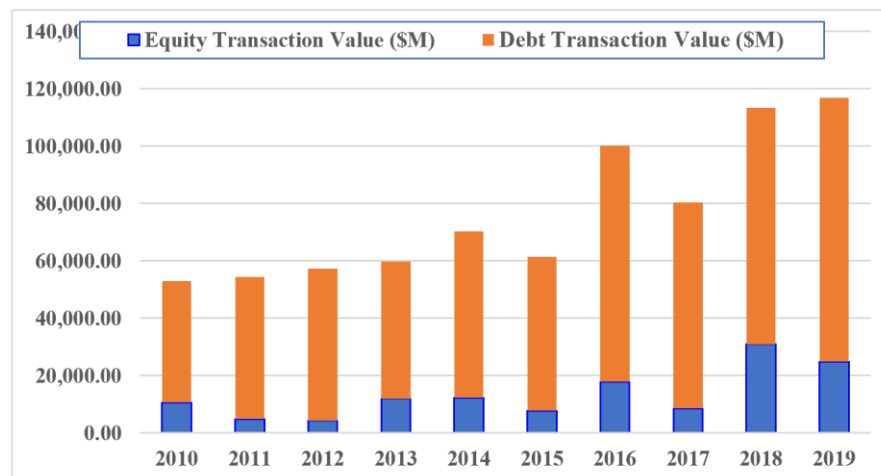
¹⁴ The Company does not have separate reporting for its CA operations. See Company response to OCS 2.28.

meets the criteria established in the *Hope* and *Bluefield* decisions.

Q. ARE UTILITIES ABLE TO ATTRACT CAPITAL WITH THE LOWER ROES?

A. Yes. Figure 4 shows the annual amounts of debt and equity capital raised by public utility companies over the past decade. Electric utility and gas distribution companies have taken advantage of the low interest rate and capital cost environment of recent years and raised records amount of capital in the markets. In fact, in each of 2018 and 2019, public utilities have raised a total of over \$100 billion in debt and equity. Clearly, even with lower ROEs, utilities are able to attract record amounts of capital.

Figure 4
Debt and Equity Capital Raised by Public Utilities
2010-2019



Source: S&P Global Market Intelligence, S&P Cap IQ, 2020.

III. PROXY GROUP SELECTION

Q. PLEASE DESCRIBE YOUR APPROACH TO DEVELOPING A FAIR RATE OF RETURN RECOMMENDATION FOR RMP.

A. To develop a fair rate of return recommendation for the Company (market cost of equity), I have evaluated the return requirements of investors on the common stock of a proxy group of publicly-held electric utility companies.

Q. PLEASE DESCRIBE YOUR PROXY GROUP OF ELECTRIC COMPANIES.

A. The selection criteria for my Electric Proxy Group include the following:

1. At least 50% of revenues from regulated electric operations as indicated in the most recent SEC 10-K Report;
2. Listed as an U.S.-based Electric Utility by *Value Line Investment Survey*;
3. An investment grade issuer credit rating by Moody's and/or S&P;
4. Has paid a cash dividend in the past six months, with no cuts or omissions;
5. Not involved in an acquisition of another utility, the target of an acquisition, or in the sale or spin-off of utility assets, in the past six months; and
6. Analysts' long-term EPS growth rate forecasts available from Yahoo, Reuters, and/or Zacks.

My Electric Proxy Group includes twenty-nine companies. Summary financial statistics for the proxy group are listed in Panel A of page 1 of Exhibit JRW-2.¹⁵ The median operating revenues and net plant among members of the Electric Proxy Group are \$6,338.0 million and \$23,661.5 million, respectively. The group receives 83% of its revenues from regulated electric operations, has BBB+ and Baa1 issuer credit ratings from S&P and Moody's respectively, a current average common equity ratio of 44.0%, and an earned return on common equity of 10.3%.

¹⁵ In my testimony, I present financial results using both mean and medians as measures of central tendency. However, due to outliers among means, I have used the median as a measure of central tendency.

Q. PLEASE DESCRIBE MS. BULKLEY'S PROXY GROUP OF ELECTRIC UTILITY COMPANIES.

A. The Bulkley Proxy Group consists of twenty electric utility companies. Summary financial statistics for the proxy group are listed on Panel B of page 1 of Exhibit JRW-2. The median operating revenues and net plant among members of the Bulkley Proxy Group are \$4,397.8 million and \$16,613.6 million, respectively. The group receives 80% of revenues from regulated electric operations, has an average BBB+ issuer credit rating from S&P and an average Baa1 long-term rating from Moody's, a current common equity ratio of 43.6%, and an earned return on common equity of 10.7%.

Q. HOW DOES THE INVESTMENT RISK OF THE COMPANY COMPARE TO THAT OF THE TWO PROXY GROUPS?

A. I believe that bond ratings provide a good assessment of the investment risk of a company. Page 1 of Exhibit JRW-2 also shows S&P and Moody's issuer credit ratings for the companies in the two groups. RMP's issuer credit rating is A according to S&P and A3 according to Moody's. RMP's S&P rating (A) is two notches above the average S&P rating for the Electric and Bulkley Proxy Groups (BBB+). RMP's Moody's rating of A3 is one notch above the average Moody's rating for the Electric and Bulkley Proxy Groups (Baa1). As such, I believe that RMP is less risky than the Electric and Bulkley Proxy Groups.

Q. HOW DOES THE INVESTMENT RISK OF THE TWO PROXY GROUPS COMPARE BASED ON THE VARIOUS RISK METRICS PUBLISHED BY VALUE LINE?

A. On page 2 of Exhibit JRW-2, I have assessed the riskiness of the two proxy groups using five different risk measures from *Value Line*. These measures include Beta, Financial Strength, Safety, Earnings Predictability, and Stock Price Stability.¹⁶ These risk measures suggest that the two proxy groups are similar in risk. The comparisons of the risk measures include Beta (0.86 vs. 0.88), Financial Strength (A vs. A), Safety (1.8 vs. 1.9), Earnings Predictability (76 vs. 82), and Stock Price Stability (88 vs. 89). On balance, these measures suggest that the two proxy groups are similar in risk.

IV. CAPITAL STRUCTURE RATIOS AND DEBT COST RATES

Q. PLEASE DESCRIBE RMP'S PROPOSED CAPITAL STRUCTURE.

A. The Company has proposed a capital structure consisting of 46.32% long-term debt, 0.01% preferred stock and 53.67% common equity, and a long-term debt and preferred stock cost rates of 4.81% and 6.75%. This is shown in Panel A of page 1 of Exhibit JRW-3.

Q. WHAT ARE THE COMMON EQUITY RATIOS IN THE CAPITALIZATIONS OF THE TWO PROXY GROUPS?

A. As shown in page 1 of Exhibit JRW-2, the average common equity ratios of the Electric and Bulkley Proxy Groups are 44.0% and 43.6%, respectively. As such, RMP's

¹⁶ These metrics are defined on page 3 of Exhibit JRW-2.

540 proposed capitalization from investor-provided capital has more equity and a little less
541 financial risk than the average current capitalizations of the electric utility companies
542 in the proxy groups.

543 **Q. IS IT APPROPRIATE TO USE THE COMMON EQUITY RATIOS OF THE**
544 **PARENT HOLDING COMPANIES OR SUBSIDIARY OPERATING**
545 **UTILITIES FOR COMPARISON PURPOSES WITH RMP'S PROPOSED**
546 **CAPITALIZATION?**

547 A. It is appropriate to use the common equity ratios of the utility holding companies because
548 the holding companies are publicly-traded and their stocks are used in the cost of equity
549 capital studies. The equities of the operating utilities are not publicly-traded and hence
550 their stocks cannot be used to compute the cost of equity capital for RMP.

551 **Q. IS IT APPROPRIATE TO INCLUDE SHORT-TERM DEBT IN THE**
552 **CAPITALIZATION IN COMPARING THE COMMON EQUITY RATIOS OF**
553 **THE HOLDING COMPANIES WITH RMP COMPANY'S PROPOSED**
554 **CAPITALIZATION?**

555 A. Yes. In comparing the common equity ratios of the holding companies with RMP's
556 recommendation, it is appropriate to include short-term debt when computing the holding
557 company common equity ratios. That is because short-term debt, like long-term debt, has
558 a higher claim on the assets and earnings of the company and requires timely payment of
559 interest and repayment of principal. In addition, the financial risk of a company is based
560 on total debt, which includes both short-term and long-term debt. This is why credit
561 rating agencies use total debt in assessing the leverage and financial risk of companies.

Q. INCLUDING SHORT-TERM DEBT, HOW DO RMP'S PROPOSED CAPITAL STRUCTURE RATIOS COMPARE TO ITS RECENT CAPITALIZATION RATIOS AS WELL AS TO THOSE OF ITS PARENT, BERKSHIRE HATHEWAY ENERGY?

A. Panel B of page 1 of Exhibit JRW-3 provides RMP's and BHE's average quarterly capitalization ratio over the 2018-20 time period. The quarterly data are provided on page 2 of Exhibit JRW-3. The Company's and BHE's average common equity ratio with short-term debt were 51.79 and 42.40%. In this case, RMP proposes a 53.67% equity ratio.

Q. PLEASE DISCUSS THE ISSUE OF PUBLIC UTILITY HOLDING COMPANIES SUCH AS BHE USING DEBT TO FINANCE THE EQUITY IN SUBSIDIARIES SUCH AS THE COMPANY.

A. Moody's published an article on the use of low-cost, debt financing by public utility holding companies to increase their ROEs. The summary observations included the following:

U.S. utilities use leverage at the holding-company level to invest in other businesses, make acquisitions and earn higher returns on equity. In some cases, an increase in leverage at the parent can hurt the credit profiles of its regulated subsidiaries.¹⁷

This financial strategy has traditionally been known as double leverage.

Moody's defined double leverage in the following way:

Double leverage is a financial strategy whereby the parent raises debt but downstreams the proceeds to its operating subsidiary, likely in the form of an equity investment. Therefore, the subsidiary's operations are financed by debt raised at the subsidiary level and by debt financed at the holding-company

¹⁷ Moody's Investors' Service, "High Leverage at the Parent Often Hurts the Whole Family," May 11, 2015, p.1.

level. In this way, the subsidiary's equity is leveraged twice, once with the subsidiary debt and once with the holding-company debt. In a simple operating-company / holding-company structure, this practice results in a consolidated debt-to-capitalization ratio that is higher at the parent than at the subsidiary because of the additional debt at the parent.¹⁸

Moody's goes on to discuss the potential risk to utilities of the strategy, and specifically notes that regulators could take it into consideration in setting authorized ROEs.

“Double leverage” drives returns for some utilities but could pose risks down the road. The use of double leverage, a long-standing practice whereby a holding company takes on debt and downstreams the proceeds to an operating subsidiary as equity, could pose risks down the road if regulators were to ascribe the debt at the parent level to the subsidiaries or adjust the authorized return on capital.¹⁹

Q. PLEASE DISCUSS THE SIGNIFICANCE OF THE AMOUNT OF EQUITY THAT IS INCLUDED IN A UTILITY'S CAPITAL STRUCTURE.

A. A utility's decision as to the amount of equity capital it will incorporate into its capital structure involves fundamental trade-offs relating to the amount of financial risk the firm carries, the overall revenue requirements its customers are required to bear through the rates they pay, and the return on equity that investors will require.

Q. PLEASE DISCUSS A UTILITY'S DECISION TO USE DEBT VERSUS EQUITY TO MEET ITS CAPITAL NEEDS.

A. Utilities satisfy their capital needs through a mix of equity and debt. Because equity capital is more expensive than debt, the issuance of debt enables a utility to raise more capital for a given commitment of dollars than it could raise with just equity. Debt is,

¹⁸ *Ibid.* p. 5.

¹⁹ *Ibid.* p. 1.

therefore, a means of “leveraging” capital dollars. However, as the amount of debt in the capital structure increases, financial risk increases and the risk of the utility, as perceived by equity investors also increases. Significantly for this case, the converse is also true. As the amount of debt in the capital structure decreases, the financial risk decreases. The required return on equity capital is a function of the amount of overall risk that investors perceive, including financial risk in the form of debt.

Q. WHY IS THIS RELATIONSHIP IMPORTANT TO THE UTILITY’S CUSTOMERS?

A. Just as there is a direct correlation between the utility’s authorized return on equity and the utility’s revenue requirements (the higher the return, the greater the revenue requirement), there is a direct correlation between the amount of equity in the capital structure and the revenue requirements that customers are called on to bear. Again, equity capital is more expensive than debt. Not only does equity command a higher cost rate, it also adds more to the income tax burden that ratepayers are required to pay through rates. As the equity ratio increases, the utility’s revenue requirements increase and the rates paid by customers increase. If the proportion of equity is too high, rates will be higher than they need to be. For this reason, the utility’s management should pursue a capital acquisition strategy that results in the proper balance in the capital structure.

Q. HOW HAVE UTILITIES TYPICALLY STRUCK THIS BALANCE?

A. Due to regulation and the essential nature of its output, a regulated utility is exposed to less business risk than other companies that are not regulated. This means that a utility can reasonably carry relatively more debt in its capital structure than can most

unregulated companies. Thus, a utility should take appropriate advantage of its lower business risk to employ cheaper debt capital at a level that will benefit its customers through lower revenue requirements.

Q. GIVEN THAT RMP HAS PROPOSED AN EQUITY RATIO THAT IS HIGHER THAN (1) THE AVERAGE COMMON EQUITY RATIO OF OTHER ELECTRIC UTILITY COMPANIES; AND (2) THE COMMON EQUITY RATIO OF ITS PARENT COMPANY, BHE, WHAT SHOULD THE COMMISSION DO IN THIS RATEMAKING PROCEEDING?

A. When a regulated utility's actual capital structure contains a high equity ratio, the options are: (1) to impute a more reasonable capital structure that is comparable to the average of the proxy group used to determine the cost of equity and to reflect the imputed capital structure in revenue requirements; or (2) to recognize the downward impact that an unusually high equity ratio will have on the financial risk of a utility and authorize a common equity cost rate lower than that of the proxy group.

Q. PLEASE ELABORATE ON THIS "DOWNWARD IMPACT."

A. As I stated earlier, there is a direct correlation between the amount of debt in a utility's capital structure and the financial risk that an equity investor will associate with that utility. A relatively lower proportion of debt translates into a lower required return on equity, all other things being equal. Stated differently, a utility cannot expect to "have it both ways." Specifically, a utility cannot propose to maintain an unusually high equity ratio and not expect to have the resulting lower risk reflected in its authorized return on equity. The fundamental relationship between lower risk and the appropriate authorized return should not be ignored.

661 **Q. GIVEN THIS DISCUSSION, PLEASE DISCUSS YOUR PRIMARY CAPITAL**
662 **STRUCTURE RECOMMENDATION FOR RMP.**

663 A. My primary capital structure recommendation is presented in Panel C of Exhibit JRW-
664 3. As previously noted, RMP's proposed capital structure consists of more common
665 equity and less financial risk than any of the other proxy electric companies.
666 Therefore, in my primary rate of return recommendation, I am recommending a capital
667 structure that includes a common equity ratio of 50.0%. This capital structure includes
668 a common equity ratio that is about halfway between RMP's proposed capital
669 structure of 53.67% and the average 2019 common equity ratio of 44.0% of the
670 Electric Proxy Group. As shown in Panel B of Exhibit JRW-5, in this capital structure,
671 I have grossed up the percentage amounts of long-term debt and preferred stock so
672 that they collectively total 50.0% and reduced the amount of common equity from
673 53.67% to 50.0%.

674 **Q. ON PAGES 78-81 OF HER TESTIMONY AND IN EXHIBIT RMP__(AEB-11),**
675 **MS. BULKLEY ATTEMPTS TO JUSTIFY THE COMPANY'S PROPOSED**
676 **CAPITAL STRUCTURE BY COMPARING RMP'S PROPOSED 53.67%**
677 **COMMON EQUITY RATIO TO THE AVERAGE EQUITY RATIO OF THE**
678 **OPERATING UTILITIES OWNED BY THE PROXY HOLDING**
679 **COMPANIES. IS THIS THE APPROPRIATE COMPARISON?**

680 A. No. Contrary to Ms. Bulkley's assertions, the appropriate comparison when it comes
681 to common equity ratios is between the common equity ratio as proposed by the
682 Company and the average common equity ratios for the holding companies in the
683 proxy groups. The reason is that both Ms. Bulkley and myself use the holding

companies to estimate a cost of equity capital for the Company. That is because the holding companies have common stock outstanding and so we can apply DCF and CAPM equity cost rate approaches. Therefore, it is their common equity ratio that is appropriate for comparison purposes, since it is their common equity ratio which reflects their financial risk. The common equity ratios of the operating utilities are higher and therefore they are subject to less financial risk.

Q. MS. KOBLIHA SUGGESTS THAT THE COMPANY'S PROPOSED COMMON EQUITY RATIO IS NEEDED TO SUPPORT THE COMPANY'S CREDIT RATINGS. PLEASE COMMENT.

A. On page 12 of her testimony, Ms. Kobliha makes a very broad statement that the Company's proposed capital structure is consistent with the Company's current credit ratings. However, she provide no evidence to support the statement. In addition, she makes no capital structure and/or credit rating comparisons with other electric utilities or RMP's parent, BHE. I have demonstrated that: (1) RMP's S&P and Moody's credit ratings are superior to the average of the two electric proxy groups; and (2) RMP's proposed capital structure includes a much higher common equity ratio and hence lower financial risk than the average of the two proxy groups and RMP's parent, BHE.

Q. WHAT IS THE CAPITAL STRUCTURE IN YOUR ALTERNATIVE RATE OF RETURN RECOMMENDATION?

A. In my alternative rate of return recommendation, I am using the Company's proposed capital structure consisting of 46.32% long-term debt, 0.01% preferred stock and 53.67% common equity. Since this capital structure includes more common equity and less financial risk than other electric utilities, I am using my calculated estimate

of the cost of equity capital, 8.75%, as the ROE in my alternative cost of capital recommendation. Due to the lower financial risk, my alternative ROE is lower than my primary recommendation of 9.0%.

Q. ARE YOU USING THE COMPANY'S PROPOSED LONG-TERM DEBT COST AND PREFERRED STOCK RATES?

A. Yes.

IV. THE COST OF COMMON EQUITY CAPITAL

A. DCF Analysis

Q. PLEASE DESCRIBE THE THEORY BEHIND THE TRADITIONAL DCF MODEL.

A. According to the DCF model, the current stock price is equal to the discounted value of all future dividends that investors expect to receive from investment in the firm. As such, stockholders' returns ultimately result from current as well as future dividends. As owners of a corporation, common stockholders are entitled to a *pro rata* share of the firm's earnings. The DCF model presumes that earnings that are not paid out in the form of dividends are reinvested in the firm so as to provide for future growth in earnings and dividends. The rate at which investors discount future dividends, which reflects the timing and riskiness of the expected cash flows, is interpreted as the market's expected or required return on the common stock. Therefore, this discount rate represents the cost of common equity. Algebraically, the DCF model can be expressed as:

$$P = \frac{D_1}{(1+k)^1} + \frac{D_2}{(1+k)^2} + \dots + \frac{D_n}{(1+k)^n}$$

where P is the current stock price, D_n is the dividend in year n, and k is the cost of common equity.

Q. IS THE DCF MODEL CONSISTENT WITH VALUATION TECHNIQUES EMPLOYED BY INVESTMENT FIRMS?

A. Yes. Virtually all investment firms use some form of the DCF model as a valuation technique. One common application for investment firms is called the three-stage DCF or dividend discount model (“DDM”). The stages in a three-stage DCF model are presented in Exhibit JRW-6, Page 1 of 1. This model presumes that a company’s dividend payout progresses initially through a growth stage, then proceeds through a transition stage, and finally assumes a maturity (or steady-state) stage. The dividend-payment stage of a firm depends on the profitability of its internal investments which, in turn, is largely a function of the life cycle of the product or service.

1. Growth stage: Characterized by rapidly expanding sales, high profit margins, and an abnormally high growth in earnings per share. Because of highly profitable expected investment opportunities, the payout ratio is low. Competitors are attracted by the unusually high earnings, leading to a decline in the growth rate.

2. Transition stage: In later years, increased competition reduces profit margins and earnings growth slows. With fewer new investment opportunities, the company begins to pay out a larger percentage of earnings.

3. Maturity (steady-state) stage: Eventually, the company reaches a position where its new investment opportunities offer, on average, only slightly attractive ROEs. At that time, its earnings growth rate, payout ratio, and ROE stabilize for the remainder of its life. The constant-growth DCF model is appropriate when a firm is in the maturity stage of the life cycle.

In using this model to estimate a firm's cost of equity capital, dividends are projected into the future using the different growth rates in the alternative stages, and then the equity cost rate is the discount rate that equates the present value of the future dividends to the current stock price.

Q. HOW DO YOU ESTIMATE STOCKHOLDERS' EXPECTED OR REQUIRED RATE OF RETURN USING THE DCF MODEL?

A. Under certain assumptions, including a constant and infinite expected growth rate, and constant dividend/earnings and price/earnings ratios, the DCF model can be simplified to the following:

$$P = \frac{D_1}{k - g}$$

where D_1 represents the expected dividend over the coming year and g is the expected growth rate of dividends. This is known as the constant-growth version of the DCF model. To use the constant-growth DCF model to estimate a firm's cost of equity, one solves for "k" in the above expression to obtain the following:

$$k = \frac{D_1}{P} + g$$

782

783 **Q. IN YOUR OPINION, IS THE CONSTANT-GROWTH VERSION OF THE**
784 **DCF MODEL APPROPRIATE FOR PUBLIC UTILITIES?**

785 A. Yes. The economics of the public utility business indicate that the industry is in the
786 maturity or constant-growth stage of a three-stage DCF. The economics include the
787 relative stability of the utility business, the maturity of the demand for public utility
788 services, and the regulated status of public utilities (especially the fact that their returns
789 on investment are effectively set through the ratemaking process). The appropriate
790 DCF valuation procedure for companies in this stage is the constant-growth DCF. In
791 the constant-growth version of the DCF model, the current dividend payment and
792 stock price are directly observable. However, the primary problem and controversy
793 in applying the DCF model to estimate equity cost rates entails estimating investors'
794 expected dividend growth rate.

795 **Q. WHAT FACTORS SHOULD ONE CONSIDER WHEN APPLYING THE DCF**
796 **METHODOLOGY?**

797 A. One should be sensitive to several factors when using the DCF model to estimate a
798 firm's cost of equity capital. In general, one must recognize the assumptions under
799 which the DCF model was developed in estimating its components (the dividend yield
800 and the expected growth rate). The dividend yield can be measured precisely at any
801 point in time; however, it tends to vary somewhat over time. Estimation of expected
802 growth is considerably more difficult. One must consider recent firm performance, in
803 conjunction with current economic developments and other information available to
804 investors, to accurately estimate investors' expectations.

805 **Q. WHAT DIVIDEND YIELDS HAVE YOU REVIEWED?**

806 A. I have calculated the dividend yields for the companies in the two proxy groups using
807 the current annual dividend and the 30-day, 90-day, and 180-day average stock prices.
808 These dividend yields, as derived from the 30-day, 90-day, and 180-day average stock
809 prices, are provided in Panel A of page 2 of Exhibit JRW-7. Due to changing market
810 conditions in 2020, I am using the dividend yields derived from the 30-day and 90-
811 day average stock prices. For the Electric Proxy Group, the mean and median dividend
812 yields using the 30-day and 90-day average stock prices range from 3.5% to 3.7%.
813 Hence, I am using 3.60%, as the dividend yield for the Electric Proxy Group. The
814 dividend yields for the Bulkley Proxy Group are shown in Panel B of page 2 of Exhibit
815 JRW-7. The mean and median dividend yields range from 3.5% to 3.7% using the 30-
816 day and 90-day average stock prices. Therefore, I am using a dividend yield of 3.60%
817 for the Bulkley Proxy Group.

818 **Q. PLEASE DISCUSS THE APPROPRIATE ADJUSTMENT TO THE SPOT**
819 **DIVIDEND YIELD.**

820 A. According to the traditional DCF model, the dividend yield term relates to the dividend
821 yield over the coming period. As indicated by Professor Myron Gordon, who is
822 commonly associated with the development of the DCF model for popular use, this is
823 obtained by: (1) multiplying the expected dividend over the coming quarter by 4, and
824 (2) dividing this dividend by the current stock price to determine the appropriate
825 dividend yield for a firm that pays dividends on a quarterly basis.²⁰

²⁰ *Petition for Modification of Prescribed Rate of Return*, Federal Communications Commission, Docket No. 79-05, Direct Testimony of Myron J. Gordon and Lawrence I. Gould at 62 (April 1980).

In applying the DCF model, some analysts adjust the current dividend for growth over the coming year as opposed to the coming quarter. This can be complicated because firms tend to announce changes in dividends at different times during the year. As such, the dividend yield computed based on presumed growth over the coming quarter as opposed to the coming year can be quite different. Consequently, it is common for analysts to adjust the dividend yield by some fraction of the long-term expected growth rate.

Q. GIVEN THIS DISCUSSION, WHAT ADJUSTMENT FACTOR DO YOU USE FOR YOUR DIVIDEND YIELD?

A. I adjust the dividend yield by one-half (1/2) of the expected growth so as to reflect growth over the coming year. This is the approach employed by the Federal Energy Regulatory Commission (“FERC”).²¹ The DCF equity cost rate (“K”) is computed as:

$$K = [(D/P) * (1 + 0.5g)] + g$$

Q. PLEASE DISCUSS THE GROWTH RATE COMPONENT OF THE DCF MODEL.

A. There is debate as to the proper methodology to employ in estimating the growth component of the DCF model. By definition, this component is investors’ expectation of the long-term dividend growth rate. Presumably, investors use some combination of historical and/or projected growth rates for earnings and dividends per share and for internal or book-value growth to assess long-term potential.

²¹ Opinion No. 414-A, *Transcontinental Gas Pipe Line Corp.*, 84 FERC ¶61,084 (1998).

848 **Q. WHAT GROWTH DATA HAVE YOU REVIEWED FOR THE PROXY**
849 **GROUPS?**

850 A. I have analyzed a number of measures of growth for companies in the proxy groups.
851 I reviewed *Value Line* 's historical and projected growth rate estimates for earnings per
852 share ("EPS"), dividends per share ("DPS"), and book value per share ("BVPS"). In
853 addition, I utilized the average EPS growth rate forecasts of Wall Street analysts as
854 provided by Yahoo, Reuters, and Zacks. These services solicit five-year earnings
855 growth rate projections from securities analysts and compile and publish the means
856 and medians of these forecasts. Finally, I also assessed prospective growth as
857 measured by prospective earnings retention rates and earned returns on common
858 equity.

859 **Q. PLEASE DISCUSS HISTORICAL GROWTH IN EARNINGS AND**
860 **DIVIDENDS AS WELL AS INTERNAL GROWTH.**

861 A. Historical growth rates for EPS, DPS, and BVPS are readily available to investors and
862 are presumably an important ingredient in forming expectations concerning future
863 growth. However, one must use historical growth numbers as measures of investors'
864 expectations with caution. In some cases, past growth may not reflect future growth
865 potential. Also, employing a single growth rate number (for example, for five or ten
866 years) is unlikely to accurately measure investors' expectations, due to the sensitivity
867 of a single growth rate figure to fluctuations in individual firm performance as well as
868 overall economic fluctuations (i.e., business cycles). However, one must appraise the
869 context in which the growth rate is being employed. According to the conventional
870 DCF model, the expected return on a security is equal to the sum of the dividend yield

and the expected long-term growth in dividends. Therefore, to best estimate the cost of common equity capital using the conventional DCF model, one must look to long-term growth rate expectations.

Internally generated growth is a function of the percentage of earnings retained within the firm (the earnings retention rate) and the rate of return earned on those earnings (the return on equity). The internal growth rate is computed as the retention rate times the return on equity. Internal growth is significant in determining long-term earnings and, therefore, dividends. Investors recognize the importance of internally generated growth and pay premiums for stocks of companies that retain earnings and earn high returns on internal investments.

Q. PLEASE DISCUSS THE SERVICES THAT PROVIDE ANALYSTS' EPS FORECASTS.

A. Analysts' EPS forecasts for companies are collected and published by several different investment information services, including Institutional Brokers Estimate System ("I/B/E/S"), Bloomberg, FactSet, Zacks, First Call, and Reuters, among others. Reuters publishes analysts' EPS forecasts under different product names, including I/B/E/S, First Call, and Reuters. Bloomberg, FactSet, and Zacks each publish their own set of analysts' EPS forecasts for companies. These services do not reveal (1) the analysts who are solicited for forecasts or (2) the identity of the analysts who actually provide the EPS forecasts that are used in the compilations published by the services. I/B/E/S, Bloomberg, FactSet, and First Call are fee-based services. These services usually provide detailed reports and other data in addition to analysts' EPS forecasts. In contrast, Reuters and Zacks do provide limited EPS forecast data free-

of-charge on the Internet. Yahoo finance (<http://finance.yahoo.com>) lists Reuters as the source of its summary EPS forecasts. Zacks (www.zacks.com) publishes its summary forecasts on its website. Zacks estimates are also available on other websites, such as MSN.money (<http://money.msn.com>).

Q. ARE YOU RELYING EXCLUSIVELY ON THE EPS FORECASTS OF WALL STREET ANALYSTS IN ARRIVING AT A DCF GROWTH RATE FOR THE PROXY GROUP?

A. No. There are several issues with using the EPS growth rate forecasts of Wall Street analysts as DCF growth rates. First, the appropriate growth rate in the DCF model is the dividend growth rate, not the earnings growth rate. Nonetheless, over the very long term, dividend and earnings will have to grow at a similar growth rate. Therefore, consideration must be given to other indicators of growth, including prospective dividend growth, internal growth, as well as projected earnings growth. Second, a study by Lacina, Lee, and Xu (2011) has shown that analysts' three-to-five year EPS growth rate forecasts are not more accurate at forecasting future earnings than naïve random walk forecasts of future earnings.²² Employing data over a twenty-year period, these authors demonstrate that using the most recent year's actual EPS figure to forecast EPS in the next 3-5 years proved to be just as accurate as using the EPS estimates from analysts' three-to-five year EPS growth rate forecasts. In the authors' opinion, these results indicate that analysts' long-term earnings growth-rate forecasts should be used with caution as inputs for valuation and cost of capital purposes.

²² M. Lacina, B. Lee & Z. Xu, *Advances in Business and Management Forecasting* (Vol. 8), Kenneth D. Lawrence, Ronald K. Klimberg (ed.), Emerald Group Publishing Limited, pp.77-101.

Finally, and most significantly, it is well known that the long-term EPS growth-rate forecasts of Wall Street securities analysts are overly optimistic and upwardly biased. This has been demonstrated in a number of academic studies over the years.²³ Hence, using these growth rates as a DCF growth rate will provide an overstated equity cost rate. On this issue, a study by Easton and Sommers (2007) found that optimism in analysts' growth rate forecasts leads to an upward bias in estimates of the cost of equity capital of almost 3.0 percentage points.²⁴

Q. ARE THE PROJECTED EPS GROWTH RATES OF *VALUE LINE* ALSO OVERLY OPTIMISTIC AND UPWARDLY BIASED?

A. Yes. A study by Szakmary, Conover, and Lancaster (2008) evaluated the accuracy of *Value Line*'s three-to-five-year EPS growth rate forecasts using companies in the Dow Jones Industrial Average over a thirty-year time period and found these forecasted EPS growth rates to be significantly higher than the EPS growth rates that these companies subsequently achieved.²⁵

Szakmary, Conover, and Lancaster (SCL) studied the predicted versus the projected stock returns, sales, profit margins, and earnings per share made by Value

²³ The studies that demonstrate analysts' long-term EPS forecasts are overly-optimistic and upwardly biased include: R.D. Harris, "The Accuracy, Bias, and Efficiency of Analysts' Long Run Earnings Growth Forecasts," *Journal of Business Finance & Accounting*, pp. 725-55 (June/July 1999); P. DeChow, A. Hutton, and R. Sloan, "The Relation Between Analysts' Forecasts of Long-Term Earnings Growth and Stock Price Performance Following Equity Offerings," *Contemporary Accounting Research* (2000); K. Chan, L., Karceski, J., & Lakonishok, J., "The Level and Persistence of Growth Rates," *Journal of Finance*, pp. 643-684, (2003); M. Lacina, B. Lee, and Z. Xu, *Advances in Business and Management Forecasting* (Vol. 8), Kenneth D. Lawrence, Ronald K. Klimberg (ed.), Emerald Group Publishing Limited, pp.77-101; and Marc H. Goedhart, Rishi Raj, and Abhishek Saxena, "Equity Analysts, Still Too Bullish," *McKinsey on Finance*, pp. 14-17, (Spring 2010).

²⁴ Peter D. Easton & Gregory A. Sommers, *Effect of Analysts' Optimism on Estimates of the Expected Rate of Return Implied by Earnings Forecasts*, 45 J. ACCT. RES. 983-1015 (2007).

²⁵ Szakmary, A., Conover, C., & Lancaster, C. (2008). "An Examination of *Value Line*'s Long-Term Projections," *Journal of Banking & Finance*, May 2008, pp. 820-833.

Line over the 1969 to 2001 time period. *Value Line* projects variables from a three-year base period (e.g., 2012-2014) to a future three-year projected period (e.g., 2016-18). SCL used the sixty-five stocks included in the Dow Jones Indexes (30 Industrials, 20 Transports and 15 Utilities). SCL found that the projected annual stock returns for the Dow Jones stocks were “incredibly overoptimistic” and of no predictive value. The mean annual stock return of 20% for the Dow Jones’ stocks *Value Line*’s forecasts was nearly double the realized annual stock return. The authors also found that *Value Line*’s forecasts of earnings per share and profit margins were termed “strikingly overoptimistic.” *Value Line*’s forecasts of annual sales were higher than achieved levels, but not statistically significant. SCL concluded that the overly-optimistic projected annual stock returns were attributable to *Value Line*’s upwardly-biased forecasts of earnings per share and profit margins

Q. IS IT YOUR OPINION THAT STOCK PRICES REFLECT THE UPWARD BIAS IN THE EPS GROWTH RATE FORECASTS?

A. Yes, I do believe that investors are well aware of the bias in analysts’ EPS growth-rate forecasts, and therefore stock prices reflect the upward bias.

Q. HOW DOES THAT AFFECT THE USE OF THESE FORECASTS IN A DCF EQUITY COST RATE STUDY?

A. According to the DCF model, the equity cost rate is a function of the dividend yield and expected growth rate. Because I believe that investors are aware of the upward bias in analysts’ long-term EPS growth rate forecasts, stock prices reflect the bias. But the DCF growth rate needs to be adjusted downward from the projected EPS growth rate to reflect the upward bias in the DCF model.

Q. PLEASE DISCUSS THE HISTORICAL GROWTH OF THE COMPANIES IN THE PROXY GROUPS, AS PROVIDED BY VALUE LINE.

A. Page 3 of Exhibit JRW-7 provides the 5- and 10-year historical growth rates for EPS, DPS, and BVPS for the companies in the three proxy groups, as published in the *Value Line Investment Survey*. The median historical growth measures for EPS, DPS, and BVPS for the Electric Proxy Group, as provided in Panel A, range from 4.0% to 5.5%, with an average of the medians of 4.5%. For the Bulkley Proxy Group, as shown in Panel B of page 3 of Exhibit JRW-7, the historical growth measures in EPS, DPS, and BVPS, as measured by the medians, range from 4.0% to 5.5%, with an average of the medians of 4.9%.

Q. PLEASE SUMMARIZE VALUE LINE'S PROJECTED GROWTH RATES FOR THE COMPANIES IN THE PROXY GROUPS.

A. *Value Line's* projections of EPS, DPS, and BVPS growth for the companies in the proxy groups are shown on page 4 of Exhibit JRW-7. As stated above, due to the presence of outliers, the medians are used in the analysis. For the Electric Proxy Group, as shown in Panel A of page 4 of Exhibit JRW-7, the medians range from 4.0% to 5.5%, with an average of the medians of 4.8%. The range of the medians for the Bulkley Proxy Group, shown in Panel B of page 4 of Exhibit JRW-7, is from 4.0% to 5.5%, with an average of the medians of 4.6%.

Also provided on page 4 of Exhibit JRW-7 are the prospective sustainable growth rates for the companies in the two proxy groups as measured by *Value Line's* average projected return on shareholders' equity and retention rate. As noted above, sustainable growth is a significant and a primary driver of long-run earnings growth.

For the Electric Proxy Group and Bulkley Proxy Group, the median prospective sustainable growth rates are 3.4% and 3.4%, respectively.

Q. PLEASE ASSESS GROWTH FOR THE PROXY GROUPS AS MEASURED BY ANALYSTS' FORECASTS OF EXPECTED 5-YEAR EPS GROWTH.

A. Yahoo and Zacks collect, summarize, and publish Wall Street analysts' long-term EPS growth rate forecasts for the companies in the proxy groups. These forecasts are provided for the companies in the proxy groups on page 5 of Exhibit JRW-7. I have reported both the mean and median growth rates for the groups. Because there is considerable overlap in analyst coverage between the two services, and not all of the companies have forecasts from the different services, I have averaged the expected five-year EPS growth rates from the two services for each company to arrive at an expected EPS growth rate for each company. The mean/median of analysts' projected EPS growth rates for the Electric Proxy Group and Bulkley Proxy Group are 4.9%/5.3% and 5.4%/5.5%, respectively.²⁶

Q. PLEASE SUMMARIZE YOUR ANALYSIS OF THE HISTORICAL AND PROSPECTIVE GROWTH OF THE PROXY GROUPS.

A. Page 6 of Exhibit JRW-7 shows the summary DCF growth rate indicators for the proxy groups.

The historical growth rate indicators for my Electric Proxy Group imply a baseline growth rate of 4.5%. The average of the projected EPS, DPS, and BVPS growth rates from *Value Line* is 4.8%, and *Value Line*'s projected sustainable growth

²⁶ Given the variation in the measures of central tendency of analysts' projected EPS growth rates for the proxy groups, I have considered both the means and medians figures in the growth rate analysis.

rate is 3.4%. The projected EPS growth rates of Wall Street analysts for the Electric Proxy Group are 4.0% and 5.0% as measured by the mean and median growth rates. The overall range for the projected growth rate indicators (ignoring historical growth) is 3.4% to 5.3%. Giving primary weight to the projected EPS growth rate of Wall Street analysts, I believe that 5.0% is the appropriate growth rate for the Electric Proxy Group. This growth rate figure is at the upper end of the range of historic and projected growth rates for the Electric Proxy Group.

For the Bulkley Proxy Group, the historical growth rate indicators indicate a growth rate of 4.9%. The average of the projected EPS, DPS, and BVPS growth rates from *Value Line* is 4.6%, and *Value Line*'s projected sustainable growth rate is 3.4%. The projected EPS growth rates of Wall Street analysts are 5.4% and 5.6% as measured by the mean and median growth rates. The overall range for the projected growth rate indicators is 3.4% to 5.6%. Again, giving primary weight to the projected EPS growth rate of Wall Street analysts, I believe that the appropriate DCF growth rate is in the 5.0% to 5.5% range. I will use the midpoint of this range, 5.25%, as the DCF growth rate for the Bulkley Proxy Group. Similar to the Electric Proxy Group, this growth rate figure is clearly in the upper end of the range of historic and projected growth rates for the Bulkley Proxy Group.

Q. BASED ON THE ABOVE ANALYSIS, WHAT ARE YOUR INDICATED COMMON EQUITY COST RATES FROM THE DCF MODEL FOR THE PROXY GROUPS?

A. My DCF-derived equity cost rates for the groups are summarized on page 1 of Exhibit JRW-7 and in Table 3 below.

Table 3
DCF-derived Equity Cost Rate/ROE

	Dividend Yield	1 + ½ Growth Adjustment	DCF Growth Rate	Equity Cost Rate
Electric Proxy Group	3.60%	1.02500	5.00%	8.70%
Bulkley Proxy Group	3.60%	1.02625	5.25%	8.95%

The result for my Electric Proxy Group is the 3.60% dividend yield, times the one and one-half growth adjustment of 1.0250, plus the DCF growth rate of 5.00%, which results in an equity cost rate of 8.70%. The result for the Bulkley Proxy Group is 8.95%, which includes a dividend yield of 3.60%, an adjustment factor of 1.02625, and a DCF growth rate of 5.25%.

C. Capital Asset Pricing Model

Q. PLEASE DISCUSS THE CAPM.

A. The CAPM is a risk premium approach to gauging a firm's cost of equity capital. According to the risk premium approach, the cost of equity is the sum of the interest rate on a risk-free bond (R_f) and a risk premium (RP), as in the following:

$$k = R_f + RP$$

The yield on long-term U.S. Treasury securities is normally used as R_f . Risk premiums are measured in different ways. The CAPM is a theory of the risk and expected returns of common stocks. In the CAPM, two types of risk are associated with a stock: firm-specific risk or unsystematic risk, and market or systematic risk, which is measured by a firm's beta. The only risk that investors receive a return for bearing is systematic risk.

According to the CAPM, the expected return on a company's stock, which is also the equity cost rate (K), is expressed as:

$$K = (R_f) + \beta * [E(R_m) - (R_f)]$$

Where:

- K represents the estimated rate of return on the stock;
- $E(R_m)$ represents the expected rate of return on the overall stock market. Frequently, the S&P 500 is used as a proxy for the "market";
- (R_f) represents the risk-free rate of interest;
- $[E(R_m) - (R_f)]$ represents the expected equity or market risk premium—the excess rate of return that an investor expects to receive above the risk-free rate for investing in risky stocks; and
- $Beta$ —(β) is a measure of the systematic risk of an asset.

To estimate the required return or cost of equity using the CAPM requires three inputs: the risk-free rate of interest (R_f), the beta (β), and the expected equity or market risk premium $[E(R_m) - (R_f)]$. R_f is the easiest of the inputs to measure – it is represented by the yield on long-term U.S. Treasury bonds. β , the measure of systematic risk, is a little more difficult to measure because there are different opinions about what adjustments, if any, should be made to historical betas due to their tendency to regress to 1.0 over time. And finally, the most difficult input to measure is the expected equity or market risk premium ($E(R_m) - (R_f)$). I will discuss each of these inputs below.

Q. PLEASE DISCUSS EXHIBIT JRW-8.

A. Exhibit JRW-8 provides the summary results for my CAPM study. Page 1 shows the results, and the following pages contain the supporting data.

Q. PLEASE DISCUSS THE RISK-FREE INTEREST RATE.

1067 A. The yield on long-term U.S. Treasury bonds has usually been viewed as the risk-free
1068 rate of interest in the CAPM. The yield on long-term U.S. Treasury bonds, in turn, has
1069 been considered to be the yield on U.S. Treasury bonds with 30-year maturities.

1070 **Q. WHAT RISK-FREE INTEREST RATE ARE YOU USING IN YOUR CAPM?**

1071 A. As shown on page 2 of Exhibit JRW-8, the yield on 30-year U.S. Treasury bonds has
1072 been in the 1.3% to 4.0% range over the 2013–2020 time period. The current 30-year
1073 Treasury yield is near the bottom of this range. Given the recent range of yields, I
1074 have chosen to use a yield toward the middle of the range as my risk-free interest rate.
1075 Therefore, I am using 2.50% as the risk-free rate, or R_f , in my CAPM. This rate is
1076 consistent with Duff & Phelps, who are also using 2.50% (see page 7 of Exhibit JRW-
1077 8.)²⁷.

1078 **Q. DOES YOUR 2.50% RISK-FREE INTEREST RATE TAKE INTO**
1079 **CONSIDERATION FORECASTS OF HIGHER INTEREST RATES?**

1080 A. No; it does not. As I stated before, forecasts of higher interest rates have been
1081 notoriously wrong for a decade. My 2.50% risk-free interest rate takes into account
1082 the range of interest rates in the past and effectively synchronizes the risk-free rate
1083 with the market risk premium. The risk-free rate and the market risk premium are
1084 interrelated in that the market risk premium is developed in relation to the risk-free
1085 rate. As discussed below, my market risk premium is based on the results of many
1086 studies and surveys that have been published over time. Therefore, my risk-free
1087 interest rate of 2.50% is effectively a normalized risk-free rate of interest.

1088 **Q. WHAT BETAS ARE YOU EMPLOYING IN YOUR CAPM?**

²⁷ <https://www.duffandphelps.com/insights/publications/cost-of-capital>.

1089 A. Beta (β) is a measure of the systematic risk of a stock. The market, usually taken to be
1090 the S&P 500, has a beta of 1.0. The beta of a stock with the same price movement as
1091 the market also has a beta of 1.0. A stock with price movement greater than that of the
1092 market, such as a technology stock, is riskier than the market and has a beta greater
1093 than 1.0. A stock with below average price movement, such as that of a regulated
1094 public utility, is less risky than the market and has a beta less than 1.0. Estimating a
1095 stock's beta involves running a linear regression of a stock's return on the market
1096 return.

1097 As shown on page 3 of Exhibit JRW-8, the slope of the regression line is the
1098 stock's β . A steeper line indicates that the stock is more sensitive to the return on the
1099 overall market. This means that the stock has a higher β and greater-than-average
1100 market risk. A less steep line indicates a lower β and less market risk.

1101 Several online investment information services, such as Yahoo and Reuters,
1102 provide estimates of stock betas. Usually these services report different betas for the
1103 same stock. The differences are usually due to: (1) the time period over which β is
1104 measured; and (2) any adjustments that are made to reflect the fact that betas tend to
1105 regress to 1.0 over time.

1106 **Q. PLEASE DISCUSS THE RECENT CHANGE IN BETAS.**

1107 A. I have traditionally used the betas as provided in the *Value Line Investment Survey*.
1108 As discussed above, the betas for utilities recently increased significantly as a result
1109 of the volatility of utility stocks during the stock market meltdown associated with
1110 the novel coronavirus in March. Utility betas as measured by *Value Line* have been
1111 in the 0.55 to 0.70 range for the past ten years. But utility stocks were much more

volatile relative to the market in March and April of this year, and this resulted in an increase of above 0.30 to the average utility beta.

Value Line defines their computation of beta as:²⁸

Beta - A relative measure of the historical sensitivity of a stock's price to overall fluctuations in the New York Stock Exchange Composite Index. A Beta of 1.50 indicates a stock tends to rise (or fall) 50% more than the New York Stock Exchange Composite Index. The "Beta coefficient" is derived from a regression analysis of the relationship between weekly percent-age changes in the price of a stock and weekly percentage changes in the NYSE Index over a period of five years. In the case of shorter price histories, a smaller time period is used, but two years is the minimum. The Betas are adjusted for their long-term tendency to converge toward 1.00. *Value Line* then adjusts these Betas to account for their long-term tendency to converge toward 1.00.

However, there are several issues with *Value Line* betas:

1. *Value Line* betas are computed using weekly returns, and the volatility of utility stocks during March was impacted by using weekly and not monthly returns. Yahoo Finance uses five years of monthly returns to compute betas, and Yahoo Finance's betas for utilities are lower than *Value Line*'s'
2. *Value Line* betas are computed using the New York Stock Exchange Index as the market. While about 3,000 stocks trade on the NYSE, most technology stocks are traded on the NASDAQ or over-the-counter market and not the NYSE. Technology stocks, which make up about 25% of the S&P 500, tend to be more volatile. If they were traded on the NYSE, they would increase the volatility of the measure of the market and thereby lower utility betas.
3. Major vendors of CAPM betas such as Merrill Lynch, *Value Line*, and Bloomberg

²⁸ www.valueline.com

publish adjusted betas. The so-called Blume adjustment cited by *Value Line* adjusts betas calculated using historical returns data to reflect the tendency of stock betas to regress toward 1.0 over time, which means that the Betas of typical low beta stocks tend to increase toward 1.0, and the betas of typical high beta stocks tend to decrease toward 1.0.²⁹

The Blume adjustment procedure is:

$$\text{Regressed Beta} = .67 * (\text{Observed Beta}) + 0.33$$

For example, suppose a company has an observed past beta of 0.50. The regressed (Blume-adjusted) beta would be:

$$\text{Regressed Beta} = .67 * (0.50) + 0.33 = 0.67$$

Blume offered two reasons for betas to regress toward 1.0. First, he suggested it may be by-product of management's efforts to keep the level of firm's systematic risk close to that of the market. He also speculated that it results from the management's efforts to diversify through investment projects.

However, there is an issue with using regressed betas for utilities. Specifically, a study by Michelfelder and Theodossiou investigated whether regressed Betas are appropriate for utilities.³⁰ Conceptually, Michelfelder and Theodossiou suggested that utilities are different from unregulated companies in several areas which may result in betas not regressing toward 1.0.³¹

Being natural monopolies in their own geographic areas, public utilities have more influence on the prices of their product (gas and electricity) than other firms. The rate setting process provides public utilities with

²⁹ M. Blume, "On the Assessment of Risk," *Journal of Finance*, March 1971.

³⁰ Richard A. Michelfelder and Panayiotis Theodossiou, "Public Utility Beta Adjustment and Biased Costs of Capital in Public Utility Rate Proceedings," *The Electricity Journal*, November, 2013.

³¹ *Ibid*, p. 61.

1162 the opportunity to adjust prices of gas and electricity to recover the
1163 rising costs of fuel and other materials used in the transmission and
1164 distribution of electricity and gas.

1165 To test for a regression toward 1.0, the authors used monthly holding period total
1166 returns for 57 publicly traded U.S. public utilities for the period from January 1962 to
1167 December 2007 using 60, 84, 96, and 108 monthly returns over five different non-lapping
1168 periods. They also used alternative time periods and got similar results. The authors
1169 came to the following conclusion from their analysis of the data:³²

1170 Major vendors of CAPM Betas such as Merrill Lynch, Value Line,
1171 and Bloomberg distribute Blume adjusted betas to investors. We have
1172 shown empirically that public utility betas do not have a tendency to
1173 converge to 1. Short-term Betas of public utilities follow a cyclical
1174 pattern with recent downward trends, then upward structural breaks
1175 with long-term betas following a downward trend.

1176 The authors concluded that utility betas converge to 0.59 as opposed to 1.0. The
1177 implication is that using regressed betas such as those from *Value Line* will result in
1178 an inflated expected return using the CAPM for electric utilities.

1179 **Q. GIVEN THIS DISCUSSION, WHAT BETAS ARE YOU USING IN YOUR**
1180 **CAPM?**

1181 A. As shown on page 3 of Exhibit JRW-8, the median *Value Line* beta for both the
1182 Electric and Bulkley Proxy Groups is 0.85. At this point, until I have studied utility
1183 betas in more depth, I will continue to use *Value Line* betas in my CAPM. I believe
1184 this is a conservative approach at this time.

1185 **Q. PLEASE DISCUSS THE MARKET RISK PREMIUM.**

³² *Ibid*, p. 67.

1186 A. The market risk premium is equal to the expected return on the stock market (e.g., the
1187 expected return on the S&P 500, $E(R_m)$ minus the risk-free rate of interest (R_f)). The
1188 market risk premium is the difference in the expected total return between investing
1189 in equities and investing in “safe” fixed-income assets, such as long-term government
1190 bonds. However, while the market risk premium is easy to define conceptually, it is
1191 difficult to measure because it requires an estimate of the expected return on the
1192 market - $E(R_m)$. As is discussed below, there are different ways to measure $E(R_m)$, and
1193 studies have come up with significantly different magnitudes for $E(R_m)$. As Merton
1194 Miller, the 1990 Nobel Prize winner in economics indicated, $E(R_m)$ is very difficult to
1195 measure and is one of the great mysteries in finance.³³

1196 **Q. PLEASE DISCUSS THE ALTERNATIVE APPROACHES TO ESTIMATING**
1197 **THE MARKET RISK PREMIUM.**

1198 A. Page 4 of Exhibit JRW-8 highlights the primary approaches to, and issues in,
1199 estimating the expected market risk premium. The traditional way to measure the
1200 market risk premium was to use the difference between historical average stock and
1201 bond returns. In this case, historical stock and bond returns, also called *ex post* returns,
1202 were used as the measures of the market’s expected return (known as the *ex ante* or
1203 forward-looking expected return). This type of historical evaluation of stock and bond
1204 returns is often called the “Ibbotson approach” after Professor Roger Ibbotson, who
1205 popularized this method of using historical financial market returns as measures of
1206 expected returns. However, this historical evaluation of returns can be a problem

³³ Merton Miller, “The History of Finance: An Eyewitness Account,” *Journal of Applied Corporate Finance*, 2000, p. 3.

because: (1) *ex post* returns are not the same as *ex ante* expectations; (2) market risk premiums can change over time, increasing when investors become more risk-averse and decreasing when investors become less risk-averse; and (3) market conditions can change such that *ex post* historical returns are poor estimates of *ex ante* expectations.

The use of historical returns as market expectations has been criticized in numerous academic studies as discussed later in my testimony. The general theme of these studies is that the large equity risk premium discovered in historical stock and bond returns cannot be justified by the fundamental data. These studies, which fall under the category “*Ex Ante* Models and Market Data,” compute *ex ante* expected returns using market data to arrive at an expected equity risk premium. These studies have also been called “Puzzle Research” after the famous study by Mehra and Prescott in which the authors first questioned the magnitude of historical equity risk premiums relative to fundamentals.³⁴

In addition, there are a number of surveys of financial professionals regarding the market risk premium, as well as several published surveys of academics on the equity risk premium. Duke University has published a CFO Survey on a quarterly basis for over ten years.³⁵ Questions regarding expected stock and bond returns are also included in the Federal Reserve Bank of Philadelphia’s annual survey of financial forecasters, which is published as the *Survey of Professional Forecasters*.³⁶ This

³⁴ Rajnish Mehra & Edward C. Prescott, “The Equity Premium: A Puzzle,” *Journal of Monetary Economics*, 145 (1985).

³⁵ *The CFO Survey* (<https://www.richmondfed.org/cfosurvey>).

³⁶ Federal Reserve Bank of Philadelphia, *Survey of Professional Forecasters* (February, 2020), <https://www.philadelphiafed.org/-/media/research-and-data/real-time-center/survey-of-professional-forecasters/2019/spfq119.pdf?la=en>. The Survey of Professional Forecasters was formerly conducted by the American Statistical Association (“ASA”) and the National Bureau of Economic Research (“NBER”) and

survey of professional economists has been published for almost 50 years. In addition, Pablo Fernandez conducts annual surveys of financial analysts and companies regarding the equity risk premiums used in their investment and financial decision-making.³⁷

Q. PLEASE PROVIDE A SUMMARY OF THE MARKET RISK PREMIUM STUDIES.

A. Derrig and Orr, Fernandez, and Song completed the most comprehensive reviews of the research on the market risk premium.³⁸ Derrig and Orr's study evaluated the various approaches to estimating market risk premiums, discussed the issues with the alternative approaches, and summarized the findings of the published research on the market risk premium. Fernandez examined four alternative measures of the market risk premium – historical, expected, required, and implied. He also reviewed the major studies of the market risk premium and presented the summary market risk premium results. Song provided an annotated bibliography and highlighted the alternative approaches to estimating the market risk premium.

Page 5 of Exhibit JRW-8 provides a summary of the results of the primary risk premium studies reviewed by Derrig and Orr, Fernandez, and Song, as well as other more recent studies of the market risk premium. In developing page 5 of Exhibit JRW-

was known as the ASA/NBER survey. The survey, which began in 1968, is conducted each quarter. The Federal Reserve Bank of Philadelphia, in cooperation with the NBER, assumed responsibility for the survey in June 1990.

³⁷ Pablo Fernandez, Apellániz, Eduardo & Acín, Javier. (2020). Survey: Market Risk Premium and Risk-Free Rate used for 81 countries in 2020. SSRN Electronic Journal. 10.2139/ssrn.3560869.

³⁸ See Richard Derrig & Elisha Orr, "Equity Risk Premium: Expectations Great and Small," Working Paper (version 3.0), Automobile Insurers Bureau of Massachusetts, (August 28, 2003); Pablo Fernandez, "Equity Premium: Historical, Expected, Required, and Implied," IESE Business School Working Paper, (2007); Zhiyi Song, "The Equity Risk Premium: An Annotated Bibliography," CFA Institute, (2007).

1244 8, I have categorized the types of studies as discussed on page 4 of Exhibit JRW-8. I
1245 have also included the results of studies of the “Building Blocks” approach to
1246 estimating the equity risk premium. The Building Blocks approach is a hybrid
1247 approach employing elements of both historical and *ex ante* models.

1248 **Q. PLEASE DISCUSS PAGE 5 OF EXHIBIT JRW-8.**

1249 A. Page 5 of Exhibit JRW-8 provides a summary of the results of the market risk premium
1250 studies that I have reviewed. These include the results of: (1) the various studies of the
1251 historical risk premium, (2) *ex ante* market risk premium studies, (3) market risk
1252 premium surveys of CFOs, financial forecasters, analysts, companies and academics,
1253 and (4) the Building Blocks approach to the market risk premium. There are results
1254 reported for over 30 studies, and the median market risk premium of these studies is
1255 4.83%.

1256 **Q. PLEASE HIGHLIGHT THE RESULTS OF MORE RECENT RISK**
1257 **PREMIUM STUDIES AND SURVEYS.**

1258 A. The studies cited on page 5 of Exhibit JRW-8 include every market risk premium
1259 study and survey I could identify that was published over the past 15 years and that
1260 provided a market risk premium estimate. Many of these studies were published prior
1261 to the financial crisis that began in 2008. In addition, some of these studies were
1262 published in the early 2000s at the market peak. It should be noted that many of these
1263 studies (as indicated) used data over long periods of time (as long as 50 years of data)
1264 and so were not estimating a market risk premium as of a specific point in time (e.g.,
1265 the year 2001). To assess the effect of the earlier studies on the market risk premium,
1266 I have reconstructed page 5 of Exhibit JRW-8 on page 6 of Exhibit JRW-8; however,

1267 I have eliminated all studies dated before January 2, 2010. The median market risk
1268 premium estimate for this subset of studies is 5.13%.

1269 **Q. PLEASE SUMMARIZE THE MARKET RISK PREMIUM STUDIES AND**
1270 **SURVEYS.**

1271 A. As noted above, there are three approaches to estimating the market risk premium –
1272 historic stock and bond returns, ex ante or expected returns models, and surveys. The
1273 studies on page 6 of Exhibit JRW-8 can be summarized in the following manners:

1274 Historic Stock and Bond Returns - Historic stock and bond returns suggest a market
1275 risk premium in the 4.40% to 6.43% range, depending on whether one uses arithmetic
1276 or geometric mean returns.

1277 Ex Ante Models - Market risk premium studies that use expected or ex ante return
1278 models indicate a market risk premium in the range of 5.24% to 6.75%.

1279 Surveys - Market risk premiums developed from surveys of analysts, companies,
1280 financial professionals, and academics are lower, with a range from 3.36% to 5.70%.

1281 **Q. PLEASE HIGHLIGHT THE EX ANTE MARKET RISK PREMIUM STUDIES**
1282 **AND SURVEYS THAT YOU BELIEVE ARE MOST TIMELY AND**
1283 **RELEVANT.**

1284 A. I will highlight several studies/surveys.

1285 Pablo Fernandez conducts annual surveys of financial analysts and companies
1286 regarding the equity risk premiums used in their investment and financial decision-
1287 making.³⁹ His survey results are included on pages 5 and 6 of Exhibit JRW-8. The

³⁹ Pablo Fernandez, Vitaly Pershin, and Isabel Fernandez Acín, “Market Risk Premium and Risk-Free Rate used for 81 countries in 2020: a survey,” *IESE Business School*, (Apr. 2020).

results of his 2020 survey of academics, financial analysts, and companies, which included 4,000 responses, indicated a mean market risk premium employed by U.S. analysts and companies of 5.6%.⁴⁰ His estimated market risk premium for the U.S. has been in the 5.00%-5.60% range in recent years.

Professor Aswath Damodaran of New York University, a leading expert on valuation and the market risk premium, provides a monthly updated market risk premium based on projected S&P 500 EPS and stock price level and long-term interest rates. His estimated market risk premium, shown graphically in Figure 5, below, for the past 20 years, has primarily been in the range of 5.0% to 6.0% since 2010. As of July, 2020, his estimate of the implied market risk premium was 5.65%.⁴¹

Figure 5
Damodaran Market Risk Premium



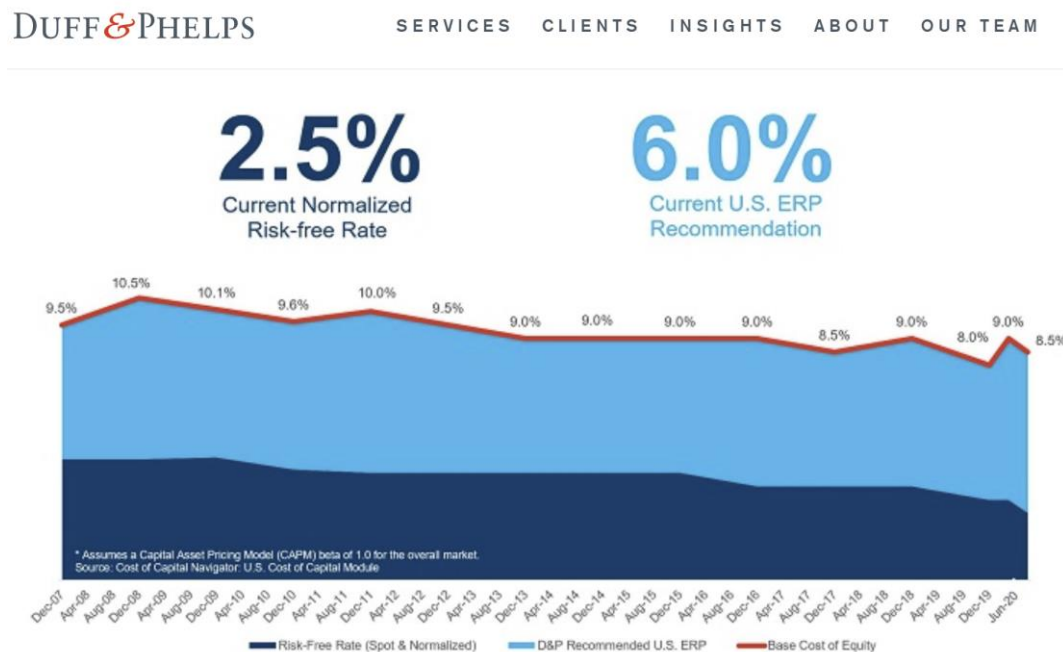
Source: <http://pages.stern.nyu.edu/~adamodar/>

⁴⁰ *Ibid.* p. 3.

⁴¹ <http://pages.stern.nyu.edu/~adamodar/>.

Duff & Phelps, an investment advisory firm, provides recommendations for the normalized risk-free interest rate and market risk premiums to be used in calculating the cost of capital data. Its recommendations over the 2008-2020 time periods are shown on page 7 of Exhibit JRW-8 and are shown graphically in Figure 6. Over the past decade, Duff & Phelps' recommended normalized risk-free interest rates have been in the 2.50% to 4.00% and market risk premiums has been in the 5.0% to 6.0% range. Most recently, in the wake of the novel coronavirus in 2020, Duff & Phelps decreased its recommended normalized risk-free interest rate from 3.0% to 2.50% and increased its market risk premium from 5.00% to 6.00%.⁴²

Figure 6
Duff & Phelps
Normalized Risk-Free Rate and Market Risk Premium Recommendations
2007-2020



Source: <https://www.duffandphelps.com/insights/publications/cost-of-capital>

⁴² Duff & Phelps, "U.S. Equity Risk Premium Recommendation," (June 30, 2020, <https://www.duffandphelps.com/insights/publications/cost-of-capital>).

Q. GIVEN THESE RESULTS, WHAT MARKET RISK PREMIUM ARE YOU USING IN YOUR CAPM?

A. The studies on page 6 of Exhibit JRW-8, and more importantly the more timely and relevant studies just cited, suggest that the appropriate market risk premium in the U.S. is in the 4.0% to 6.0% range. I will use an expected market risk premium of 6.00%, which is in the upper end of the range, as the market risk premium. I gave most weight to the market risk premium estimates of Duff & Phelps, KPMG, the Fernandez survey, and Damodaran. This is a conservatively high estimate of the market risk premium considering the many studies and surveys of the market risk premium.

Q. WHAT EQUITY COST RATE IS INDICATED BY YOUR CAPM ANALYSIS?

A. The results of my CAPM study for the proxy groups are summarized on page 1 of Exhibit JRW-8 and in Table 4 below.

Table 4
CAPM-Derived Equity Cost Rate/ROE
 $K = (R_f) + \beta * [E(R_m) - (R_f)]$

	Risk-Free Rate	Beta	Equity Risk Premium	Equity Cost Rate
Electric Proxy Group	2.50%	0.85	6.0%	7.6%
Bulkley Proxy Group	2.50%	0.85	6.0%	7.6%

For the Electric Proxy Group, the risk-free rate of 2.50% plus the product of the beta of 0.85 times the equity risk premium of 6.0% results in a 7.6% equity cost rate. For the Bulkley Proxy Group, the risk-free rate of 2.50% plus the product of the beta of 0.85 times the equity risk premium of 6.0% results in a 7.6% equity cost rate.

C. Equity Cost Rate Summary

Q. PLEASE SUMMARIZE THE RESULTS OF YOUR EQUITY COST RATE STUDIES.

A. My DCF analyses for the Electric Proxy Group and Bulkley Proxy Group indicate equity cost rates of 8.70% and 8.95%, respectively. The CAPM equity cost rates for the Electric Proxy Group and Bulkley Proxy Group are 7.60% and 7.60%.

Table 5
ROEs Derived from DCF and CAPM Models

	DCF	CAPM
Electric Proxy Group	8.70%	7.60%
Bulkley Proxy Group	8.95%	7.60%

Q. GIVEN THESE RESULTS, WHAT IS YOUR ESTIMATED EQUITY COST RATE FOR THE GROUPS?

A. Given these results, I conclude that the appropriate equity cost rate for companies in the Electric and Bulkley Proxy Groups is in the 7.60% to 8.95% range. However, because I rely primarily on the DCF model and the results for the Electric Proxy Group, I am using a figure in the upper end of the range as the equity cost rate. Therefore, I conclude that the appropriate equity cost rate for the groups is 8.75%.

Q. PLEASE INDICATE WHY YOUR EQUITY COST RATE RECOMMENDATION IS APPROPRIATE FOR THE ELECTRIC OPERATIONS OF RMP?

A. There are a number of reasons why an equity cost rate of 8.75% is appropriate and fair for the Company in this case:

1. I have employed a capital structure that includes more common equity (50.0%) than the Company's parent, BHE, as well as the average of the companies in the two proxy groups;
2. As shown in Exhibits JRW-5, capital costs for utilities, as indicated by long-term bond yields, are still at historically low levels. In addition, given low inflationary expectations and slow global economic growth, interest rates are likely to remain at low levels for some time;
3. As shown in Exhibit JRW-5, the electric utility industry is among the lowest risk industries in the U.S. as measured by beta. As such, the cost of equity capital for this industry is amongst the lowest in the U.S., according to the CAPM;
4. The investment risk of RMP, as indicated by the Company's S&P and Moody's issuer credit ratings of A and A3, is below the average for the companies in the Electric and Bulkley Proxy Groups;

As shown in Figure 3, the authorized ROEs for electric utility and gas distribution companies have declined in recent years. The authorized ROEs for electric utilities have declined from 10.01% in 2012, 9.8% in 2013, 9.76% in 2014, 9.58% in 2015, 9.60% in 2016, 9.68% in 2017, 9.56% in 2018, 9.64% in 2019, and 9.47% in the first half of 2020, according to Regulatory Research Associates.⁴³ In my opinion, these authorized ROEs have lagged behind capital market cost rates, or in other words, authorized ROEs have been slow to reflect low capital market cost rates.

⁴³ S&P Global Market Intelligence, RRA *Regulatory Focus*, 2020.

This has been especially true in recent years as some state commissions have been reluctant to authorize ROEs below 10%. However, the trend has been towards lower ROEs, and the norm now is below ten percent. Hence, I believe that my recommended ROE reflects the low capital cost rates in today's markets, and these low capital cost rates are finally being recognized by state utility commissions.

VI. CRITIQUE OF RMP'S RATE OF RETURN TESTIMONY

Q. PLEASE REVIEW THE COMPANY'S PROPOSED RATE OF RETURN.

A. RMP witness Ms. Nikki L. Kobliha recommends a capital structure consisting of 46.32% long-term debt, 0.01% preferred stock and 53.67% common equity, and long-term debt and preferred stock cost rates of 4.81% and 6.75%. RMP witness Ms. Ann E. Bulkley has recommended a common equity cost rate of 10.20% for RMP. The Company's overall proposed rate of return is 7.70%. This is summarized on page 1 of Exhibit JRW-9.

Q. WHAT ARE THE PRIMARY AREAS OF DISAGREEMENT IN ESTIMATING THE RATE OF RETURN OR COST OF CAPITAL IN THIS PROCEEDING?

A. The primary issues related to the Company's rate of return include the following:
Capital Structure - The Company has proposed a capital structure that includes a common equity ratio of 53.67%. This capital structure includes a higher common equity ratio than the Company's parent, BHE, and the average common equity ratios employed by the two proxy groups;

1400 Capital Market Conditions – Ms. Bulkley’s analyses, ROE results, and
1401 recommendations are based on assumptions of higher interest rates and capital costs.
1402 However, interest rates and capital costs remained at low levels in recent years. In
1403 2019, interest rates fell due to slow economic growth and low inflation and, as
1404 discussed in above, interest rates have fallen even further to record low levels in 2020
1405 due to the impact of the novel coronavirus on the world’s population and economy.

1406 RMP’s Investment Risk is Below the Averages of the Two Proxy Groups –RMP’s
1407 S&P and Moody’s credit ratings of A and A3 are better than the averages of the proxy
1408 groups, which indicates the Company is a less risky than the groups.

1409 DCF Approach – Ms. Bulkley and I have both employed the traditional constant-
1410 growth DCF model. Ms. Bulkley’s analysis has seriously overstated her reported DCF
1411 results in four ways: (1) she selectively eliminated low-end DCF results; (2) she has
1412 exclusively used the overly optimistic and upwardly biased EPS growth rate forecasts
1413 of Wall Street analysts and *Value Line*; and (3) she has created her own new version
1414 of the DCF model – the projected constant-growth DCF model - in which she projects
1415 DCF inputs into the future; and (4) she has claimed that the DCF results underestimate
1416 the market-determined cost of equity capital due to high utility stock valuations and
1417 low dividend yields.

1418 CAPM Approach – The CAPM approach requires an estimate of the risk-free interest
1419 rate, beta, and the market or risk premium. There are three issues with Ms. Bulkley’s
1420 CAPM analysis: (1) her long-term projected (3.20%) 30-year Treasury yields are well
1421 in excess of current market yields; (2) she has employed the Empirical CAPM
1422 (“ECAPM”) version of the CAPM, which makes inappropriate adjustments to the risk-

free rate and the market risk premium; and (3) most significantly, she has computed a market risk premium of 12.49%. The 12.49% market risk premium is much larger than: (1) indicated by historic stock and bond return data; and (2) found in the published studies and surveys of the market risk premium. In addition, I demonstrate that the 12.49% market risk premium is based on totally unrealistic assumptions of future economic and earnings growth and stock returns. To compute her market risk premium, Ms. Bulkley has applied the DCF to the S&P 500 and employed analysts' three-to-five-year earnings per share ("EPS") growth-rate projections as a growth rate to compute an expected market return and market risk premium. As I demonstrate later in my testimony, the EPS growth-rate projection used for the S&P 500 and the resulting expected market return and market risk premium include totally unrealistic assumptions regarding future economic and earnings growth and stock returns.

Alternative Risk Premium Model - Ms. Bulkley also estimates an equity cost rate using an alternative risk premium model which she calls the Bond Yield Risk Premium ("BYRP") approach. There are two issues with this approach: (1) the base interest rates; and (2) the risk premium. With respect to the base rates, her current long-term projected (3.20%) 30-year Treasury rates yields are well in excess of current market yields (1.40%). The risk premium in her BYRP method is based on the historical relationship between the yields on long-term Treasury yields and authorized ROEs for electric utility companies. There are several issues with this approach: (1) This approach is a gauge of commission behavior and not investor behavior. Capital costs are determined in the market place through the financial decisions of investors and are reflected in such fundamental factors as dividend yields, expected growth rates,

interest rates, and investors' assessment of the risk and expected return of different investments; (2) Ms. Bulkley's methodology produces an inflated measure of the risk premium because her approach uses historical authorized ROEs and Treasury yields, and the resulting risk premium is applied to projected Treasury yields; and (3) the risk premium is inflated as a measure of investor's required risk premium, because electric utility companies have been selling at market-to-book ratios in excess of 1.0. This indicates that the authorized rates of return have been greater than the return that investors require.

Expected Earnings Approach - Ms. Bulkley also uses the Expected Earnings approach to estimate an equity cost rate for the Company. Ms. Bulkley computes the expected ROE as forecasted by *Value Line* for her proxy group of electric utilities. As I discuss in my critique of Ms. Bulkley's presentation, the so-called "Expected Earnings" approach does not measure the market cost of equity capital, is independent of most cost of capital indicators, ignores the research on the upward bias in *Value Line*'s earnings projections, and has several other empirical issues. Therefore, the Commission should ignore Ms. Bulkley's "Expected Earnings" approach in determining the appropriate ROE for RMP.

Regulatory and Business Risk Factors - Ms. Bulkley also considers several other risk factors in arriving at her 10.20% ROE recommendation. She claims that: (1) RMP's higher than average capital expenditures increase its risk relative to the proxy utility companies; (2) RMP's regulatory risk of high due to operating in Utah; (3) RMP's generation ownership and fuel sources make it riskier than other utilities. Ms. Bulkley's conclusion that these factors make RMP riskier are erroneous. Each of these

three factors are risk factors are already considered in the credit-rating process used by major rating agencies. As I noted above, the S&P and Moody's issuer credit ratings for RMP of A and A3 indicate that the Company is less risky than the electric utilities in the proxy groups. In addition, in terms of Utah regulatory risk, Ms. Bulkley claims that Utah ROEs are below those of other states. This is erroneous. For example, the Commission approved a ROE of 9.50% for the gas distribution operations of Dominion Energy of Utah in February of this year. This compares to a national average gas distribution ROE of 9.40% in 2020.⁴⁴

Q. PLEASE REVIEW MS. BULKLEY'S EQUITY COST RATE APPROACHES AND RESULTS.

A. Ms. Bulkley has developed a proxy group of electric utility companies and employs DCF, CAPM, and Bond Yield Risk Premium ("BYRP") equity cost rate approaches. Ms. Bulkley's equity cost rate estimates for RMP are summarized on page 2 Exhibit JRW-9. Based on these figures, she concludes that the appropriate equity cost rate is 10.2% for RMP's electric utility operations.

A. DCF Approach

Q. PLEASE SUMMARIZE MS. BULKLEY'S DCF ESTIMATES.

A. On pages 44-50 of her testimony and in Exhibits RMP__(AEB-4) 4 and 5, Ms. Bulkley develops an equity cost rate by applying the DCF model to her electric group. Ms. Bulkley's DCF results are summarized on page 2 of Exhibit JRW-9. In the traditional

⁴⁴ S&P Global Market Intelligence, RRA *Regulatory Focus*, 2020.

DCF approach, the equity cost rate is the sum of the dividend yield and expected growth. Ms. Bulkley uses three dividend yield measures (30, 90, and 180 days) in her DCF models. In her constant-growth DCF models, Ms. Bulkley has relied on the forecasted EPS growth rates of Zacks, Yahoo Finance, and *Value Line*. The average of the mean DCF results, as reported by Ms. Bulkley, is 8.93% for her electric group. She also develops and “considers the results” of a new, so-called projected Constant-growth DCF model. In this approach, she uses *Value Line*’s projected stock prices and dividends for her proxy group companies, and the five-year forecasted EPS growth rates of Zacks, Yahoo, and *Value Line*. While she gives no indication what she considered in the results or the weight given them, this approach increases her mean DCF results by 50 to 75 basis points.

Q. WHAT ARE THE ERRORS IN MS. BULKLEY’S DCF ANALYSES?

A. The primary issues in Ms. Bulkley’s DCF analyses are: (1) she selectively eliminated low-end DCF results; (2) she exclusively used the overly optimistic and upwardly biased EPS growth rate forecasts of Wall Street analysts and *Value Line*; (3) she created her own new version of the DCF model – the so-called projected constant-growth DCF model - in which she projects DCF inputs into the future; and (4) she has claimed that the DCF results underestimate the market-determined cost of equity capital due to high utility stock valuations and low dividend yields.

1. The Asymmetric Elimination of Low End DCF Results

Q. HOW HAS MS. BULKLEY ELIMINATED LOW-END DCF RESULTS?

A. Ms. Bulkley has eliminated all DCF results below 7.0% because she believes that they are too low. This results in an overstatement of her DCF results. By eliminating low-end outliers while keeping the same number of high-end outliers, Ms. Bulkley biases her DCF equity cost rate study and reports a higher DCF equity cost rate than the data indicate. This is magnified by her small proxy group. In addition, selectively eliminating individual DCF results creates a statistical problem. The problem is that the DCF cost of equity estimates are measured with error, most likely due to the growth rate estimates. In statistics, this is the well-known errors-in-variables (“EIV”) problem. The EIV problem results from incorrectly measured dependent variables (in this case, the DCF equity cost rate estimates) in a regression model. Errors in measuring the dependent variable (the growth rates) are incorporated in the error term in the regression which cause no problems. However, when an independent variable is measured with error, this error appears in both the regressor variable and in the error term of the regression model.⁴⁵ The typical way to address this issue is to group the data to mitigate the EIV problem. And that is why, in estimating an equity cost rate, we use a proxy group and employ the means or medians for the entire group. The presumption in using such an approach is that the measurement errors for the individual companies in the group will average out, and therefore the results of the entire group are a meaningful measure for the cost of equity capital, but not the individual company results.

Q. DOES MS. BULKLEY’S DCF ROE ELIMINATION IMPACT HER REPORTED

⁴⁵ G.S.Maddala and M.Nimalendran, “Errors-in-Variables Problems in Financial Models,” *Handbook of Statistics*, Volume 14, 1996, Pages 507-528.

DCF RESULTS?

A. Yes. Beyond the statistical problems discussed above, Ms. Bulkley's asymmetric elimination of low-end DCF results significantly impacts her reported DCF results. Table 5 shows Ms. Bulkley's mean DCF results with and without the low-end eliminations. The reported results, with eliminations, produces an average ROE of 8.93% as opposed to the actual DCF results, without eliminations, with an average ROE of 8.59%, a 34 basis point difference.

Table 6
Mean Bulkley DCF Results
With and Without Low-End Eliminations

DCF Model	Mean DCF ROE	
	W/ Eliminations	W/O Eliminations
30-Day	9.01%	8.75%
90-Day	8.89%	8.51%
180-Day	8.89%	8.52%
Average	8.93%	8.59%

2. Analysts' EPS Growth Rate Forecasts

Q. PLEASE DISCUSS MS. BULKLEY'S EXCLUSIVE RELIANCE ON THE PROJECTED GROWTH RATES OF WALL STREET ANALYSTS AND VALUE LINE.

A. It seems highly unlikely that investors today would rely exclusively on the EPS growth rate forecasts of Wall Street analysts and ignore other growth rate measures in arriving at their expected growth rates for equity investments. As I previously indicated, the appropriate growth rate in the DCF model is the dividend growth rate, not the earnings growth rate. Hence, consideration must be given to other indicators of growth,

including historical prospective dividend growth, internal growth, as well as projected earnings growth. In addition, a recent study by Lacina, Lee, and Xu (2011) has shown that analysts' long-term earnings growth rate forecasts are not more accurate at forecasting future earnings than naïve random walk forecasts of future earnings.⁴⁶ As such, the weight given to analysts' projected EPS growth rates should be limited. And finally, and most significantly, it is well-known that the long-term EPS growth rate forecasts of Wall Street securities analysts are overly optimistic and upwardly biased.⁴⁷ Hence, using these growth rates as a DCF growth rate produces an overstated equity cost rate. A recent study by Easton and Sommers (2007) found that optimism in analysts' earnings growth rate forecasts leads to an upward bias in estimates of the cost of equity capital of almost 3.0 percentage points.⁴⁸ Therefore, exclusive reliance on these forecasts for a DCF growth rate results in failure of one the basic inputs in the equation. In addition, as noted above, a study by Szakmary, Conover, and Lancaster (2008) discovered the three-to-five-year EPS growth rate forecasts of *Value Line* to be significantly higher than the EPS growth rates that these companies subsequently achieved.⁴⁹

Q. HAVE CHANGES IN REGULATIONS IMPACTING WALL STREET ANALYSTS AND THEIR RESEARCH IMPACTED THE UPWARD BIAS IN THEIR PROJECTED EPS GROWTH RATES?

⁴⁶ M. Lacina, B. Lee and Z. Xu, *Advances in Business and Management Forecasting (Vol. 8)*, Kenneth D. Lawrence, Ronald K. Klimberg (ed.), Emerald Group Publishing Limited, pp.77-101

⁴⁷ See references in footnote No. 14.

⁴⁸ Easton, P., & Sommers, G. (2007). Effect of analysts' optimism on estimates of the expected rate of return implied by earnings forecasts. *Journal of Accounting Research*, 45(5), 983–1015.

⁴⁹ Szakmary, A., Conover, C., & Lancaster, C. (2008). "An Examination of *Value Line's* Long-Term Projections," *Journal of Banking & Finance*, May 2008, pp. 820-833.

1576 A. No. A number of the studies I have cited above demonstrate that the upward bias has
1577 continued despite changes in regulations and reporting requirements over the past two
1578 decades. This observation is highlighted by a 2010 McKinsey study entitled “Equity
1579 Analysts: Still Too Bullish,” which involved a study of the accuracy of analysts’ long-
1580 term EPS growth rate forecasts. The authors conclude that after a decade of stricter
1581 regulation, analysts’ long-term earnings forecasts continue to be excessively
1582 optimistic. They made the following observation:⁵⁰

1583 Alas, a recently completed update of our work only reinforces
1584 this view—despite a series of rules and regulations, dating to
1585 the last decade, that were intended to improve the quality of the
1586 analysts’ long-term earnings forecasts, restore investor
1587 confidence in them, and prevent conflicts of interest. For
1588 executives, many of whom go to great lengths to satisfy Wall
1589 Street’s expectations in their financial reporting and long-term
1590 strategic moves, this is a cautionary tale worth remembering.
1591 This pattern confirms our earlier findings that analysts typically
1592 lag behind events in revising their forecasts to reflect new
1593 economic conditions. When economic growth accelerates, the
1594 size of the forecast error declines; when economic growth
1595 slows, it increases. So as economic growth cycles up and down,
1596 the actual earnings S&P 500 companies report occasionally
1597 coincide with the analysts’ forecasts, as they did, for example,
1598 in 1988, from 1994 to 1997, and from 2003 to 2006. *Moreover,*
1599 *analysts have been persistently overoptimistic for the past 25*
1600 *years, with estimates ranging from 10 to 12 percent a year,*
1601 *compared with actual earnings growth of 6 percent. Over this*
1602 *time frame, actual earnings growth surpassed forecasts in only*
1603 *two instances, both during the earnings recovery following a*
1604 *recession. On average, analysts’ forecasts have been almost*
1605 *100 percent too high.*
1606

⁵⁰ Marc H. Goedhart, Rishi Raj, and Abhishek Saxena, “Equity Analysts, Still Too Bullish,” *McKinsey on Finance*, pp. 14-17, (Spring 2010) (emphasis added).

This is the same observation made in a *Bloomberg Businessweek* article.⁵¹ The author concluded:

***The bottom line:** Despite reforms intended to improve Wall Street research, stock analysts seem to be promoting an overly rosy view of profit prospects.*

3. Projected DCF Model

Q. PLEASE DISCUSS MS. BULKLEY'S PROJECTED DCF APPROACH.

A. Ms. Bulkley also has developed and employed an entirely new and novel DCF approach - the so-called projected constant-growth DCF model. In this model, she (1) computes a dividend yield using *Value Line*'s projected stock price and dividends for the proxy companies for the three-to-five year period; and (2) adds the current forecasted EPS growth rates of Zacks, Yahoo, and *Value Line*.

Q. WHAT ARE THE ERRORS WITH MS. BULKLEY'S PROJECTED DCF APPROACH?

A. First, it is a totally new approach, created and used only by Ms. Bulkley. It is not a generally accepted equity cost rate model. Second, it involves a mismatch of data. She uses the projected stock price and dividends for three-to-five years in the future, and then she adds the projected EPS growth rate from 2019. Her new approach produces her highest DCF results.

⁵¹ Roben Farzad, "For Analysts, Things Are Always Looking Up," *Bloomberg Businessweek* (June 10, 2010), <https://www.bloomberg.com/news/articles/2010-06-10/for-analysts-things-are-always-looking-up>.

1631

1632

4. The DCF Model Understates the Cost of Equity Capital

1633

1634 **Q. PLEASE DISCUSS MS. BULKLEY'S CLAIM THAT THE DCF MODEL**
1635 **UNDERSTATES THE COST OF EQUITY CAPITAL.**

1636 A. On page 24-8 of her testimony, Ms. Bulkley makes the claim that using current utility
1637 stock valuations and low dividend yields will underestimate the market-determined
1638 ROE using the DCF model.

1639 **Q. WHAT IS YOUR RESPONSE TO THIS CLAIM?**

1640 A. Ms. Bulkley's claim is totally without merit for the following reasons: (1) she is saying
1641 that utility stocks are overvalued, and their stock prices will decline in the future (and
1642 therefore their dividend yield will increase). Hence, Ms. Bulkley presumes that she
1643 knows more than investors in the stock market. Actually, if she believes that utility
1644 stock prices will decline in the future, she should be forecasting negative returns. (2),
1645 Ms. Bulkley's CAPM results are highly dependent on her selection of a market risk
1646 premium which, as discussed above, is one of the great mysteries in finance.

1647

1648 **B. CAPM Approach**

1649

1650 **Q. PLEASE DISCUSS MS. BULKLEY'S CAPM.**

1651 A. On pages 50-5 of her testimony and in Exhibit RMP__(AEB-4)-6, Ms. Bulkley develops
1652 an equity cost rate by applying the CAPM model to her electric proxy group. Ms.
1653 Bulkley's DCF results are summarized on page 2 of Exhibit JRW-9. Ms. Bulkley
1654 develops an equity cost rate by using not only the traditional CAPM, but also the so-

called Empirical CAPM (“ECAPM”) model for her electric proxy group. The ECAPM is a variant of the traditional CAPM. The CAPM/ECAPM approach requires an estimate of the risk-free interest rate, Beta, and the equity risk premium. Ms. Bulkley uses: (1) current (1.56%), near-term projected (1.80%), and long-term projected (3.20%) 30-year Treasury yields; (2) betas from *Value Line* and Bloomberg; and (3) a market risk premium of 12.49%. Based on these figures, she finds CAPM/ECAPM equity cost rates ranging from 8.49% to 12.30%.

Q. WHAT ARE THE ERRORS IN MS. BULKLEY’S CAPM/ECAPM ANALYSES?

A. The primary errors with Ms. Bulkley’s CAPM/ECAPM analyses are: (1) the use of the ECAPM version of the CAPM; (2) the projected risk-free interest rate of 3.2%; and (3) the expected market risk premium 12.49%. As I explain below and in Appendix B, the use of a 12.49% MRP is a very serious error.

1. ECAPM Approach

Q. WHAT ISSUES DO YOU HAVE WITH MS. BULKLEY’S ECAPM?

A. In addition to the CAPM, Ms. Bulkley has employed a variation of the CAPM which she calls the “ECAPM.” The ECAPM, as popularized by rate of return consultant Dr. Roger Morin, attempts to model the well-known finding of tests of the CAPM that have indicated the Security Market Line (“SML”) is not as steep as predicted by the CAPM. As such, the ECAPM is nothing more than an ad hoc version of the CAPM. Moreover, the ECAPM has not been theoretically or empirically validated in refereed journals. The ECAPM provides for weights which are used to adjust the risk-free rate

and market risk premium in applying the ECAPM. Ms. Bulkley uses 0.25 and 0.75 factors to boost the equity risk premium measure, but provides no empirical justification for those figures.

Beyond the lack of any theoretical or empirical validation of the ECAPM, there are two errors in Ms. Bulkley's version of the ECAPM: (1) I am not aware of any tests of the CAPM that use adjusted betas such as those used by Ms. Bulkley; and (2) adjusted betas, which were previously discussed, address the empirical issues with the CAPM because adjusting low (high) beta stock increases (decreases) the adjusted beta, thereby increasing the expected returns for low beta stocks and decreasing the expected returns for high beta stocks.

2. The Projected Risk-Free Interest Rate

Q. PLEASE DISCUSS THE BASE YIELD OF MS. BULKLEY'S CAPM/ECAPM ANALYSIS.

A. Ms. Bulkley uses a long-term projected risk-free interest rate of 3.2% in her CAPM/ECAPM. This figure is almost 200 basis points above the current yield on long-term Treasury bonds of 1.4%. Investors would not be buying long-term Treasury bonds at their current yields if they expected the yields on these bonds to increase from 100 to 200 basis points in the next year or two. Such a move in interest rates would result in a capital loss of over 20%. Investors do not buy long-term Treasury bonds or any other investment if they expect to receive a negative return.

3. Market Risk Premium

Q. PLEASE ASSESS MS. BULKLEY'S MARKET RISK PREMIUMS DERIVED FROM APPLYING THE DCF MODEL TO THE S&P 500.

A. A very serious problem with Ms. Bulkley's CAPM analysis is the magnitude of the market (or equity) risk premium – which she uses to produce very high ROE results, as high as 12.30%⁵². Ms. Bulkley develops an expected market risk premium by: (1) applying the DCF model to the S&P 500 to get an expected market return; and (2) subtracting the risk-free rate of interest. Ms. Bulkley's estimated market return of 14.05% for the S&P 500 equals the sum of the dividend yield of 2.31% and expected EPS growth rate of 11.60%. The expected EPS growth rate is the average of the expected EPS growth rates from IBES, Zacks, and *Value Line*. The primary error in this approach is Ms. Bulkley's expected DCF growth rate. As previously discussed, the expected EPS growth rates of Wall Street analysts are upwardly biased. In addition, as explained below, the projected growth rate is inconsistent with actual economic and earnings growth rates in the U.S.

Q. INITIALLY, PLEASE PROVIDE ADDITIONAL INSIGHTS INTO THE EXPECTED STOCK MARKET RETURN OF 14.05%.

A. Simply put, the assumption of a 14.05% expected stock market return is simply excessive and unrealistic. The compounded annual return in the U.S. stock market is about 10% (9.71% according to Damodaran between 1928-2019).⁵³ Ms. Bulkley's

⁵² See Exhibit AEB-2.

⁵³ <http://pages.stern.nyu.edu/~adamodar/>.

1722 CAPM results assume that return on the U.S. stock market will be more than 40%
1723 higher in the future than it has been in the past! The extremely high expected stock
1724 market return, and the resulting market risk premium and equity cost rate results, is
1725 directly related to computing the expected stock market return (14.05%) as the sum of
1726 the adjusted dividend yield (2.45%) plus the expected EPS growth rate (11.60%).

1727 **Q. PLEASE ONCE AGAIN ADDRESS THE ISSUES WITH ANALYSTS' EPS**
1728 **GROWTH RATE FORECASTS.**

1729 A. The key point is that Ms. Bulkley's CAPM market risk premium methodology is based
1730 entirely on the concept that analyst projections of companies' three-to-five EPS
1731 growth rates reflect investors' expected *long-term* EPS growth for those companies.
1732 However, this seems highly unrealistic given the published research on these
1733 projections. As previously noted, numerous studies have shown that the long-term
1734 EPS growth rate forecasts of Wall Street securities analysts are overly optimistic and
1735 upwardly biased.⁵⁴ Moreover, as discussed above, the Lacina, Lee and Xu study
1736 showed that analysts' forecasts of EPS growth over the next three-to-five years
1737 earnings are no more accurate than their forecasts of the next single year's EPS growth
1738 (and the single year forecasts are notoriously inaccurate). The overly-optimistic

⁵⁴ Such studies include: R.D. Harris, "The Accuracy, Bias, and Efficiency of Analysts' Long Run Earnings Growth Forecasts," *Journal of Business Finance & Accounting*, pp. 725-55 (June/July 1999); P. DeChow, A. Hutton, and R. Sloan, "The Relation Between Analysts' Forecasts of Long-Term Earnings Growth and Stock Price Performance Following Equity Offerings," *Contemporary Accounting Research* (2000); K. Chan, L., Karceski, J., & Lakonishok, J., "The Level and Persistence of Growth Rates," *Journal of Finance*, pp. 643-684, (2003); M. Lacina, B. Lee, and Z. Xu, *Advances in Business and Management Forecasting (Vol. 8)*, Kenneth D. Lawrence, Ronald K. Klimberg (ed.), Emerald Group Publishing Limited, pp.77-101 (2011).

1739 inaccuracy of analysts' growth rate forecasts leads to an upward bias in equity cost
1740 estimates that has been estimated at about 300 basis points.⁵⁵

1741 **Q. IS MS. BULKLEY'S MARKET RISK PREMIUM OF 12.49% REFLECTIVE**
1742 **OF THE MARKET RISK PREMIUMS FOUND IN STUDIES AND SURVEYS**
1743 **OF THE MARKET RISK PREMIUM?**

1744 A. This figure is well in excess of market risk premiums: (1) found in studies of the
1745 market risk premiums by leading academic scholars; (2) produced by analyses of
1746 historic stock and bond returns; and (3) found in surveys of financial professionals.
1747 Page 6 of Exhibit JRW-8 provides the results of over thirty market risk premiums
1748 studies from the past fifteen years. Historic stock and bond returns suggest a market
1749 risk premium in the 4.40-6.43% range, depending on whether one uses arithmetic or
1750 geometric mean returns. There have been many studies using expected return (also
1751 called *ex ante*) models, and their market risk premiums results vary from as low as
1752 5.24% to as high as 6.0%. Finally, the market risk premiums developed from surveys
1753 of analysts, companies, financial professionals, and academics suggest even
1754 potentially lower market risk premiums, in a range of from 3.36% to 6.75%. The
1755 bottom line is that there is no support in historic return data, surveys, academic studies,
1756 or reports for investment firms for a market risk premium as high as the 12.49% used
1757 by Ms. Bulkley.

1758 **Q. IS A PROJECTED EPS GROWTH RATE OF 11.60%, WHICH MS.**
1759 **BULKLEY USES TO COMPUTE HER MARKET RISK PREMIUM OF**

⁵⁵ Peter D. Easton & Gregory A. Sommers, "Effect of Analysts' Optimism on Estimates of the Expected Rate of Return Implied by Earnings Forecasts," 45, *Journal of Accounting Research*, pp. 983-1015 (2007).

1760 **12.49%, REASAONABLE GIVEN THE PROJECTED GROWTH IN U.S.**
1761 **GDP?**

1762 A. No. This issue is addressed in depth in Appendix B. But the simple answer is that a
1763 long-term EPS growth rate of 11.60% is inconsistent with both historic and projected
1764 economic and earnings growth in the U.S. for several reasons: (1) long-term EPS and
1765 economic growth is about one-half of Ms. Bulkley's projected EPS growth rate of
1766 11.60%; (2) long-term EPS and GDP growth are directly linked; and (3) more recent
1767 trends in GDP growth, as well as projections of GDP growth, suggest slower economic
1768 and earnings growth in the near future, during the period when the rates from this case
1769 will be effective.

1770 Long-Term Historic EPS and GDP Growth have been in the 6%-7% Range - By
1771 comparison, Ms. Bulkley's long-run growth rate projections of 11.60% is at best
1772 overstated. These estimates suggest that companies in the U.S. would be expected to:
1773 (1) increase their growth rate of EPS by more than 50% in the future, and (2) maintain
1774 that growth indefinitely in an economy that is currently expected to grow at about one-
1775 third of Ms. Bulkley's projected growth rates.

1776 There is a Direct Link Between Long-Term EPS and GDP Growth - Brad Cornell of
1777 the California Institute of Technology published a study on GDP growth, earnings
1778 growth, and equity returns. He finds that long-term EPS growth in the U.S. is directly
1779 related to GDP growth, with GDP growth providing an upward limit on EPS growth.
1780 In addition, he finds that long-term stock returns are determined by long-term earnings
1781 growth.⁵⁶

⁵⁶ Bradford Cornell, "Economic Growth and Equity Investing," *Financial Analysts Journal* (January-

The Trend and Projections Indicate Slower GDP Growth in the Future - Whereas the long-term compounded GDP growth rate is in the 6.00%-7.00% range, there has been a monotonic and significant decline in nominal GDP growth in recent decades.

Long-Term GDP Projections also Indicate Slower GDP Growth in the Future - A lower range is also consistent with long-term GDP forecasts. There are several forecasts of annual GDP growth that are available from economists and government agencies. These include forecasts from the Energy Information Administration (“EIA”), the Congressional Budget Office (“CBO”), and the Social Security Administration (“SSA”). Overall, these forecasts suggest long-term GDP growth rate in the 4.0% - 4.3% range. The trends and projections indicating slower GDP growth make Ms. Bulkley’s market risk premium of 12.49%, which is computed by using a growth rate of 11.60% from analysts’ EPS growth projections, look even more unrealistic. Simply stated, Ms. Bulkley’s projected EPS growth rate of 11.6% is almost three times projected GDP growth.

Corporate Profits are Constrained by GDP – Milton Friedman, the noted economist, warned investors and others not to expect corporate profit growth to sustainably exceed GDP growth, stating, “Beware of predictions that earnings can grow faster than the economy for long periods. When earnings are exceptionally high, they don’t just keep booming.”⁵⁷ Friedman also noted in the same *Fortune* interview that profits must move back down to their traditional share of GDP. In Appendix B, I show that currently the aggregate net income levels for the S&P 500 companies, using 2019

February 2010), p. 63.

⁵⁷ Shaun Tully, “Corporate Profits Are Soaring. Here’s Why It Can’t Last,” *Fortune*, (Dec. 7, 2017), <http://fortune.com/2017/12/07/corporate-earnings-profit-boom-end/>.

figures, represent 6.53% of nominal GDP. However, if the S&P 500 companies grow their earnings at Ms. Bulkley's projected growth rate of 11.60%, while the U.S. GDP grows at 4.09% (the average of CBO, SSA, and EIA), the S&P 500 profits would grow to 56.6% of GDP by the year 2050!

Q. PLEASE PROVIDE A SUMMARY ANALYSIS ON GDP AND S&P 500 EPS GROWTH RATES.

A. As noted above, the long-term link between corporate profits and GDP is inevitable. The short-term differences in growth between the two has been highlighted by some notable market observers, including Warren Buffet, who indicated that corporate profits as a share of GDP tend to go far higher after periods where they are depressed, and then drop sharply after they have been hovering at historically high levels. In a famous 1999 *Fortune* article, Mr. Buffet made the following observation:⁵⁸

You know, someone once told me that New York has more lawyers than people. I think that's the same fellow who thinks profits will become larger than GDP. When you begin to expect the growth of a component factor to forever outpace that of the aggregate, you get into certain mathematical problems. In my opinion, you have to be wildly optimistic to believe that corporate profits as a percent of GDP can, for any sustained period, hold much above 6%. One thing keeping the percentage down will be competition, which is alive and well. In addition, there's a public-policy point: If corporate investors, in aggregate, are going to eat an ever-growing portion of the American economic pie, some other group will have to settle for a smaller portion. That would justifiably raise political problems – and in my view a major reslicing of the pie just isn't going to happen.

⁵⁸ Carol Loomis, "Mr. Buffet on the Stock Market," *Fortune*, (Nov. 22, 1999), https://money.cnn.com/magazines/fortune/fortune_archive/1999/11/22/269071/.

In sum, Ms. Bulkley's long-term S&P 500 EPS growth rate of 11.60% is grossly overstated and has no basis in economic reality. In the end, the big question remains as to whether corporate profits can grow faster than GDP. Jeremy Siegel, the renowned finance professor at the Wharton School of the University of Pennsylvania, believes that going forward, earnings per share can grow about half a point faster than nominal GDP, or about 5.0%, due to the big gains in the technology sector. But he also believes that sustained EPS growth matching analysts' near-term projections is absurd: "The idea of 8% or 10% or 12% growth is ridiculous. It will not happen."⁵⁹

C. Bond Yield Risk Premium Approach ("BYRP")

Q. PLEASE REVIEW MS. BULKLEY'S BYRP APPROACH.

A. On pages 55-8 of her testimony and in Exhibit RMP__(AEB-4)-7, Ms. Bulkley estimates an equity cost rate using a risk premium ("RP") model. She uses the quarterly authorized ROEs for all electric utility companies from Q1 1992 until Q1 2020. Ms. Bulkley develops an equity cost rate by: (1) regressing the authorized returns on equity for electric utility companies on the thirty-year Treasury yield; and then (2) adding the risk premium established in (1) to each of her three different thirty-year Treasury yields: (a) a current yield of 1.56%, (b) a near-term projected yield of 1.80%, and (c) a long-term projected yield of 3.20%. Ms. Bulkley's RP results are provided in page 2 of Exhibit JRW-9. She reports RP equity cost rates ranging from 9.33% to 10.04%.

⁵⁹ Shaun Tully, "Corporate Profits Are Soaring. Here's Why It Can't Last," *Fortune*, (Dec. 7, 2017), <http://fortune.com/2017/12/07/corporate-earnings-profit-boom-end/>.

Q. WHAT ARE THE ERRORS IN MS. BULKLEY'S BYRP ANALYSIS?

A. The two issues are: (1) the long-term projected (3.20%) 30-year Treasury yield; (2) the risk premium.

1. Long-Term Projected Risk-Free Interest Rate

Q. WHAT IS THE ISSUE WITH MS. BULKLEY'S RISK FREE INTEREST RATES?

A. Ms. Bulkley's long-term projected (3.20%) 30-year Treasury yield is well above the current 30-year Treasury yield of 1.40%. As previously discussed, investors would not be buying 30-year Treasury bonds at current rates if they expected these rate to increase by 200 basis points in the next couple years because they would incur significant capital losses. Also, as discussed above, economists have been forecasting high interest rates for a decade, and they have been consistently wrong as interest rates have declined and not increased.

2. Risk Premium

Q. WHAT ARE THE ISSUES WITH MS. BULKLEY'S RISK PREMIUM IN THE BYRP ANALYSIS?

A. There are several problems with this approach for calculating risk premium.

First, the methodology produces an inflated measure of the risk premium because it uses historic authorized ROEs and Treasury yields, and the resulting risk premium is applied to projected Treasury Yields. Since Treasury yields are always forecasted to increase, the resulting risk premium would be smaller if done correctly, which would be to use projected

Treasury yields in the analysis rather than historic Treasury yields.

. Second, Ms. Bulkley's RP approach is a gauge of *commission* behavior and not *investor* behavior. Capital costs are determined in the marketplace through the financial decisions of investors and are reflected in such fundamental factors as dividend yields, expected growth rates, interest rates, and investors' assessment of the risk and expected return of different investments. Regulatory commissions evaluate capital market data in setting authorized ROEs, but also consider other utility- and rate case-specific information in setting ROEs. As such, Ms. Bulkley's approach and results reflect other factors such as capital structure, credit ratings and other risk measures, service territory, capital expenditures, energy supply issues, rate design, investment and expense trackers, and other factors used by utility commissions in determining an appropriate ROE in addition to capital costs. This may especially be true when the authorized ROE data includes the results of rate cases that are settled and not fully litigated.

Third, since the stocks of electric utilities have been selling above book value for the last decade, it is obvious that the authorized ROEs of state utility commissions are above the returns that investors require.

D. Expected Earnings Approach

Q. PLEASE DISCUSS MS. BULKLEY'S EXPECTED EARNINGS ANALYSIS.

A. On pages 58-60 of her testimony and in Exhibit RMP__(AEB-4)-8, Ms. Bulkley estimates an equity cost rates of 10.74% and 10.82% using an approach she calls the

1896 Expected Earnings (“EE”) approach. Her methodology simply involves using the
1897 expected ROE for the companies in the proxy group as estimated by *Value Line*.

1898 **Q. PLEASE ADDRESS THE ISSUES WITH MS. BULKLEY’S EXPECTED**
1899 **EARNINGS APPROACH.**

1900 A. There are a number of significant issues with this so-called Expected Earnings
1901 approach. As such, I strongly suggest that the Commission ignore this approach in
1902 setting an ROE for RMP. These issues include:

1903 The Expected Earnings Approach Does Not Measure the Market Cost of Equity
1904 Capital – First and foremost, this is an accounting-based methodology that does not
1905 measure investor return requirements. As indicated by Professor Roger Morin, a long-
1906 time rate of return witness for utility companies, “More simply, the Comparable
1907 (Expected) Earnings standard ignores capital markets. If interest rates go up 2%
1908 for example, investor requirements and the cost of equity should increase
1909 commensurably, but if regulation is based on accounting returns, no immediate
1910 change in equity cost results.”⁶⁰ As such, this method does not measure the market
1911 cost of equity capital.

1912 Changes in ROE Ratios do not Track Capital Market Conditions - As also noted by
1913 Morin, “The denominator of accounting return, book equity, is a historical cost-based
1914 concept, which is insensitive to changes in investor return requirements. Only stock
1915 market price is sensitive to a change in investor requirements. Investors can only

⁶⁰ Roger Morin, *New Regulatory Finance* (2006), p. 293.

1916 purchase new shares of common stock at current market prices and not at book
1917 value.”⁶¹

1918 The Expected Earnings Approach is Circular - The ROE ratios for the proxy
1919 companies are not determined by competitive market forces, but instead are largely
1920 the result of federal and state rate regulation, including the present proceedings.

1921 The Proxies’ ROEs Reflect Earnings on Business Activities that are not
1922 Representative of RMP’ Rate-Regulated Utility Activities - The numerators of the
1923 proxy companies’ ROEs include earnings from business activities that are riskier and
1924 produce more projected earnings per dollar of book investment than does the regulated
1925 electric business. These include earnings from unregulated businesses such as
1926 merchant generation, construction services, and other energy services.

1927 **Q. FINALLY PLEASE DISCUSS THE EXPECTED EARNINGS APPROACH IN**
1928 **LIGHT OF A STUDY OF VALUE LINE PROJECTED EARNINGS.**

1929 A. Ms. Bulkley’s EE approach uses *Value Line*’s adjusted forecast for proxy utility
1930 ROEs. Hence, the ROE specified by the EE approach is totally dependent on the
1931 forecast of one variable (net income/shareholder’s equity) by one analyst firm (Value
1932 Line), with the same single individual authoring most of the *Value Line* reports for the
1933 various proxy companies. Neither the Commission nor other parties have assessed the
1934 accuracy of these forecasts. However, there is one study that did evaluate the *Value*
1935 *Line* forecasts. A study by Szakmary, Conover, and Lancaster evaluated the accuracy
1936 of *Value Line*’s three-to-five-year EPS growth rate forecasts using companies in the
1937 Dow Jones Industrial Average over a 30-year time period and found these forecasted

⁶¹ *Id.*

1938 EPS growth rates to be significantly higher than the EPS growth rates that these
1939 companies subsequently achieved.⁶²

1940 Szakmary, Conover, and Lancaster (SCL) studied the predicted versus the
1941 projected stock returns, sales, profit margins, and earnings per share made by *Value*
1942 *Line* over the 1969 to 2001 time period. *Value Line* projects variables from a three-
1943 year base period (e.g., 2012-2014) to a future three-year projected period (e.g., 2016-
1944 18). SCL used the sixty-five stocks included in the Dow Jones Indexes (30 Industrials,
1945 20 Transports and 15 Utilities). SCL found that the projected annual stock returns for
1946 the Dow Jones stocks were “incredibly overoptimistic” and of no predictive value.
1947 The mean annual stock return of 20% for the Dow Jones’ stocks *Value Line*’s forecasts
1948 was nearly double the realized annual stock return. The authors also found that *Value*
1949 *Line*’s forecasts of earnings per share and profit margins were termed “strikingly
1950 overoptimistic.” *Value Line*’s forecasts of annual sales were higher than achieved
1951 levels, but not statistically significant. SCL concluded that the overly-optimistic
1952 projected annual stock returns were attributable to *Value Line*’s upwardly-biased
1953 forecasts of earnings per share and profit margins

1954 The SCL results suggest that *Value Line*’s projection of return on equity is
1955 upwardly biased. As noted above, the EPS and profit margins as projected by *Value*
1956 *Line* over this 30-year period were termed “strikingly overoptimistic.” This is because
1957 Value line’s projected earnings is the numerator for their calculation of return on
1958 equity (net income/book value). Therefore, the EE approach proposed by Ms. Bulkley
1959 is based on an upwardly-biased measure forecasted by one analyst.

⁶² Szakmary, A., Conover, C., & Lancaster, C. (2008). “An Examination of *Value Line*’s Long-Term Projections,” *Journal of Banking & Finance*, May 2008, pp. 820-833.

Q. PLEASE PROVIDE A SUMMARY OF THE SIGNIFICANT ERRORS THAT YOU FOUND WITH MS. BULKLEY'S ROE ANALYSES.

A. There are a number of errors in Ms. Bulkley's ROE studies that cause her ROE estimates and the Company's cost of capital to be inaccurate and too high. These include:

Capital Structure - The Company has proposed a capital structure that includes a common equity ratio of 53.67%. This capital structure includes a higher common equity ratio than the Company's parent, BHE, and the average common equity ratios employed by the two proxy groups;

Capital Market Conditions – Ms. Bulkley's analyses, ROE results, and recommendations are based on assumptions of higher interest rates and capital costs. However, interest rates and capital costs remained at low levels in recent years. In 2019, interest rates fell due to slow economic growth and low inflation and, as discussed in above, interest rates have fallen even further to record low levels in 2020 due to the impact of the novel coronavirus on the world's population and economy.

RMP's Investment Risk is Below the Averages of the Two Proxy Groups –RMP's S&P and Moody's credit ratings of A and A3 are better than the averages of the proxy groups, which indicates the Company is a less risky than the groups.

DCF Approach – Ms. Bulkley and I have both employed the traditional constant-growth DCF model. Ms. Bulkley's analysis has seriously overstated her reported DCF results in four ways: (1) she selectively eliminated low-end DCF results; (2) she has exclusively used the overly optimistic and upwardly biased EPS growth rate forecasts of Wall Street analysts and *Value Line*; and (3) she has created her own new version

of the DCF model – the projected constant-growth DCF model - in which she projects DCF inputs into the future; and (4) she has claimed that the DCF results underestimate the market-determined cost of equity capital due to high utility stock valuations and low dividend yields, i.e. Ms. Bulkley claims that she knows more than investors in the stock market.

CAPM Approach – The CAPM approach requires an estimate of the risk-free interest rate, beta, and the market or risk premium. There are three issues with Ms. Bulkley’s CAPM analysis: (1) her long-term projected (3.20%) 30-year Treasury yields are well in excess of current market yields; (2) she has employed the Empirical CAPM (“ECAPM”) version of the CAPM, which makes inappropriate adjustments to the risk-free rate and the market risk premium; and (3) most significantly, she has computed a market risk premium of 12.49%. The 12.49% market risk premium is much larger than: (1) indicated by historic stock and bond return data; and (2) found in the published studies and surveys of the market risk premium. In addition, I demonstrate that the 12.49% market risk premium is based on totally unrealistic assumptions of future economic and earnings growth and stock returns.

Alternative Risk Premium Model - Ms. Bulkley also estimates an equity cost rate using an alternative risk premium model which she calls the Bond Yield Risk Premium (“BYRP”) approach. There are two issues with this approach: (1) the base interest rates; and (2) the risk premium. With respect to the base rates, her current long-term projected (3.20%) 30-year Treasury rates yields are well in excess of current market yields (1.40%). The risk premium in her BYRP method is based on an unorthodox approach using the historical relationship between the yields on long-term Treasury

yields and authorized ROEs for electric utility companies. As the discussion in my testimony of market-to-book ratios explains, the authorized ROEs have been greater than the return that investors require.

Expected Earnings Approach - Ms. Bulkley also uses the Expected Earnings approach to estimate an equity cost rate for the Company. Ms. Bulkley computes the expected ROE as forecasted by *Value Line* for her proxy group of electric utilities. As I discuss in my critique of Ms. Bulkley's presentation, the so-called "Expected Earnings" approach does not measure the market cost of equity capital, is independent of most cost of capital indicators, ignores the research on the upward bias in *Value Line*'s earnings projections, and has several other empirical issues. Therefore, the Commission should ignore Ms. Bulkley's "Expected Earnings" approach in determining the appropriate ROE for RMP.

Regulatory and Business Risk Factors - Ms. Bulkley also considers several other risk factors in arriving at her 10.20% ROE recommendation. She claims that: (1) RMP's higher than average capital expenditures increase its risk relative to the proxy utility companies; (2) RMP's regulatory risk of high due to operating in Utah; (3) RMP's generation ownership and fuel sources make it riskier than other utilities. Ms. Bulkley's conclusion that these factors are making RMP riskier are erroneous. Each of these three factors are risk factors that are already considered in the credit-rating process used by major rating agencies. As I noted above, the S&P and Moody's issuer credit ratings for RMP of A and A3 indicate that the Company is less risky than the electric utilities in the proxy groups. In addition, in terms of Utah regulatory risk, Ms. Bulkley claims that Utah ROEs are below those of other states. This is erroneous. For

example, the Commission approved a ROE of 9.50% for the gas distribution operations of Dominion Energy of Utah in February of this year. This compares to a national average gas distribution ROE of 9.40% in 2020.⁶³

VII. SUMMARY AND CONCLUSIONS

Q. PLEASE SUMMARIZE THE ISSUES WITH THE COMPANY'S COST OF CAPITAL PROPOSAL.

A. The primary issues related to the Company's rate of return include the following:

Capital Structure - The Company has proposed a capital structure that includes a common equity ratio of 53.67%. This capital structure includes a higher common equity ratio than the Company's parent, BHE, and the average common equity ratios employed by the two proxy groups;

Capital Market Conditions – Ms. Bulkley's analyses, ROE results, and recommendations are based on assumptions of higher interest rates and capital costs. However, interest rates and capital costs have remained at low levels in recent years. In 2019, interest rates fell due to slow economic growth and low inflation and, as discussed in above, interest rates have fallen even further to record low levels in 2020 due to the impact of the novel coronavirus on the world's population and economy.

GDP and Corporate Earnings Growth – Ms. Bulkley employs excessive growth estimates in the models she uses to calculate RMP's required ROE. This produces erroneous results and ROEs that are much too high.

⁶³ S&P Global Market Intelligence, RRA *Regulatory Focus*, 2020.

RMP's Investment Risk is Below the Averages of the Two Proxy Groups –RMP's S&P and Moody's credit ratings of A and A3 are better than the averages of the proxy groups, which indicates the Company is a less risky than the groups.

Q. PLEASE REVIEW YOUR PROPOSED RATE OF RETURN.

A. I have reviewed the Company's proposed capital structure and overall cost of capital. To estimate an equity cost rate for the Company, I have applied the DCF and CAPM to my two proxy groups of electric utility companies. My DCF and CAPM analyses indicate an equity cost rate range of 7.60% to 8.95%.

RMP's proposed capitalization has more equity and less financial risk than the average current capitalizations of electric utilities. Therefore, in my primary rate of return recommendation, I am using the capital structure with a common equity ratio of 50.0% which is more reflective of the capital structures of electric utility companies. I am using RMP's recommended long-term debt cost and preferred stock cost rates. With respect to the ROE, I recognize that my equity cost rate range, 7.60% to 8.95%, is below the average authorized ROEs for electric utility companies nationally. Therefore, as a primary ROE for RMP, I am recommending 9.0%. This recommendation: (1) gives weight to the higher authorized ROEs for electric utility companies; and (2) recognizes the concept of 'gradualism' in which authorized ROEs are adjusted on a gradual basis to reflect capital market data. Given my recommended capitalization ratios and senior capital cost rates, my primary rate of return or cost of capital recommendation for the Company is 6.91% and is summarized in Table 1 above and in Panel A of Exhibit JRW-1.

In my alternative rate of return recommendation, I am employing RMP's proposed capital structure of 46.32% long-term debt, 0.01% preferred stock, and 53.67% common equity and RMP's recommended long-term debt cost and preferred stock cost rates of 4.81% and 6.75%. With respect to the equity component of my recommendation regarding rate of return and due to using a much higher 53.67% equity ratio, my alternative ROE recommendation is 8.75%, which is still at the high end of my equity cost rate range of 7.60% to 8.95%. Given my alternative capitalization ratios and senior capital cost rates, based on the Company's proposed capital structure, my alternative rate of return or cost of capital recommendation for the Company is 6.92% and is summarized above in Table 2 and in Panel B of Exhibit JRW-1.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.