**STATE OF NEW HAMPSHIRE
BEFORE THE
PUBLIC UTILITIES COMMISSION**

Docket No. DE 16-383

Liberty Utilities (Granite State Electric) Corp. d/b/a Liberty Utilities
Distribution Service Rate Case

DIRECT TESTIMONY

OF

ROBERT B. HEVERT

April 29, 2016

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List of Attachments

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1   **I.   INTRODUCTION**

2   **Q.   Please state your name, affiliation, and business address.**

3   A.   My name is Robert B. Hevert. I am Managing Partner of Sussex Economic Advisors,

4   LLC ("Sussex"). My business address is 1900 West Park Drive, Suite 250,

5   Westborough, Massachusetts 01581.

6   **Q.   On whose behalf are you submitting this testimony?**

7   A.   I am submitting this testimony before the New Hampshire Public Utilities Commission

8   ("Commission") on behalf of Liberty Utilities (Granite State Electric) Corp. d/b/a Liberty

9   Utilities) ("Granite State" or the "Company").

10   **Q.   Please describe your educational background.**

11   A.   I hold a Bachelor's degree in Business and Economics from the University of Delaware,

12   and an MBA with a concentration in Finance from the University of Massachusetts. I

13   also hold the Chartered Financial Analyst designation.

14   **Q.   Please describe your experience in the energy and utility industries.**

15   A.   I have worked in regulated industries for over twenty-five years, having served as an

16   executive and manager with consulting firms, a financial officer of a publicly traded

17   natural gas utility (at the time, Bay State Gas Company), and an analyst at a

18   telecommunications utility. In my role as a consultant, I have advised numerous energy

19   and utility clients on a wide range of financial and economic issues, including corporate

20   and asset-based transactions, asset and enterprise valuation, transaction due diligence,

21   and strategic matters. As an expert witness, I have provided testimony in over 150

1   proceedings regarding various financial and regulatory matters before numerous state

2   utility regulatory agencies, the Federal Energy Regulatory Commission, and the Province

3   of Alberta, Canada. A summary of my professional and educational background,

4   including a list of my testimony in prior proceedings, is included in Attachment RBH-1

5   to my testimony.

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

7 **Q.**   **What is the purpose of your testimony?**

8 A.   The purpose of my testimony is to present evidence and provide a recommendation

9   regarding the Company's Cost of Equity (sometimes referred to as the "Return on

10   Equity" or "ROE") and to provide an assessment of the capital structure and cost of debt

11   to be used for ratemaking purposes. My analyses and conclusions are supported by the

12   data presented in Attachment RBH-2 through Attachment RBH-14, which have been

13   prepared by me or under my direction.

14 **Q.**   **What are your conclusions regarding the appropriate Cost of Equity and capital**

15   **structure for the Company?**

16 A.   My analyses indicate that the Company's Cost of Equity currently is in the range of 10.00

17   percent to 10.60 percent. Based on the quantitative and qualitative analyses discussed

18   throughout my testimony, I conclude that an ROE of 10.30 percent is reasonable and

19   appropriate. That ROE, together with the Company's proposed capital structure and cost

20   of debt, produces an overall Rate of Return of 8.31 percent. As to its proposed capital

21   structure, which includes 55.00 percent common equity and 45.00 percent long-term debt

22   as approved by the Commission in Order No. 25,638 at 16 (Mar. 17, 2014), I conclude

1   that the Company's proposal is consistent with the capital structures that have been in

2   place over several fiscal quarters at comparable operating utility companies. Given the

3   consistency of its proposal with similarly situated utility companies, I conclude that the

4   Company's proposed capital structure is reasonable and appropriate. Regarding the cost

5   of debt, I also understand that Company's current weighted average cost of long-term

6   debt is 5.88 percent, which I believe is reasonable and appropriate.

7   **Q.   Please provide a brief overview of the analyses that lead to your ROE**

8   **recommendation.**

9   A.   Equity analysts and investors use multiple methods to develop their return requirements

10   for investments. In order to develop my ROE recommendation, I relied on three widely

11   accepted approaches: the Constant Growth and Multi-Stage forms of the Discounted

12   Cash Flow ("DCF") model, the Capital Asset Pricing Model ("CAPM"); and the Bond

13   Yield Plus Risk Premium approach.

14   My recommendations and conclusions consider the risks associated with (1) the

15   Company's proposed Capital Investment Recovery Mechanism; (2) the Company's

16   comparatively small size; and (3) flotation costs associated with equity issuances.

17   Although I did not make any explicit adjustments to my ROE estimates for those factors,

18   I did take them into consideration in determining the range in which the Company's Cost

19   of Equity likely falls.

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

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

1   • <u>Section III</u> – Provides a summary of my conclusions and recommendations;

2   • <u>Section IV</u> – Discusses the regulatory guidelines and financial considerations

3   pertinent to the development of the cost of capital;

4   • <u>Section V</u> – Explains my selection of the proxy group used to develop my

5   analytical results;

6   • <u>Section VI</u> – Explains my analyses and the analytical bases for my ROE

7   recommendation;

8   • <u>Section VII</u> – Provides a discussion of specific business risks that have a direct

9   bearing on the Company's Cost of Equity;

10   • <u>Section VIII</u> – Highlights the current capital market conditions and their effect on

11   the Company's Cost of Equity;

12   • <u>Section IX</u> – Addresses the reasonableness of the Company's proposed capital

13   structure;

14   • <u>Section X</u> – Addresses the reasonableness of the Company's proposed Cost of

15   Debt; and

16   • <u>Section XI</u> – Summarizes my conclusions and recommendations.

17 **III.**   **<u>SUMMARY OF CONCLUSION</u>**

18 **Q.**   **What are the key factors considered in your analyses and upon which you base your**

19   **recommended ROE?**

20 A.   My analyses and recommendations considered the following:

1   •   The *Hope* and *Bluefield* decisions[1] that established the standards for determining a

2   fair and reasonable allowed return on equity including: consistency of the allowed

3   return with other businesses having similar risk; adequacy of the return to provide

4   access to capital and support credit quality; and that the end result must lead to just

5   and reasonable rates.

6   •   The Company's business risks relative to the proxy group of comparable companies

7   and the implications of those risks in arriving at the appropriate ROE.

8   •   The effect of the current capital market conditions on investors' return

9   requirements.

10   **Q.**   **What are the results of your analyses?**

11   A.   The results of my analyses are summarized in Table 1.

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[1]   *Bluefield Waterworks & Improvement Co. v. Public Service Comm'n of West Virginia*, 262 U.S. 679 (1923); *Federal Power Comm'n v. Hope Natural Gas Co.*, 320 U.S. 591 (1944).

1   **Table 1: Summary of Analytical Results**

Discounted Cash Flow	Mean Low	Mean	Mean High
30-Day Constant Growth DCF	8.47%	9.13%	9.78%
90-Day Constant Growth DCF	8.60%	9.27%	9.91%
180-Day Constant Growth DCF	8.70%	9.37%	10.01%
30-Day Multi-Stage DCF	9.39%	9.86%	10.32%
90-Day Multi-Stage DCF	9.72%	10.20%	10.66%
180-Day Multi-Stage DCF	9.99%	10.46%	10.93%
Supporting Methodologies			
CAPM Results		Bloomberg Derived Market Risk Premium	Value Line Derived Market Risk Premium
Average Bloomberg Beta Coefficient			
Current 30-Year Treasury (2.68%)		9.02%	8.46%
Near Term Projected 30-Year Treasury (3.35%)		9.69%	9.13%
Average Value Line Beta Coefficient			
Current 30-Year Treasury (2.68%)		10.95%	10.22%
Near Term Projected 30-Year Treasury (3.35%)		11.62%	10.89%
	Low	Mid	High
Bond Yield Risk Premium	10.04%	10.08%	10.47%
Flotation Costs		0.13%	

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3   Based on the analytical results presented in Table 1, and in light of the considerations

4   discussed throughout the balance of my testimony regarding the Company's business and

5   regulatory risks relative to the proxy group, it is my view that an ROE of 10.30 percent is

6   reasonable and appropriate.

1   **IV.   REGULATORY GUIDELINES AND FINANCIAL CONSIDERATIONS**

2   **Q.   Please provide a brief summary of the guidelines established by the United States**

3   **Supreme Court (the "Court") for the purpose of determining a utility's ROE.**

4   A.   The Court established the guiding principles for establishing a fair return for capital in

5   two cases: (1) *Bluefield Water Works and Improvement Co. v. Public Service Comm'n of*

6   *West Virginia* ("*Bluefield*"); and (2) *Federal Power Comm'n v. Hope Natural Gas Co.*

7   ("*Hope*").[2]   In those cases, the Court recognized that the fair rate of return on equity

8   should be (1) comparable to returns investors expect to earn on other investments of

9   similar risk, (2) sufficient to assure confidence in the company's financial integrity, and

10   (3) adequate to maintain and support the company's credit and to attract capital.

11   **Q.   Does New Hampshire precedent provide similar guidance?**

12   A.   Yes. The Commission's decision in Order No. 24,972 indicates that the Commission

13   adheres to the capital attraction standard articulated in the *Hope* and *Bluefield* decisions.[3]

14   That Order also states that the Commission is:

15   [B]ound to set a rate of return that falls within a zone of reasonableness,
16   neither so low to result in a confiscation of company property, nor so
17   high as to result in extortionate charges to customers. A rate falling
18   within the zone should, at a minimum, be sufficient to yield the cost of
19   debt and equity capital necessary to provide the assets required for the
20   discharge of the company's responsibility.[4]

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[2]   *Bluefield Waterworks & Improvement Co., v. Public Service Commission of West Virginia*, 262 U.S. 679 (1923); *Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591 (1944).

[3]   *See*, *EnergyNorth Natural Gas, Inc. d/b/a National Grid NH,* Docket DG 08-009, Order No. 24,972 at 54-55 (May 29, 2009).

[4]   *Ibid.,* at 54. *See also, Appeal of Conservation Law Foundation*, 127 N.H. 606, 635 (1986).

1   Based on those standards, the authorized ROE should provide the Company with the

2   opportunity to earn a fair and reasonable return, and should enable efficient access to

3   external capital under a variety of market conditions.

4 **V.**   **PROXY GROUP SELECTION**

5 **Q.**   **As a preliminary matter, why is it necessary to select a group of proxy companies to**

6   **determine the Cost of Equity for Granite State?**

7 A.   Since the ROE is a market-based concept and Granite State is not a publicly traded entity,

8   it is necessary to establish a group of comparable publicly traded companies to serve as

9   its "proxy." Even if Granite State were a publicly traded entity, short-term events could

10   bias its market value during a given period of time. A significant benefit of using a proxy

11   group is that it serves to moderate the effects of anomalous, temporary events associated

12   with any one company.

13 **Q.**   **Does the selection of a proxy group suggest that analytical results will be tightly**

14   **clustered around average (*i.e.*, mean) results?**

15 A.   No. The DCF approach, for example, defines the Cost of Equity as the sum of the

16   expected dividend yield and projected long-term growth. Despite the care taken to ensure

17   risk comparability, market expectations with respect to future risks and growth

18   opportunities will vary from company to company. Therefore, even within a group of

19   similarly situated companies, it is common for analytical results to reflect a seemingly

20   wide range. At issue, then, is how to estimate the Cost of Equity from within that range.

21   That determination necessarily must consider a wide range of both empirical and

22   qualitative information.

1   **Q.   Please provide a summary profile of Granite State.**

2   A.   Granite State provides electric distribution service to approximately 43,000 customers in

3   21 communities in southern and western New Hampshire.[5]

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

5   A.   I began with the universe of companies that Value Line classifies as Electric Utilities, and

6   applied the following screening criteria:

7   • I excluded companies that do not consistently pay quarterly cash dividends;

8   • I excluded companies that were not covered by at least two utility industry equity

9   analysts;

10   • I excluded companies that do not have investment grade senior unsecured bond

11   and/or corporate credit ratings from S&P;

12   • I excluded companies with less than 60.00 percent of total net operating income

13   derived from regulated utility operations over the three most recently reported

14   fiscal years;

15   • I excluded companies whose regulated electric operating income over the three

16   most recently reported fiscal years represented less than 60.00 percent of total

17   regulated operating income;[6]

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[5]   *See*, Granite State Electric Company, FERC Form 3-Q for 2015Q3, at 123.1.
[6]   In prior cases before the Commission, I excluded companies whose regulated electric operating income over
       the three most recently reported fiscal years represented less than 90.00 percent of total regulated operating
       income. Due to recent consolidation in the industry, that threshold would produce a relative small group of
       proxy companies. As such, in this proceeding I have lowered the threshold to 60.00 percent.

1   •   I eliminated companies that are currently known to be party to a merger or other

2   significant transaction.

3   **Q.   Based on those criteria, what is the composition of your proxy group?**

4   A.   The criteria discussed above results in a proxy group of the following 22 companies

5   provided in Table 2 below.

1   **Table 2: Proxy Group**

Company	Ticker
ALLETE, Inc.	ALE
Alliant Energy Corporation	LNT
Ameren Corporation	AEE
American Electric Power Company, Inc.	AEP
Avista Corporation	AVA
CenterPoint Energy, Inc.	CNP
CMS Energy Corporation	CMS
Consolidated Edison, Inc.	ED
DTE Energy Company	DTE
Eversource Energy	ES
FirstEnergy Corp.	FE
Great Plains Energy Inc.	GXP
IDACORP, Inc.	IDA
NorthWestern Corporation	NWE
OGE Energy Corp.	OGE
Otter Tail Corporation	OTTR
Pinnacle West Capital Corporation	PNW
PNM Resources, Inc.	PNM
Portland General Electric Company	POR
SCANA Corporation	SCG
Westar Energy, Inc.[7]	WR
Xcel Energy Inc.	XEL

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[7]   On March 10, 2016, Bloomberg.com reported that Westar Energy ("WR") was exploring strategic options, including a possible sale. Because my analyses pre-date that announcement, I have included WR in my proxy group. To the extent I provide updated analyses later in this proceeding, I may exclude WR from the proxy group at that time.

1   **VI.   COST OF EQUITY ESTIMATION**

2   **Q.   Please briefly discuss the ROE in the context of the regulated rate of return.**

3   A.   Regulated utilities primarily use common stock and long-term debt to finance their

4   capital investments. The overall rate of return ("ROR") weighs the costs of the

5   individual sources of capital by their respective book values. While the cost of debt and

6   cost of preferred stock can be directly observed, the Cost of Equity is market-based and,

7   therefore, must be estimated based on observable market information.

8   **Q.   How is the required ROE determined?**

9   A.   Because the Cost of Equity is not directly observable, it must be estimated based on both

10   quantitative and qualitative information. Although a number of empirical models have

11   been developed for that purpose, all are subject to limiting assumptions or other

12   constraints. Consequently, many finance texts recommend using multiple approaches to

13   estimate the Cost of Equity.[8] When faced with the task of estimating the Cost of Equity,

14   analysts and investors are inclined to gather and evaluate as much relevant data as

15   reasonably can be analyzed and, therefore, rely on multiple analytical approaches.

16   As a practical matter, no individual model is more reliable than all others under all

17   market conditions. Therefore, it is both prudent and appropriate to use multiple

18   methodologies in order to mitigate the effects of assumptions and inputs associated with

19   any single approach. As such, I have considered the results of the Constant Growth and

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[8]   *See*, *e.g.,* Eugene Brigham, Louis Gapenski, <u>Financial Management: Theory and Practice</u>, 7th Ed., 1994, at 341, and Tom Copeland, Tim Koller and Jack Murrin, <u>Valuation: Measuring and Managing the Value of Companies</u>, 3rd ed., 2000, at 214.

1   Multi-Stage forms of the DCF model, the Capital Asset Pricing Model, and the Bond

2   Yield Plus Risk Premium approach.

3 **Q.   Are you aware that the New Hampshire Commission has relied primarily on the**

4 **DCF approach in establishing the ROE for regulated utilities?**

5 A.   Yes, I am aware that the Commission has expressed its preference for the Constant

6   Growth DCF approach as the primary method in determining the ROE. However, the

7   Commission also has encouraged the use of other methods as a test of the reasonableness

8   of the DCF results. In prior proceedings, for example, both Staff and the Commission

9   supported the use of a three-stage DCF model. As the Commission noted:

10   Staff testimony supports the view that a three-stage version of the DCF
11   represents a valuable refinement to the DCF model of estimating the
12   cost of capital looking forward over the long term. We agree. Given
13   the computing power available to analysts today, it is possible to more
14   closely match growth rate estimates to varying growth expectations over
15   longer time horizons.[9]

16   As such, I have relied on two forms of the DCF model (the Constant Growth and Multi-

17   Stage forms) as my principal approaches, and the CAPM and Risk Premium models to

18   assess my DCF results.

19   **A.   Constant Growth DCF Model**

20 **Q.   Are DCF models widely used in regulatory proceedings?**

21 A.   Yes. In my experience, the Constant Growth DCF model is widely recognized in

22   regulatory proceedings, as well as in financial literature. Nonetheless, neither the DCF

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[9]   *Verizon New Hampshire*, Order No. 24,265 at 65 (Jan. 16, 2004).

1   nor any other model should be applied without considerable judgment in the selection of

2   data and the interpretation of results.

3   **Q.   Please describe the DCF approach.**

4   A.   The Constant Growth DCF approach is based on the theory that a stock's current price

5   represents the present value of all expected future cash flows. In its simplest form, the

6   Constant Growth DCF model expresses the Cost of Equity as the discount rate that sets

7   the current price equal to expected cash flows:

$$P_0 = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + ... + \frac{D_\infty}{(1+k)^\infty}$$

8   Equation [1]

9   where P represents the current stock price, $D_1 \ldots D_\infty$ represent expected future dividends,

10   and k is the discount rate, or required ROE. Equation [1] is a standard present value

11   calculation that can be simplified and rearranged into the familiar form:

$$k = \frac{D(1+g)}{P_0} + g$$

12   Equation [2]

13   Equation [2] often is referred to as the "Constant Growth DCF" model, in which the first

14   term is the expected dividend yield and the second term is the expected long-term annual

15   growth rate.

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

17   A.   The Constant Growth DCF model assumes: (1) a constant average annual growth rate for

18   earnings and dividends; (2) a stable dividend payout ratio; (3) a constant price-to-

1   earnings ("P/E") multiple; and (4) a discount rate greater than the expected growth rate.

2   Under those assumptions, dividends, earnings, book value, and the stock price all grow at

3   the same, constant rate. The model further assumes that the current Cost of Equity (that

4   is, the model's results) will remain unchanged, in perpetuity.

5   **Q.   What market data did you use to calculate the dividend yield component of your**

6   **DCF model?**

7   A.   The dividend yield is based on the proxy companies' current annualized dividend and

8   average closing stock prices over the 30-, 90-, and 180-trading day periods as of February

9   29, 2016.

10   **Q.   Why did you use three averaging periods to calculate an average stock price?**

11   A.   I did so to ensure that the model's results are not skewed by anomalous events that may

12   affect stock prices on any given trading day. At the same time, the averaging period

13   should be reasonably representative of expected capital market conditions over the long

14   term. In my view, using 30-, 90-, and 180-day averaging periods reasonably balances

15   those concerns.

16   **Q.   Did you make any adjustments to the dividend yield to account for periodic growth**

17   **in dividends?**

18   A.   Yes. Because utilities increase their quarterly dividends at different times throughout the

19   year, it is reasonable to assume that dividend increases will be evenly distributed over

20   calendar quarters. Given that assumption, it is appropriate to calculate the expected

21   dividend yield by applying one-half of the long-term growth rate to the current dividend

1   yield. See Attachment RBH-2. That adjustment ensures that the expected dividend yield

2   is representative of the coming twelve-month period, and does not overstate the dividends

3   to be paid during that time.

4   **Q.   Is it important to select appropriate measures of long-term growth in applying the**

5   **DCF model?**

6   A.   Yes. In its Constant Growth form, the DCF model (*i.e.*, as presented in Equation [2]

7   above) assumes a single growth estimate in perpetuity. Accordingly, in order to reduce

8   the long-term growth rate to a single measure, one must assume a fixed payout ratio and

9   the same constant growth rate for earnings per share ("EPS"), dividends per share, and

10 book value per share. Since dividend growth can only be sustained by earnings growth,

11 the model should incorporate a variety of measures of long-term earnings growth. That

12 can be accomplished by averaging those measures of long-term growth that tend to be

13 least influenced by capital allocation decisions that companies may make in response to

14 near-term changes in the business environment. Since such decisions may directly affect

15 near-term dividend payout ratios, estimates of earnings growth are more indicative of

16 long-term investor expectations than are dividend growth estimates. Therefore, for the

17 purposes of the Constant Growth DCF model, growth in EPS represents the appropriate

18 measure of long-term growth.

1   **Q.   Please summarize the findings of academic research on the appropriate measure for**

2   **estimating equity returns using the DCF model.**

3   A.   The relationship between various growth rates and stock valuation metrics has been the

4   subject of much academic research.[10] As noted over 40 years ago by Charles Phillips in

5   The Economics of Regulation:

6   For many years, it was thought that investors bought utility stocks
7   largely on the basis of dividends. More recently, however, studies
8   indicate that the market is valuing utility stocks with reference to total
9   per share earnings, so that the earnings-price ratio has assumed
10   increased emphasis in rate cases.[11]

11   Phillips' conclusion continues to hold true. Subsequent academic research has clearly

12   and consistently indicated that measures of earnings and cash flow are strongly related to

13   returns, and that analysts' forecasts of growth are superior to other measures of growth in

14   predicting stock prices.[12] For example, Vander Weide and Carleton state that "[our]

15   results … are consistent with the hypothesis that investors use analysts' forecasts, rather

16   than historically oriented growth calculations, in making stock buy-and-sell decisions."[13]

17   Other research specifically notes the importance of analysts' growth estimates in

18   determining the Cost of Equity, and in the valuation of equity securities. Dr. Robert

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[10]   *See* Harris, Robert, *Using Analysts' Growth Forecasts to Estimate Shareholder Required Rate of Return*, Financial Management (Spring 1986).

[11]   Charles F. Phillips, Jr., The Economics of Regulation, at 285 (Rev. ed. 1969).

[12]   *See, e.g.*, Christofi, Christofi, Lori and Moliver, *Evaluating Common Stocks Using Value Line's Projected Cash Flows and Implied Growth Rate*, Journal of Investing (Spring 1999); Harris and Marston, *Estimating Shareholder Risk Premia Using Analysts' Growth Forecasts*, Financial Management, 21 (Summer 1992); and Vander Weide and Carleton, *Investor Growth Expectations: Analysts vs. History*, The Journal of Portfolio Management (Spring 1988).

[13]   Vander Weide and Carleton, *Investor Growth Expectations: Analysts vs. History*, The Journal of Portfolio Management (Spring 1988). The Vander Weide and Carleton study was updated in 2004 under the direction of Dr. Vander Weide. The results of the updated study were consistent with the original study's conclusions.

1   Harris noted that "a growing body of knowledge shows that analysts' earnings forecasts

2   are indeed reflected in stock prices." Citing Cragg and Malkiel, Dr. Harris notes that

3   those authors "found that the evaluations of companies that analysts make are the sorts of

4   ones on which market valuation is based."[14] Similarly, Brigham, Shome, and Vinson

5   noted that "evidence in the current literature indicates that (i) analysts' forecasts are

6   superior to forecasts based solely on time series data, and (ii) investors do rely on

7   analysts' forecasts."[15]

8   To that point, the research of Carleton and Vander Weide demonstrates that earnings

9   growth projections have a statistically significant relationship to stock valuation levels,

10   while dividend growth rates do not.[16] Those findings suggest that investors form their

11   investment decisions based on expectations of growth in earnings, not dividends.

12   Consequently, earnings growth, not dividend growth, is the appropriate estimate for the

13   purpose of the Constant Growth DCF model.

14 **Q.** **Are you aware that the Commission has indicated that it favors use of growth**

15   **forecasts aside from expected earnings per share growth?**

16 A. Yes, I am aware that the Commission has accepted the use of different estimates of

17   growth, including dividends per share, and book value per share. In support of that

18   approach, the Commission observed that stock price appreciation is not the sole

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[14]   Robert S. Harris, *Using Analysts' Growth Forecasts to Estimate Shareholder Required Rate of Return*, Financial Management (Spring 1986).

[15]   Eugene F. Brigham, Dilip K. Shome, and Steve R. Vinson, *The Risk Premium Approach to Measuring a Utility's Cost of Equity*, Financial Management (Spring 1985).

[16]   *See* Vander Weide and Carleton, *Investor Growth Expectations: Analysts vs. History*, The Journal of Portfolio Management (Spring 1988).

1   determinant of investors' returns, and that dividends represent an important element of

2   the return from utility stocks. The Commission further stated that sole reliance on

3   earnings growth is not appropriate since the Constant Growth DCF model assumes a

4   constant P/E ratio.[17]

5   **Q.   Why have you not relied on projected dividend growth and book value growth rates**

6   **in your Constant Growth DCF analysis?**

7   A.   I disagree with the use of dividend and book value growth rates for several reasons. First,

8   earnings are the fundamental determinant of a company's ability to pay dividends.

9   Management decisions to conserve cash for capital investments, to manage the dividend

10   payout to minimizing future dividend reductions, or to finance future earnings prospects

11   can influence dividend growth rates in near-term periods. Since dividends are

12   discretionary, in the short run, dividend growth may deviate significantly from earnings

13   growth. Over the long run, however, dividends are dependent on earnings.

14   Similarly, the book value of equity can increase only through increases to retained

15   earnings, or through the issuance of new equity. Both of those factors are derived from

16   earnings: retained earnings increase with the amount of earnings not distributed as

17   dividends; and the price at which new equity is issued is a function of the earnings per

18   share and the then-current P/E ratio. In addition, academic research has clearly indicated

19   that measures of earnings and cash flow are strongly related to returns.

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[17]   *EnergyNorth Natural Gas, Inc. d/b/a National Grid NH,* Order No. 24,972 at 63 (May 29, 2009).

1   Lastly, whereas Zack's and First Call are consensus growth estimates, Value Line is the

2   sole provider of dividend and book value growth estimates. Putting aside the observation

3   that if investor services such as Zack's and First Call felt that projected dividend and

4   book value growth rates were important to investors they likely would provide them, the

5   fact that Value Line growth rates are developed by a single analyst introduces a potential

6   element of bias. It is for that reason that my screening criteria require each proxy

7   company to be followed by multiple analysts.

8 **Q.**   **Do you have any other comments regarding the use of dividend or book value**

9   **growth rates in the Constant Growth DCF model?**

10 A.   Yes. As noted earlier, the Constant Growth DCF model assumes that earnings,

11   dividends, and book value all grow at the same constant rate and that the P/E ratio

12   remains constant in perpetuity. Under those strict assumptions, the DCF result does not

13   vary if the stock is held in perpetuity, or if it is held for only two, five, or ten years, or

14   any other period and sold at the market price at the end of that period. As a practical

15   matter, those assumptions rarely, if ever, hold. Because investors are not likely to hold

16   stock in perpetuity, they expect a substantial portion of the return in the form of capital

17   appreciation. Since stock valuation levels are statistically related to earnings growth (but

18   not dividend or book value growth) earnings growth is the appropriate growth rate to use

19   in the DCF analysis.

20 **Q.**   **Please summarize your inputs to the Constant Growth DCF model.**

21 A.   I used the following inputs for the price and dividend terms:

1   1. The average daily closing prices for the 30-, 90-, and 180-trading days ended

2   February 29, 2016, for the term P_0; and

3   2. The annualized dividend per share as of February 29, 2016, for the term D_0.

4   I then calculated my DCF results using each of the following growth terms:

5   1. The Zack's consensus long-term earnings growth estimates;

6   2. The First Call consensus long-term earnings growth estimates; and

7   3. The Value Line long-term earnings growth estimates.

8   **Q.**   **How did you calculate the high and low DCF results?**

9   A.   I calculated the proxy group mean high DCF results by using the maximum EPS growth

10   rate estimate as reported by Value Line, Zack's, and First Call for each proxy company in

11   combination with the dividend yield for each of the proxy group companies. The proxy

12   group mean high results then reflect the average of the maximum DCF results for the

13   proxy group as a whole. I used a similar approach to calculate the proxy group mean low

14   results using instead the minimum of the Value Line, Zack's, and First Call estimate for

15   each proxy group company.

16   **B.**   **Multi-Stage DCF Model**

17   **Q.**   **What other forms of the DCF model have you considered?**

18   A.   In order to address some of the limiting assumptions underlying the Constant Growth

19   form of the DCF model, I also considered the results of a Multi-Stage (three-stage) DCF

20   Model. The Multi-Stage model, which is an extension of the Constant Growth form,

21   enables the analyst to specify growth rates over three discreet stages. As with the

1   Constant Growth form of the DCF model, the Multi-Stage form defines the Cost of

2   Equity as the discount rate that sets the current price equal to the discounted value of

3   future cash flows. Unlike the Constant Growth form, however, the Multi-Stage model

4   must be solved in an iterative fashion.

5   **Q.**   **Are you aware Staff recommended discarding the Multi-Stage DCF method in**

6   **Granite State Electric's last rate case, Docket No. DE 13-063?**

7   A.   Yes, I am. In Docket No. DE 13-063, Staff argued that Granite State Electric "was a

8   well-established electric distribution company", characterized the company as "in the

9   maturity stage of its life cycle", and therefore argued the constant growth DCF model
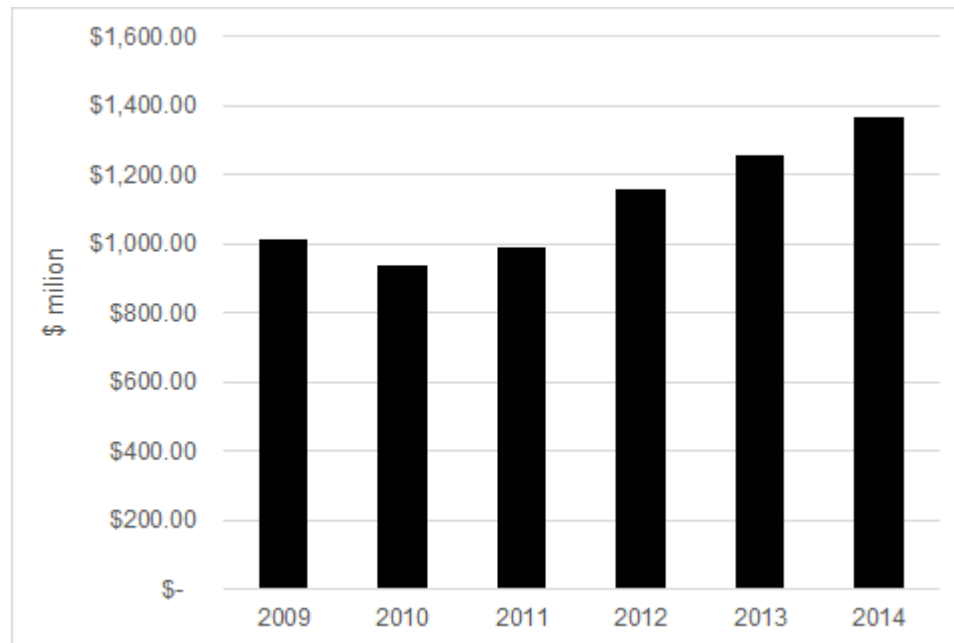
10   was most appropriate.[18]

11   Investors' expectations of growth rates, however, may not remain constant over time,

12   even for well-established companies. The Multi-Stage DCF model therefore allows for

13   changes in expected growth rates. Moreover, the relationships among revenue, assets,

14   and operating income may change over time, resulting in uneven earnings growth rates.

15   To that point, and as noted in Table 3 (below), the ratio of revenue to net plant (*i.e.*,

16   "Asset Turnover") for electric utilities fell from 2009 through 2014; that decline was

17   coincident with increases in capital spending during that period (see Chart 1).

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[18]   *See,* DE 13-063 *Granite State Electric Company d/b/a Liberty Utilities* Rate Case, Testimony of Leszek Stachow, at 15.

1   **Table 3: Asset Turnover for the Value Line Electric Universe**[19]

Year	Average Revenue/ Net Plant
2009	53.35%
2010	52.17%
2011	49.54%
2012	43.84%
2013	43.95%
2014	42.78%

2

3   **Chart 1: Proxy Group Average Capital Expenditures 2009 – 2014**[20]

4

5   Those findings are consistent with observations made by Regulatory Research Associates

6   ("RRA"), which noted that:

7   …the shake-up in capital markets in late-2008 and an extended period of
8   recessionary pressures took a toll on spending in 2009 and 2010. With
9   financial measures more stable, many companies felt compelled to return to

---

19   Source: Value Line. *See*, Attachment RBH-9.
20   Source: Value Line.

1 a more aggressive spending posture during 2011, as work was initiated on

2 many new and/or postponed projects.[21]

3 Looking forward, RRA notes that electric utility capital expenditures are expected to

4 somewhat decline in 2016 and 2017.[22] The Multi-Stage DCF model provides the

5 flexibility to reflect the prospect of changes in payout ratios in connection with changes

6 in capital investments, and to capture differences in future growth rates owing to current

7 investments.

8 Lastly, I note that in *Verizon New Hampshire*, Order No. 24,265 (Jan. 16, 2004), both the

9 Commission and Staff noted the beneficial aspects of the Multi-Stage DCF model.

10 Similarly, in Order No 24,552 the Commission noted that in a prior order (Order No.

11 24,473) it "reaffirmed the use of the Three Stage DCF model…."[23]

12 **Q.** **Please now summarize why you have included the Multi-Stage DCF method in your**

13 **Cost of Equity estimation.**

14 A. First, it is both prudent and appropriate to use multiple methodologies in order to mitigate

15 the effects of assumptions and inputs associated with any single approach. Second, the

16 Constant Growth DCF model assumes that earnings, dividends, and book value will grow

17 at the same, constant rate in perpetuity; that the payout ratio will remain constant in

18 perpetuity; and that the Price/Earnings ratio will remain constant. In addition, the model

19 assumes that the return required today will be the same return required every year in the

20 future. As discussed above, those assumptions are not likely to hold. In particular, it is

---

[21] SNL Energy, *Financial Focus Special Report, Capital Expenditure Update*, November 1, 2011, at 1.
[22] *See* SNL Energy, *Financial Focus Special Report, Capital Expenditure Update*, November 15, 2015, at 1.
[23] *Public Service Company of New Hampshire*, Order No. 24,552 at 13 (Dec.2, 2005).

1   likely that over time, payout ratios will increase from their current levels. In addition, to

2   the extent that long-term interest rates increase over the next few years as the Federal

3   Reserve continues its process of policy "normalization", it is likely that the Cost of

4   Equity also will increase. In my view, the Multi-Stage DCF model enables analysts to

5   consider those issues and to address the limiting, but likely unrealistic, assumptions

6   underlying the Constant Growth form of the model.

7   **Q.   Please describe the structure of your Multi-Stage DCF model.**

8   A.   As noted above, the Multi-Stage DCF model sets the subject company's stock price equal

9   to the present value of future cash flows received over three "stages." In the first two

10   stages, "cash flows" are defined as projected dividends. In the third stage, "cash flows"

11   equal both dividends and the expected price at which the stock will be sold at the end of

12   the period (*i.e.*, the "terminal price"). The terminal price is calculated based on the

13   Gordon model, which defines the price as the expected dividend divided by the difference

14   between the Cost of Equity (*i.e.*, the discount rate) and the long-term expected growth

15   rate. In essence, the terminal price is defined by the present value of the remaining "cash

16   flows" in perpetuity. In each of the three stages, the dividend is the product of the

17   projected earnings per share and the expected dividend payout ratio. A summary

18   description of the model is provided in Table 4 (below).

1   **Table 4: Multi-Stage DCF Structure**

Component	Stage			
	0	**First**	**Second**	**Terminal**
Cash Flow	Initial Stock Price	Expected Dividend	Expected Dividend	Expected Dividend + Terminal Value
Inputs	• Stock Price • Earnings Per Share ("EPS") • Dividends Per Share ("DPS")	• Expected EPS • Expected DPS	• Expected EPS • Expected DPS	• Expected EPS • Expected DPS • Terminal Value
Assumptions	• 30-, 90-, and 180-day average stock price	• EPS Growth Rate • Payout Ratio	• Growth Rate Change • Payout Ratio Change	• Long-term Growth Rate • Long-term Payout Ratio

2

3   **Q.   What are the analytical benefits of your three-stage model?**

4   A.   The principal benefits relate to the flexibility provided by the model's formulation. Since

5   the model provides the ability to specify near, intermediate, and long-term growth rates,

6   for example, it avoids the sometimes-limiting assumption that the subject company will

7   grow at the same, constant rate in perpetuity. In addition, by calculating the dividend as

8   the product of earnings and the payout ratio, the model accommodates assumptions

9   regarding the timing and extent of changes in the payout ratio to reflect, for example,

10   increases or decreases in expected capital spending, or transition from current payout

11   levels to long-term expected levels. In that regard, because the model relies on multiple

12   sources of earnings growth rate assumptions, it is not limited to a single source, such as

1   Value Line, for all inputs, and therefore mitigates the potential bias associated with

2   relying on a single source of growth estimates.[24]

3   The model also enables the analyst to assess the reasonableness of the inputs and results

4   by reference to certain market-based metrics. For example, the stock price estimate can

5   be divided by the expected earnings per share in the final year to calculate the terminal

6   P/E ratio. Similarly, the terminal P/E ratio can be divided by the terminal growth rate to

7   develop a Price to Earnings Growth ("PEG") ratio. To the extent that the projected P/E

8   or PEG ratios are inconsistent with either historical or expected levels, it may indicate

9   incorrect or inconsistent assumptions within the balance of the model.

10 **Q.   Please summarize your inputs to the Multi-Stage DCF model.**

11 A.   I applied the Multi-Stage model to the proxy group described earlier in my testimony.

12 My assumptions with respect to the various model inputs are described in Table 5 below.

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[24]   *See*, for example, Harris and Marston, *Estimating Shareholder Risk Premia Using Analysts' Growth Forecasts*, Financial Management, 21 (Summer 1992).

1   **Table 5: Multi-Stage DCF Model Assumptions**

Component	Stage			
	Initial	First	Transition	Terminal
Stock Price	30-, 90-, and 180-day average stock price as of February 29, 2016			
Earnings Growth	2014 actual EPS escalated by Period 1 growth rate	EPS growth as average of (1) Value Line; (2) Zack's; (3) First Call; and (4) Retention Growth rates	Transition to Long-term GDP growth	Long-term GDP growth
Payout Ratio		Value Line company-specific	Transition to long-term industry payout ratio	Long-term industry average
Terminal Value				Expected dividend in final year divided by solved Cost of Equity less long-term growth rate

2

3 **Q.   How did you calculate the long-term Gross Domestic Product ("GDP") growth rate?**

4 A.   The long-term growth rate of 5.30 percent is based on the real GDP growth rate of 3.24

5   percent from 1929 through 2015, and an inflation rate of 2.00 percent. The GDP growth

6   rate is calculated as the compound growth rate in the chain-weighted GDP for the period

7   from 1929 through 2015.[25] The rate of inflation of 2.00 percent is an average of two

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25   *See* Bureau of Economic Analysis, "Current-Dollar and 'Real' Gross Domestic Product," February 26, 2016
        update.

1   components: (1) the compound annual forward rate starting in ten years (*i.e.*, 2026,

2   which is the beginning of the terminal period) based on the 180-day average spread

3   between yields on long-term nominal Treasury Securities and long-term Treasury

4   Inflation Protected Securities, known as the "TIPS spread" of 1.81 percent;[26] and (2) the

5   projected Blue Chip Financial Forecast of the CPI for 2022 – 2026 of 2.20 percent.[27]

6   In essence, the real GDP growth rate projection is based on the assumption that, absent

7   specific knowledge to the contrary, it is reasonable to assume that over time real GDP

8   growth will revert to its long-term mean. In addition, since estimating the Cost of Equity

9   is a market-based exercise, it is important to reflect the sentiments and expectations of

10   investors to the extent possible. In that important respect, the TIPS spread represents the

11   collective views of investors regarding long-term inflation expectations. Equally

12   important, by using forward yields we are able to infer the level of long-term inflation

13   expected by investors as of the terminal period of the Multi-Stage model, that is, ten

14   years in the future.

15 **Q.**   **What were your specific assumptions with respect to the payout ratio?**

16 A.   As noted in Table 5, the first two periods rely on the first year and long-term projected

17   payout ratios reported by Value Line for each of the proxy group companies.[28] Then, by

18   the end of the second period (*i.e.*, the end of year 10), it is assumed that the payout ratio

19   will converge to the long-term industry average of 67.30 percent.[29]

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[26]   *See* Board of Governors of the Federal Reserve System, "Table H.15 Selected Interest Rates."
[27]   *Blue Chip Financial Forecasts*, December 1, 2015, at 14.
[28]   As reported in the Value Line Investment Survey as "All Div'ds to Net Prof."
[29]   Source: Bloomberg Professional

1 **Q.** **What was your principal assumption regarding the terminal value?**

2 A. Although I performed a series of analyses in which the terminal value is calculated based

3 on the assumed long-term nominal GDP growth rate,[30] I also performed a series of

4 analyses in which the terminal value is based on the current P/E ratio.[31] The results of

5 those analyses are shown in Table 6, below. For the reasons discussed below, I believe

6 that assumption is reasonable and produces reliable results.

7 **Table 6: Multi-Stage DCF Model Results[32]**

	Mean Low	*Mean*	*Mean High*
30-Day Average	9.39%	9.86%	10.32%
90-Day Average	9.72%	10.20%	10.66%
180-Day Average	9.99%	10.46%	10.93%

8

9 **Q.** **Why are the results presented in Table 6 reliable estimates of the Company's Cost**

10 **of Equity?**

11 A. As noted earlier, we can use aspects of the Multi-Stage DCF model to assess its

12 consistency with other market measures, including the terminal P/E ratio. On a relative

13 basis, the proxy group current P/E ratio of 18.56 is approximately equal to the 2015

14 market average P/E ratio of 18.37.[33] Over time, however, the proxy group traded at

15 discount to the market of approximately 9.00 percent. It is reasonable to assume that in

16 the future the group likewise would trade at a discount to the market. Assuming that in

---

30 *See,* Attachment RBH-3.
31 Defined as the 30-day average of the proxy group P/E ratio, calculated as an Index.
32 *See*, Attachment RBH-4.
33 Source: Bloomberg Professional.

1   the terminal year (that is, 2030) the 18.56 proxy group P/E ratio represents a 9.00 percent

2   discount to the market P/E, the market would then trade at a P/E multiple of

3   approximately 20.40.

4   That multiple (*i.e.*, 20.40) is less than one standard deviation from the long-term average

5   market P/E ratio. Moreover, over time the market P/E ratio has expanded at a geometric

6   average rate of approximately 0.58 percent per year (that is, about 58 basis points from

7   1954 through 2015).[34] If the market P/E ratio in 2030 is 20.40, the implied rate of

8   expansion is 0.64 percent (that is, 64 basis points), only six basis points from the long-

9   term average. On a relative valuation basis, therefore, the assumed terminal P/E ratio is

10   reasonable, and the model results based on that assumption likewise are reasonable.

11   Looking to the 5.30 percent terminal growth rate discussed above, the implied terminal

12   P/E ratios are in the range of 15.80 to 18.30 (*see* Attachment RBH-3). Assuming any rate

13   of expansion in the market P/E over the coming fifteen years, those P/E ratios indicate a

14   larger discount than historically has been observed. As such, they may produce results

15   that understate investors' return requirements. On balance, and in the context of current

16   market conditions, it is my view that the assumed terminal P/E ratio of 18.56 produces

17   somewhat more reliable results than does the assumed terminal growth rate method.

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[34]   Source: Bloomberg Professional.

1 **Q. What are the results of your DCF analysis?**

2 A. My Constant Growth and Multi-Stage DCF results are summarized in Table 7 below (*see*

3 also Attachment RBH-2 and Attachment RBH-4).

4   **Table 7: DCF Results**

Constant Growth DCF	*Low*	*Mean*	*High*
30-Day Average	8.47%	9.13%	9.78%
90-Day Average	8.60%	9.27%	9.91%
180-Day Average	8.70%	9.37%	10.01%
Multi-Stage DCF (Terminal P/E)	*Low*	*Mean*	*High*
30-Day Average	9.39%	9.86%	10.32%
90-Day Average	9.72%	10.20%	10.66%
180-Day Average	9.99%	10.46%	10.93%

5

6 **Q. Did you undertake any additional analyses to support your ROE recommendation?**

7 A. Yes. As noted earlier, I also applied the CAPM and Risk Premium analyses in estimating

8 the Company's Cost of Equity.

9 **C. CAPM Analysis**

10 **Q. Please briefly describe the general form of the CAPM analysis.**

11 A. The CAPM analysis is a risk premium approach that estimates the Cost of Equity for a

12 given security as a function of a risk-free return plus a risk premium to compensate

13 investors for the non-diversifiable or "systematic" risk of that security. As shown in

1   Equation [3], the CAPM is defined by four components, each of which theoretically must

2   be a forward-looking estimate:

3                          $K_e = r_f + \beta(r_m - r_f)$ Equation [3]

4   where:

5   K_e = the required market ROE for a security;

6   β = the Beta coefficient of that security;

7   r_f = the risk-free rate of return; and

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

9   In Equation [3], the term $(r_m - r_f)$ represents the Market Risk Premium.[35] According to

10   the theory underlying the CAPM, since unsystematic risk can be diversified away by

11   adding securities to their investment portfolio, investors should be concerned only with

12   systematic or non-diversifiable risk. Non-diversifiable risk is measured by the Beta

13   coefficient, which is defined as:

14                          $\beta_j = \dfrac{\sigma_j}{\sigma_m} \; x \; \rho_{j,m}$ Equation [4]

15   Where σ_j is the standard deviation of returns for company "j," σ_m is the standard

16   deviation of returns for the broad market (as measured, for example, by the S&P 500

17   Index), and $\rho_{j,m}$ is the correlation of returns in between company j and the broad market.

18   The Beta coefficient therefore represents both relative volatility (*i.e.*, the standard

---

[35]   The Market Risk Premium is defined as the incremental return of the market over the risk-free rate.

1   deviation) of returns, and the correlation in returns between the subject company and the

2   overall market.

3   Intuitively, higher Beta coefficients indicate that the subject company's returns have been

4   relatively volatile and have moved in tandem with the overall market. Consequently, if a

5   company has a Beta coefficient of 1.00, it is as risky as the market and does not provide

6   any diversification benefit.

7   **Q.**   **What assumptions regarding the risk-free rate did you include in your CAPM**

8   **analysis?**

9   A.   Since utility assets represent long-term investments, I used two different estimates of the

10   risk-free rate: (1) the current 30-day average yield on 30-year Treasury bonds (*i.e.*, 2.68

11   percent); and (2) the near-term projected 30-year Treasury yield (*i.e.*, 3.35 percent). [36]

12   **Q.**   **Why have you relied upon the 30-year Treasury yield for your CAPM analysis?**

13   A.   In determining the security most relevant to the application of the CAPM, it is important

14   to select the term (or maturity) that best matches the life of the underlying investment.

15   Electric utilities typically are long-duration investments and, as such, the 30-year

16   Treasury yield is more suitable for the purpose of calculating the Cost of Equity.

17   **Q.**   **Please describe your ex-ante approach to estimating the Market Risk Premium.**

18   A.   The *ex-ante* Market Risk Premium reflects the expected market required return, less the

19   current 30-year Treasury yield. To estimate the expected market return, I calculated the

---

[36]   *See*, Blue Chip Financial Forecasts, Vol. 35, No. 2, February 1, 2016, at 2. Consensus projections of the 30-year Treasury yield for the six quarters ending June 2017.

1   average ROE based on the Constant Growth DCF model. To do so, I relied on data from

2   two sources: (1) Bloomberg, and (2) Value Line. For both sources, I calculated the

3   average expected dividend yield (using the same one-half growth rate assumption

4   described earlier) and combined that amount with the average projected earnings growth

5   rate to arrive at the average DCF result. I then subtracted the current 30-year Treasury

6   yield from that amount to arrive at the market DCF-derived *ex-ante* Market Risk

7   Premium estimate. The results of those two calculations are provided in Attachment

8   RBH-5.

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

10 A.   My approach includes the average reported Beta coefficient from Bloomberg and Value

11   Line for each of the proxy companies. While both of those services adjust their

12   calculated (or raw) Beta coefficients to reflect the tendency of the Beta coefficient to

13   regress to the market mean of 1.00, Value Line calculates the Beta coefficient over a five-

14   year period, while Bloomberg's calculation is based on two years of data (*see*,

15   Attachment RBH-6).

16 **Q.   What are the results of your CAPM analysis?**

17 A.   The results of my CAPM analysis are summarized in Table 8 below (*see* also Attachment

18   RBH-7).

1   **Table 8: Summary of CAPM Results**

	Bloomberg Derived Market Risk Premium	*Value Line Derived Market Risk Premium*
Average Bloomberg Beta Coefficient		
Current 30-Year Treasury (2.68%)	9.02%	8.46%
Near Term Projected 30-Year Treasury (3.35%)	9.69%	9.13%
Average Value Line Beta Coefficient		
Current 30-Year Treasury (2.68%)	10.95%	10.22%
Near Term Projected 30-Year Treasury (3.35%)	11.62%	10.89%

2

3   **D.   Bond Yield Plus Risk Premium Approach**

4   **Q.   Please generally describe the Bond Yield Plus Risk Premium approach.**

5   A.   This approach is based on the basic financial tenet that equity investors bear the residual

6   risk associated with ownership and therefore require a premium over the return they

7   would have earned as a bondholder. That is, since returns to equity holders are more

8   risky than returns to bondholders, equity investors must be compensated for bearing that

9   risk. Risk premium approaches, therefore, estimate the Cost of Equity as the sum of the

10   equity risk premium and the yield on a particular class of bonds. The equity risk

11   premium typically is estimated using a variety of approaches, some of which incorporate

12   *ex-ante*, or forward-looking estimates of the Cost of Equity, and others that consider

13   historical, or *ex-post*, estimates. An alternative approach is to use actual authorized

14   returns for electric utilities to estimate the Equity Risk Premium.

1   **Q.   Please explain how you performed your Bond Yield Plus Risk Premium analysis.**

2   A.   As suggested above, I first defined the Risk Premium as the difference between

3   authorized ROEs and the then-prevailing level of long-term (*i.e.*, 30-year) Treasury yield.

4   I then gathered data from 1,469 electric utility rate proceedings between January 1, 1980,

5   and February 29, 2016. In addition to the authorized ROE, I also calculated the average

6   period between the filing of the case and the date of the final order (the lag period). In

7   order to reflect the prevailing level of interest rates during the pendency of the

8   proceedings, I calculated the average 30-year Treasury yield over the average lag period

9   (approximately 200 days).

10   Because the data covers a number of economic cycles,[37] the analysis also may be used to

11   assess the stability of the Equity Risk Premium. As noted above, the Equity Risk

12   Premium is not constant over time; prior research has shown that it is directly related to

13   expected market volatility, and inversely related to the level of interest rates.[38] That

14   finding is particularly relevant given the historically low level of current Treasury yields.

15   **Q.   How did you model the relationship between interest rates and the Equity Risk**

16   **Premium?**

17   A.   The basic method used was regression analysis, in which the observed Equity Risk

18   Premium is the dependent variable, and the average 30-year Treasury yield is the

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[37]   *See*, National Bureau of Economic Research, *U.S. Business Cycle Expansion and Contractions*.
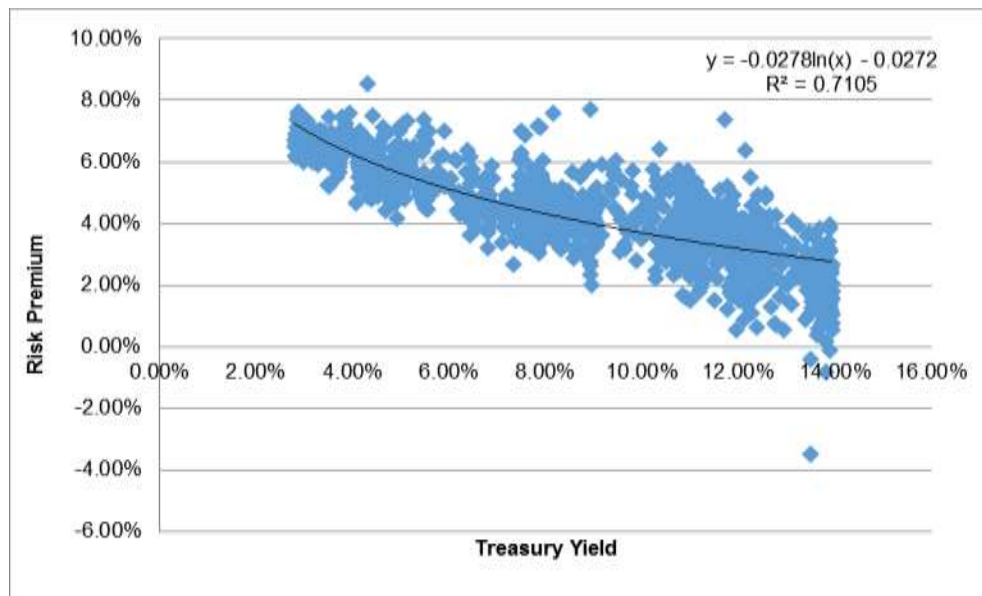[38]   *See*, *e.g.*, Robert S. Harris and Felicia C. Marston, *Estimating Shareholder Risk Premia Using Analysts'
        Growth Forecasts*, Financial Management, Summer 1992, at 63-70; Eugene F. Brigham, Dilip K. Shome,
        and Steve R. Vinson, *The Risk Premium Approach to Measuring a Utility's Cost of Equity*, Financial
        Management, Spring 1985, at 33-45; and Farris M. Maddox, Donna T. Pippert, and Rodney N. Sullivan, *An
        Empirical Study of Ex Ante Risk Premiums for the Electric Utility Industry*, Financial Management, Autumn
        1995, at 89-95.

1   independent variable. Relative to the long-term historical average, the analytical period

2   includes interest rates and authorized ROEs that are quite high during one period (*i.e.*, the

3   1980s) and that are quite low during another (*i.e.*, the post-Lehman bankruptcy period).

4   To account for that variability, I used the semi-log regression, in which the Equity Risk

5   Premium is expressed as a function of the natural log of the 30-year Treasury yield:

6    $$RP = \alpha + \beta(LN(T_{30})) = \text{Equation [5]}$$

7   As shown on Chart 2 below, the semi-log form is useful when measuring an absolute

8   change in the dependent variable (in this case, the Risk Premium) relative to a

9   proportional change in the independent variable (the 30-year Treasury yield).

10   **Chart 2: Equity Risk Premium**

11

12   As Chart 2 illustrates, over time there has been a statistically significant, negative

13   relationship between the 30-year Treasury yield and the Equity Risk Premium.

1   Consequently, simply applying the long-term average Equity Risk Premium of 4.50

2   percent would significantly understate the Cost of Equity and produce results well below

3   any reasonable estimate. Based on the regression coefficients in Chart 2, however, the

4   implied ROE is between 10.04 percent and 10.47 percent (*see*, Attachment RBH-8).

5   **VII.   BUSINESS RISKS AND OTHER CONSIDERATIONS**

6   **Q.   What additional information did you consider in assessing the analytical results**

7   **noted above?**

8   A.   Because the analytical methods discussed above provide a range of estimates, there are

9   several additional factors that should be taken into consideration when establishing a

10   reasonable range for the Company's Cost of Equity. Those factors include (1) the

11   Company's proposed Capital Investment Recovery Mechanism, (2) the Company's

12   comparatively small size, and (3) the costs associated with the flotation of common stock.

13   **A.   Capital Investment Recovery Mechanism**

14   **Q.   Please summarize the Company's Capital Investment Recovery Mechanism**

15   **proposal.**

16   A.   As described in the Joint Testimony of Christian P. Brouillard and Stephen R. Hall, due

17   to the attrition that Granite State is experiencing, the Company is proposing a mechanism

18   to recover the capital costs associated with certain capital investments. As explained by

19   Witnesses Brouillard and Hall, the proposal includes a series of annual step increases to

20   Granite State's distribution rates to provide for more timely recovery of targeted and

21   specific capital investment made in Granite State's distribution system between rate

1 cases. [39] The Company proposes a process similar to that currently used for Reliability

2 Enhancement Program ("REP") capital investments.[40] Granite State will make a filing

3 with the Commission showing the projects(s) actually completed and in service by

4 December 31 of the previous year, the cost of each project, and a calculation of the

5 revenue requirement associated with those project(s). Granite State's filing will include a

6 request to increase its distribution rates effective May 1 by the amount of the revenue

7 requirement.[41]

8 **Q.** **Are cost recovery mechanisms for capital investment common among the proxy**

9 **companies?**

10 A.   Yes, they are. Attachment RBH-10 provides a summary of capital investment recovery

11   mechanisms currently in effect at each electric utility subsidiary of my proxy group

12   companies. As Attachment RBH-10 demonstrates, at least one operating company for

13   twelve of the 22 proxy companies has a mechanism in place to recover certain capital

14   investment. Attachment RBH-10 also includes a summary of the alternative regulation

15   and incentive plans currently in effect at the proxy companies. Those regulatory

16   constructs include alternative regulations for rate base additions. Consequently, the

17   implementation of cost recovery mechanisms for capital investment has become an

18   increasingly visible issue to investors. Granite State's proposed mechanism, therefore,

19   does not reduce its risk relative to its peers.

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[39]   Joint Testimony of Christian P. Brouillard and Stephen R. Hall, at 3-4.
[40]   As approved in Docket No. DG 06-107.
[41]   Joint Testimony of Christian P. Brouillard and Stephen R. Hall, at 7-8.

1   **Q.   Would the Company's proposed capital investment recovery mechanism reduce its**

2   **Cost of Equity?**

3   A.   No, it would not. As a preliminary matter, the Company's proposed mechanism is

4   limited and targeted to specific capital investment projects for which there is a

5   demonstrated need.   As Witnesses Brouillard and Hall state, the mechanism is not

6   intended to provide the ability for Granite State to recover the cost of all capital

7   investments.[42] Therefore, although the proposal is intended to mitigate the effect of

8   attrition on the Company's earnings, that risk is not necessarily eliminated as a result of

9   the mechanism.

10   Further, the principal analytical issue is whether the Company is so less risky than its

11   peers as a direct result of its recovery mechanisms that investors would specifically and

12   measurably reduce their return requirements. The fact that the Company's proposed

13   recovery mechanism may, to a degree, stabilize the Company's revenues, it will not

14   affect its Cost of Equity unless it can be demonstrated that: (1) the Company is materially

15   less risky than the proxy group by virtue of the mechanism; and (2) investors are likely to

16   react to the incremental effect of the mechanism.   Because infrastructure cost recovery

17   mechanisms are common among the proxy companies, there is no reason to assume that

18   Granite State would be materially less risky, and that its Cost of Equity would be lower

19   than its peers' as a result of its proposed recovery mechanism.

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42   Joint Testimony of Christian P. Brouillard and Stephen R. Hall, at 8.

1   **B.   Small Size Premium**

2   **Q.   Please explain the risk associated with small size.**

3   A.   Both the financial and academic communities have long accepted the proposition that the

4   Cost of Equity for small firms is subject to a "size effect".[43] Although empirical evidence

5   of the size effect often is based on studies of industries beyond regulated utilities, utility

6   analysts also have noted the risks with associated small market capitalizations.

7   Specifically, Ibbotson Associates noted:

8   For small utilities, investors face additional obstacles, such as smaller
9   customer base, limited financial resources, and a lack of diversification
10   across customers, energy sources, and geography. These obstacles imply a
11   higher investor return.[44]

12   Small size, therefore, leads to two categories of increased risk for investors: (1) liquidity

13   risk (*i.e.*, the risk of not being able to sell one's shares in a timely manner due to the

14   relatively thin market for the securities); and (2) fundamental business risks.

15 **Q.   How does Granite State compare in size to the proxy companies?**

16 A.   Granite State is significantly smaller than the average for the proxy group companies,

17   both in terms of number of customers and market capitalization. Because Granite State is

18   not a separately traded entity, an estimated stand-alone market capitalization for Granite

19   State must be calculated. To do so, I applied the median market to book ratio for the 22-

20   member proxy group to Granite State's implied equity of $54 million.[45] The implied

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[43]   *See*, Mario Levis, *The record on small companies: A review of the evidence*, Journal of Asset Management
       2, March 2002, at 368-397, for a review of literature relating to the size effect.
[44]   Michael Annin, *Equity and the Small-Stock Effect*, Public Utilities Fortnightly, October 15, 1995.
[45]   Stockholder equity was calculated by applying the proposed equity ratio of 55.00 percent to the proposed
       Rate base for Granite State of $97.5 million.

1   market capitalization based on that calculation is $89 million, which is 1.19 percent of the

2   median level of the proxy group.

3 **Q.   How did you evaluate the risks associated with the Company's relatively small size?**

4 A.   In its *2015 Ibbotson SBBI Market Report*, Morningstar Inc. ("Morningstar") calculates

5   the size premium for deciles of market capitalizations relative to the S&P 500 Index. As

6   shown on Attachment RBH-11, based on recent market data the average market

7   capitalization of the proxy group is approximately $9.26 billion, and the median market

8   capitalization of the proxy group is $7.47 billion, which correspond to the third decile of

9   Morningstar's market capitalization data. Using the median market capitalization in the

10   Morningstar analysis, the proxy group has a size premium of 0.94 percent. The implied

11   market capitalization for Granite State is approximately $89 million, which falls within

12   the 10th decile and corresponds to a size premium of 5.72 percent (or 572 basis points).

13   The difference between those size premiums is 478 basis points (5.72 percent − 0.94

14   percent). However, rather than propose a specific adjustment, I considered the effect of

15   small size in determining where the Company's ROE falls within the range of results.

16   **C.   Flotation Costs**

17 **Q.   What are flotation costs?**

18 A.   Flotation costs are the costs associated with the sale of new issues of common stock.

19   These include out-of-pocket expenditures for preparation, filing, underwriting, and other

20   costs of issuance.

1 **Q.** **Why is it important to recognize flotation costs in the allowed ROE?**

2 A. In order to attract and retain new investors, a regulated utility must have the opportunity

3 to earn a return that is both competitive and compensatory. To the extent that a company

4 is denied the opportunity to recover prudently incurred flotation costs, actual returns will

5 fall short of expected (or required) returns, thereby diminishing its ability to attract

6 adequate capital on reasonable terms.

7 **Q.** **Are flotation costs part of the utility's invested costs or part of the utility's**

8 **expenses?**

9 A. Flotation costs are part of capital costs, which are properly reflected on the balance sheet

10 under "paid in capital" rather than current expenses on the income statement. Flotation

11 costs are incurred over time, just as investments in rate base or debt issuance costs. As a

12 result, the great majority of flotation costs is incurred prior to the test year, but remains

13 part of the cost structure during the test year and beyond.

14 **Q.** **Do the DCF and CAPM models already incorporate investor expectations of a**

15 **return in order to compensate for flotation costs?**

16 A. No. The models used to estimate the appropriate ROE assume no "friction" or

17 transaction costs, as these costs are not reflected in the market price (in the case of the

18 DCF model) or risk premium (in the case of the CAPM and the Bond Yield Plus Risk

19 Premium model). Therefore, it is appropriate to consider flotation costs when

20 determining where within the range of reasonable results Granite State's return should

21 fall.

1 **Q.** **Is the need to consider flotation costs recognized by the academic and financial**

2 **communities?**

3 A. Yes. The need to reimburse investors for equity issuance costs is recognized by the

4 academic and financial communities in the same spirit that investors are reimbursed for

5 the costs of issuing debt. This treatment is consistent with the philosophy of a fair rate of

6 return. As explained by Dr. Shannon Pratt:

7 Flotation costs occur when a company issues new stock. The business
8 usually incurs several kinds of flotation or transaction costs, which
9 reduce the actual proceeds received by the business. Some of these are
10 direct out-of-pocket outlays, such as fees paid to underwriters, legal
11 expenses, and prospectus preparation costs. Because of this reduction
12 in proceeds, the business's required returns must be greater to
13 compensate for the additional costs. Flotation costs can be accounted
14 for either by amortizing the cost, thus reducing the net cash flow to
15 discount, or by incorporating the cost into the cost of equity capital.
16 Since flotation costs typically are not applied to operating cash flow,
17 they must be incorporated into the cost of equity capital.[46]

18 **Q.** **How did you calculate the flotation cost recovery adjustment?**

19 A. I modified the DCF calculation to provide a dividend yield that would reimburse

20 investors for issuance costs. My flotation cost adjustment recognizes the costs of issuing

21 equity that were incurred by the Company and the proxy group companies in their most

22 recent two issuances. As shown in Attachment RBH-12, an adjustment of 0.13 percent

23 (*i.e.*, 13 basis points) reasonably represents flotation costs for the Company.

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[46] Shannon P. Pratt, Roger J. Grabowski, Cost of Capital: Applications and Examples, 4th ed. (John Wiley & Sons, Inc., 2010), page 586.

1   **Q.**   **Are you proposing to adjust your recommended ROE by 13 basis points to reflect**

2   **the effect of flotation costs on Granite State's ROE?**

3   A.   No, I am not. Rather, I have considered the effect of flotation costs, in addition to the

4   Company's other business risks, in determining where the Company's ROE falls within

5   the range of results.

6   **VIII.**   **CAPITAL MARKET ENVIRONMENT**

7   **Q.**   **Do economic conditions influence the required cost of capital and required return**

8   **on common equity?**

9   A.   Yes. As discussed in Section VI, the models used to estimate the Cost of Equity are

10   meant to reflect, and therefore are influenced by, current and expected capital market

11   conditions. Therefore, it is important to assess the reasonableness of any financial

12   model's results in the context of observable market data. To the extent that certain ROE

13   estimates are incompatible with such data or inconsistent with basic financial principles,

14   it is appropriate to consider whether alternative estimation techniques are likely to

15   provide more meaningful and reliable results.

16   **Q.**   **Do you have any general observations regarding the relationship between current**

17   **capital market conditions and the Company's Cost of Equity?**

18   A.   Yes, I do. Much has been reported about the Federal Reserve's market intervention since

19   2007, and its effect on interest rates. Although the Federal Reserve completed its

20   Quantitative Easing initiative in October 2014, it was not until December 2015 that it

21   raised the Federal Funds rate, and began the process of rate normalization.[47] A

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[47]   *See* Federal Reserve Press Release (December 16, 2015).

1   significant issue, then, is how investors will react as that process continues, and

2   eventually is completed. A viable outcome is that investors will perceive greater chances

3   for economic growth, which will increase the growth rates included in the Constant

4   Growth DCF model. At the same time, higher growth and the absence of Federal market

5   intervention could provide the opportunity for interest rates to increase, thereby

6   increasing the dividend yield portion of the DCF model. In that case, both terms of the

7   Constant Growth DCF model would increase, producing higher ROE estimates.

8   At this time, however, market data remains somewhat disjointed. As a consequence, it is

9   difficult to rely on a single model to estimate the Company's Cost of Equity. A more

10   reasoned approach is to understand the relationships among Federal Reserve policies,

11   interest rates and risk, and assess how those factors may affect different models and their

12   results. For the reasons discussed below, the current market is one in which it is very

13   important to consider a broad range of data and models when determining the Cost of

14   Equity.

15   **Q.   Please summarize the effect of recent Federal Reserve policies on interest rates and**

16   **the cost of capital.**

17   A.   Beginning in 2008, the Federal Reserve proceeded on a steady path of initiatives intended

18   to lower long-term Treasury yields.[48] The Federal Reserve policy actions "were designed

19   to put downward pressure on longer-term interest rates by having the Federal Reserve

20   take onto its balance sheet some of the duration and prepayment risks that would
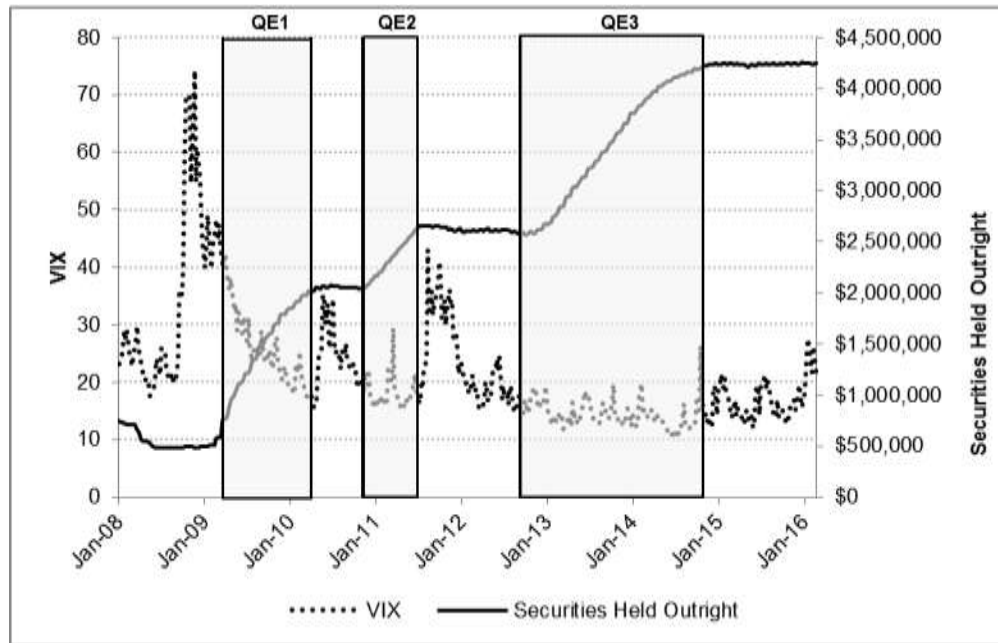
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[48]   *See* Federal Reserve Press Release (June 19, 2013).

1   otherwise have been borne by private investors."[49] Under that policy, "Securities held

2   outright" on the Federal Reserve's balance sheet increased from approximately $489

3   billion at the beginning of October 2008 to $4.25 trillion by the end of February 2016.[50]

4   To put that increase in context, the securities held by the Federal Reserve represented

5   approximately 3.29 percent of GDP at the end of September 2008, and had risen to

6   approximately 23.42 percent of GDP in February 2016.[51] As such, the Federal Reserve

7   policy actions have represented a significant source of liquidity, and have had a

8   substantial effect on capital markets.

9   Just as market intervention by the Federal Reserve has reduced interest rates, it also has

10   had the effect of reducing market volatility. As shown in Chart 3 (below), each time the

11   Federal Reserve began to purchase bonds (as evidenced by the increase in "Securities

12   Held Outright" on its balance sheet), volatility subsequently declined. In fact, in

13   September 2012, when the Federal Reserve began to purchase long-term securities at a

14   pace of $85 billion per month, volatility (as measured by the CBOE Volatility Index,

15   known as the "VIX") fell, and through October 2014 remained in a relatively narrow

16   range. The reason is quite straightforward; investors became confident that the Federal

17   Reserve would intervene if markets were to become unstable.

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[49]   Federal Reserve Bank of New York, *Domestic Open Market Operations During 2012*, April 2013, at 29.
[50]   Source: Federal Reserve Board Schedule H.4.1. "Securities held outright" include U.S. Treasury securities, Federal agency debt securities, and mortgage-backed securities.
[51]   Source: Federal Reserve Board Schedule H.4.1; Bureau of Economic Analysis.
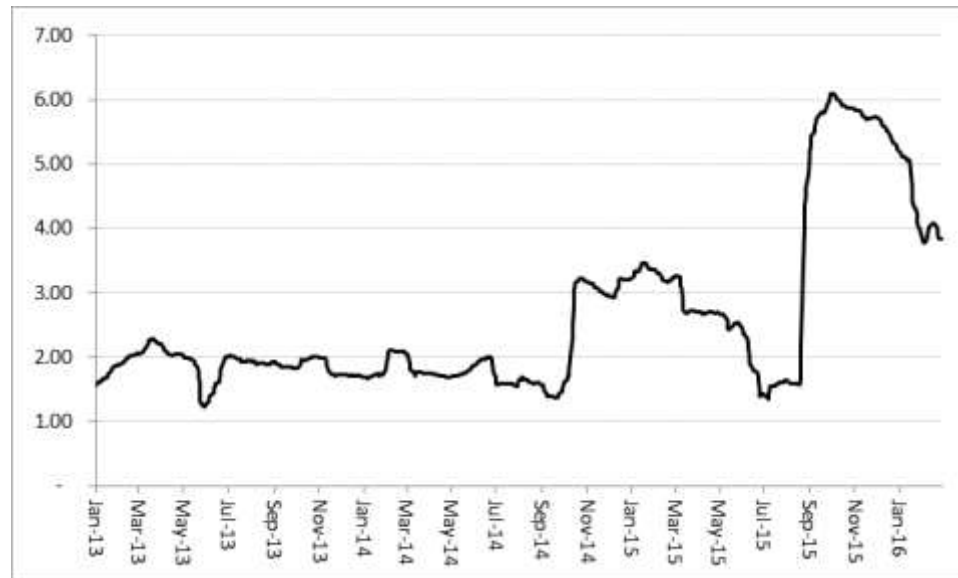
1   **Chart 3: VIX and Federal Reserve Asset Purchases[52]**

2

3   A further measure of market uncertainty is the volatility of the VIX as measured by its

4   standard deviation. As Chart 4 (below) notes, that volatility moved in a relatively narrow

5   range during 2013, but since then it has noticeably increased. Such volatility indicates

6   that, although interest rates are still near historical lows, there remains significant, if not

7   greater, uncertainty in today's equity markets, with investors requiring greater returns to

8   bear that risk.

---

[52]   Source: Federal Reserve Economic Data (FRED), Federal Reserve Bank of St. Louis; Federal Reserve
Statistical Release H.4.1, Factors Affecting Reserve Balances.

1 **Chart 4: Standard Deviation (100 days) of VIX[53]**

2

3   Those findings are consistent with the VVIX, which is a traded index of the expected

4   volatility of the VIX. Over the long-term, the VVIX has averaged approximately 87.00;

5   its 2013 average was somewhat below that level (80.64). In 2015, the VVIX increased to

6   (on average) 94.82, and to date in 2016, has averaged 100.04; the 2015-2016 average has

7   been 95.52. Just as the backward-looking standard deviation of the VIX indicates that

8   observed volatility increased considerably in 2015 and 2016, the VVIX indicates that

9   expected volatility also has been well above the 2013 levels.[54]

10   The important analytical issue is whether we can infer that risk aversion among investors

11   is at a historically low level, implying a Cost of Equity that is well below recently

12   authorized returns. Given the negative correlation between the expansion of the Federal

13   Reserve's balance sheet and the VIX, it is difficult to conclude that fundamental risk

---

53   Source: Bloomberg Professional.
54   Source: Bloomberg Professional.

1   aversion and investor return requirements have fallen. If it were the case that investors

2   believe that volatility will remain at low levels (that is, that market risk and uncertainty

3   will remain low), it is not clear why they would decrease their return requirements for

4   defensive sectors such as utilities. In that respect, it appears that the Constant Growth

5   DCF results are at odds with market conditions.

6   Q.   **Has the Federal Reserve's quantitative easing policy been associated with changes in**

7   **the proxy companies' trading levels?**

8   A.   Yes, that appears to be the case. From January 2000 through the end of August 2012

9   (that is, immediately prior to the third round of Quantitative Easing), the proxy group's

10   average P/E ratio traded at a 14.00 percent discount to the market. From September 2012

11   through May 2013, when the Federal Reserve announced it would begin to taper its asset

12   purchases, the proxy group traded at a 19.00 percent premium to the market. In fact,

13   between September 2012 and February 29, 2016, the proxy group P/E ratio traded at a

14   9.00 percent premium to the market.

15   More recently, while the proxy group P/E ratio declined somewhat in the latter part of

16   2015, it began increasing again in 2016. Since the beginning of 2016, the proxy group

17   has traded at a 7.00 percent premium to the market.

18   Q.   **Does your recommendation also consider the current interest rate environment?**
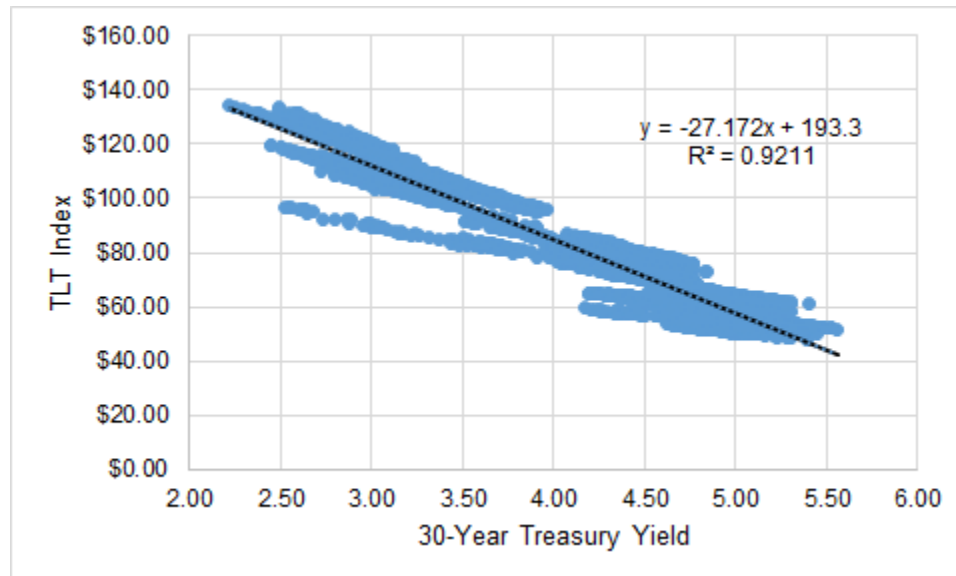
19   A.   Yes, it does. From an analytical perspective, it is important that the inputs and

20   assumptions used to arrive at an ROE recommendation, including assessments of capital

21   market conditions, are consistent with the recommendation itself. Although I appreciate

1   that all analyses require an element of judgment, the application of that judgment must be

2   made in the context of the quantitative and qualitative information available to the analyst

3   and the capital market environment in which the analyses were undertaken. Because the

4   Cost of Equity is forward-looking, the salient issue is whether investors see the likelihood

5   of increased interest rates during the period in which the rates set in this proceeding will

6   be in effect.

7   As to long-term interest rates, the approximately 50 economists surveyed by Blue Chip

8   Financial Forecast see the 30-year Treasury yield as increasing to 4.00 percent by 2017.[55]

9   In addition to consensus economists' forecasts, we can look to the TLT, an exchange-

10   traded fund of long-term U.S. Government bonds, to assess investors' views of the

11   likelihood of increased interest rates in the future. Because the price of bonds is inversely

12   related to interest rates, the TLT has increased in value as interest rates have fallen over

13   time (*see* Chart 5, below).

---

[55]   *See,* Blue Chip Financial Forecast, Vol. 34 No. 12, December 1, 2015, at 14.

1 **Chart 5: TLT Index vs. 30-Year Treasury Yield[56]**

2

3   A market-based way of understanding whether investors believe interest rates will

4   increase or decrease is to review the premium they are willing to pay for the option to

5   buy or sell the TLT, at the current market price, in the future. If investors are willing to

6   pay more for the option to sell the TLT in the future at today's price than they are willing

7   to pay for the option to buy the TLT (also at today's price), those relative values indicate

8   that, on balance, the market sees a greater prospect of increases in interest rates than

9   decreases. Based on data from NASDAQ, we see that as of April 2016, the option to sell

10   the TLT in January 2018 (the furthest priced option) at the current price is approximately

11   twice the value of the option to buy the TLT.[57] Since bond prices fall as interest rates

12   increase, investors see a greater likelihood of increases in long-term interest rates, than

13   decreases.

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[56]   Source: Yahoo!Finance.
[57]   Source: http://www.nasdaq.com/symbol/tlt/option-chain?dateindex=7

1   Given that (1) Federal monetary policy has begun its process of "normalization", and (2)

2   economists and market data indicate expectations for increasing interest rates into 2018

3   and beyond, I believe that an ROE in the range of 10.00 percent to 10.60 percent reflects

4   the prevailing and expected interest rate environment.

5 **Q.** **What conclusions do you draw from your analyses of capital market conditions?**

6 A. From an analytical perspective, it is important that the inputs and assumptions used to

7   arrive at an ROE determination, including assessments of capital market conditions, are

8   consistent with the conclusion itself. Although I appreciate that all analyses require an

9   element of judgment, the application of that judgment must be made in the context of the

10   quantitative and qualitative information available to the analyst and the capital market

11   environment in which the analyses were undertaken. Because the application of financial

12   models and interpretation of their results often is the subject of differences among

13   analysts in regulatory proceedings, I believe that it is important to review and consider a

14   variety of data points; doing so enables us to put in context both quantitative analyses and

15   the associated recommendations.

16 **IX.** **CAPITAL STRUCTURE**

17 **Q.** **What is the Company's proposed capital structure?**

18 A. The Company has proposed a capital structure comprised of 55.00 percent common

19   equity and 45.00 percent long-term debt. This is the capital structure approved by the

20   Commission in Order No. 25,638 at 16 (Mar. 17, 2014).

1   **Q.   Is there a generally accepted approach to developing the appropriate capital**

2   **structure for a regulated electric utility?**

3   A.   Yes, there are a number of generally accepted approaches to developing the appropriate

4   capital structure. The reasonableness of the approach depends on the nature and

5   circumstances of the subject company. In cases where the subject company does not

6   issue its own securities, it may be reasonable to look to the parent's capital structure, or to

7   develop a "hypothetical" capital structure based on the proxy group companies, or other

8   industry data. Regardless of the approach taken, however, it is important to consider the

9   resulting capital structure in light of industry norms and investor requirements. That is,

10   the capital structure should enable the subject company to maintain its financial integrity,

11   thereby enabling access to capital at competitive rates under a variety of economic and

12   financial market conditions.

13   **Q.   How does the capital structure affect the Cost of Equity?**

14   A.   The capital structure relates to a company's financial risk, which represents the risk that a

15   company may not have adequate cash flows to meet its financial obligations, and is a

16   function of the percentage of debt (or financial leverage) in its capital structure. In that

17   regard, as the percentage of debt in the capital structure increases, so do the fixed

18   obligations for the repayment of that debt. Consequently, as the degree of financial

19   leverage increases, the risk of financial distress (*i.e.*, financial risk) also increases. Since

20   the capital structure can affect the subject company's overall level of risk,[58] it is an

21   important consideration in establishing a just and reasonable rate of return.

---

[58]   *See*, Roger A. Morin, New Regulatory Finance, Public Utility Reports, Inc., 2006, at 45-46.

1 **Q.** **Please discuss your analysis of the capital structures of the proxy group companies.**

2 A. I calculated the average capital structure for each of the proxy group companies over the

3 last eight quarters. As shown in Attachment RBH-13, the mean of the proxy group actual

4 capital structures is 51.67 percent common equity and 48.33 percent long-term debt. The

5 common equity ratios range from 36.14 percent to 66.01 percent. Based on that review,

6 it is apparent that the Company's proposed capital structure is generally consistent with

7 the capital structures of the proxy group companies.

8 **Q.** **What is the basis for using average capital components rather than a point-in-time**

9 **measurement?**

10 A. Measuring the capital components at a particular point in time can skew the capital

11 structure by the specific circumstances of a particular period. Therefore, it is more

12 appropriate to normalize the relative relationship between the capital components over a

13 period of time.

14 **Q.** **What is your conclusion regarding an appropriate capital structure for Granite**

15 **State?**

16 A. Considering common equity ratios range from 36.14 percent to 66.01 percent for the

17 proxy group companies, I believe that Granite State's proposed common equity ratio of

18 55.00 percent is appropriate as it is consistent with the proxy group companies.

1 **X.** **COST OF DEBT**

2 **Q.** **What cost of debt has the company requested in this proceeding?**

3 A. The Company has proposed a cost of debt of 5.88 percent, which is the Company's actual

4 weighted average cost of debt, as shown in Table 9.

5 **Table 9: Weighted Cost of Debt**

Face Amount	Face Amount	Rate	Weighted Average
Liberty Utilities Co.	$3,434,343.43	3.51%	0.38%
Liberty Utilities Co.	$7,898,989.90	4.49%	1.11%
Liberty Utilities Co.	$4,121,212.12	4.89%	0.63%
Liberty Utilities Co.	$1,545,454.55	4.89%	0.24%
First Colony Life	$5,000,000.00	7.37%	1.15%
First Colony Life	$5,000,000.00	7.94%	1.24%
Paul Revere Life	$5,000,000.00	7.30%	1.14%
TOTAL	**$32,000,000.00**		**5.88%**

6

7 **Q.** **Please discuss your analysis of the Company's cost of debt.**

8 A. I calculated the embedded cost of debt for all authorized electric utility returns over the

9 January 1, 2014 to February 29, 2016 period (See Attachment RBH-14). The mean of the

10 authorized cost of debt is 5.09 percent, and the median is 5.20 percent. The embedded

11 cost of debt authorized range from 2.44 percent to 6.98 percent. Therefore, I believe the

12 Company's proposed cost of debt of 5.88 percent is reasonable and appropriate.

1 **XI.**   **CONCLUSIONS AND RECOMMENDATION**

2 **Q.**   **What is your conclusion regarding the Company's Cost of Equity?**

3 A.   I believe that a rate of return on common equity in the range of 10.00 percent to 10.60

4   percent represents the range of equity investors' required rate of return for investment in

5   electric utilities similar to Granite State in today's capital markets. Within that range, it

6   is my view that an ROE of 10.30 percent is reasonable and appropriate.   A summary of

7   the results of my analyses is shown in Table 10 below.

1   **Table 10: Summary of Analytical Results**

Discounted Cash Flow	*Mean Low*	*Mean*	*Mean High*
30-Day Constant Growth DCF	8.47%	9.13%	9.78%
90-Day Constant Growth DCF	8.60%	9.27%	9.91%
180-Day Constant Growth DCF	8.70%	9.37%	10.01%
30-Day Multi-Stage DCF	9.39%	9.86%	10.32%
90-Day Multi-Stage DCF	9.72%	10.20%	10.66%
180-Day Multi-Stage DCF	9.99%	10.46%	10.93%
Supporting Methodologies			
CAPM Results		*Bloomberg Derived Market Risk Premium*	*Value Line Derived Market Risk Premium*
Average Bloomberg Beta Coefficient			
Current 30-Year Treasury (2.68%)		9.02%	8.46%
Near Term Projected 30-Year Treasury (3.35%)		9.69%	9.13%
Average Value Line Beta Coefficient			
Current 30-Year Treasury (2.68%)		10.95%	10.22%
Near Term Projected 30-Year Treasury (3.35%)		11.62%	10.89%
	Low	*Mid*	*High*
Bond Yield Risk Premium	10.04%	10.08%	10.47%
Flotation Costs		0.13%	

2

3   Based on the proposed capital structure of 45.00 percent long-term debt and 55.00

4   percent equity, the Company's proposed cost of debt of 5.88 percent, and my

5   recommended 10.30 percent Return on Equity, the Company's proposed overall Rate of

6   Return is 8.31 percent (*see* Table 11, below).

1 **Table 11: Proposed Overall Rate of Return[59]**

Component	Percent of Total	Cost Rate	Weighted Cost Rate
Common Equity	55.00%	10.30%	5.67%
Long-term Debt	45.00%	5.88 %	2.65%
Total	100.00%		8.31%

2

3 **Q.   Does this conclude your testimony?**

4 A.   Yes, it does.

---

[59]   Total does not add due to rounding.