

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

Docket No. DE 13-063

Granite State Electric Company d/b/a Liberty Utilities
Notice of Intent to File Rate Schedules

DIRECT TESTIMONY

OF

ROBERT B. HEVERT

March 29, 2013

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- Attachment RBH-1: Resume and Testimony Listing of Robert B. Hevert
- Attachment RBH-2: Constant Growth DCF Results
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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, LLC
4 (“Sussex”). My business address is 161 Worcester Road, Suite 503, Framingham, Massachusetts
5 01701.

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

8 A. I am submitting this direct testimony (“Direct Testimony”) before the New Hampshire Public
9 Utilities Commission (“Commission”) on behalf of Granite State Electric Company (“Granite
10 State” or the “Company”).

11

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

13 A. I hold a Bachelor’s degree in Business and Economics from the University of Delaware, and an
14 MBA with a concentration in Finance from the University of Massachusetts. I also hold the
15 Chartered Financial Analyst designation.

16

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

18 A. I have worked in regulated industries for over twenty five years, having served as an executive
19 and manager with consulting firms, a financial officer of a publicly-traded natural gas utility (at
20 the time, Bay State Gas Company), and an analyst at a telecommunications utility. In my role as a
21 consultant, I have advised numerous energy and utility clients on a wide range of financial and
22 economic issues, including corporate and asset-based transactions, asset and enterprise valuation,
23 transaction due diligence, and strategic matters. As an expert witness, I have provided testimony

1 in approximately 100 proceedings regarding various financial and regulatory matters before
2 numerous state utility regulatory agencies and the Federal Energy Regulatory Commission. A
3 summary of my professional and educational background, including a list of my testimony in
4 prior proceedings, is included in Attachment RBH-1 to my Direct Testimony.

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

7 **Q. What is the purpose of your Direct Testimony?**

8 A. The purpose of my Direct Testimony is to present evidence and provide a recommendation
9 regarding the Company's Cost of Equity (sometimes referred to as the "Return on Equity" or
10 "ROE") and to provide an assessment of the Company's capital structure and cost of debt, as
11 proposed in the Direct Testimony of Company Witnesses ChristAne G. Mason and Dr. Michael
12 R. Schmidt. My analyses and conclusions are supported by the data presented in Attachment
13 RBH-2 through Attachment RBH-10, which have been prepared by me or under my direction.
14 Regarding the cost of debt, it is my understanding that the Company's proposed 5.64 percent rate,
15 which includes a *pro forma* adjustment reflecting the issuance of additional long-term debt,
16 supports the Company's proposed capital structure of 55.00 percent common equity and 45.00
17 percent long-term debt.

18
19 **Q. What are your conclusions regarding the appropriate Cost of Equity and overall Rate of**
20 **Return for the Company?**

21 A. My analyses indicate that the Company's Cost of Equity currently is in the range of 10.25 percent
22 to 11.00 percent. Based on the quantitative and qualitative analyses discussed throughout my
23 Direct Testimony, I conclude that an ROE of 10.50 percent is reasonable and appropriate. That

1 ROE, together with the Company's proposed capital structure and cost of debt produces an
2 overall Rate of Return of 8.32 percent.

3
4 **Q. Please provide a brief overview of the analyses that led to your ROE recommendation.**

5 A. Equity analysts and investors use multiple methods to develop their return requirements for
6 investments. In order to develop my ROE recommendation, I relied on three widely-accepted
7 approaches: the Constant Growth and Multi-Stage forms of the Discounted Cash Flow ("DCF")
8 model; the Capital Asset Pricing Model ("CAPM"); and the Bond Yield Plus Risk Premium
9 approach.

10
11 **Q. How is the remainder of your Direct Testimony organized?**

12 A. The remainder of my Direct Testimony is organized as follows:

- 13 • Section III – Discusses the regulatory guidelines and financial considerations pertinent to
14 the development of the cost of capital;
 - 15 • Section IV – Explains my selection of the proxy group used to develop my analytical
16 results;
 - 17 • Section V – Explains my analyses and the analytical bases for my ROE recommendation;
 - 18 • Section VI – Highlights the current capital market conditions and their effect on the
19 Company's Cost of Equity;
 - 20 • Section VII – Addresses the reasonableness of the Company's proposed capital structure;
 - 21 • Section VIII – Briefly discusses the Company's cost of debt; and
 - 22 • Section IX – Summarizes my conclusions and recommendations.
- 23

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

2 **Q. Please provide a brief summary of the guidelines established by the United States Supreme**
3 **Court (the “Court”) for the purpose of determining the ROE.**

4 A. The Court established the guiding principles for establishing a fair return for capital in two cases:
5 (1) *Bluefield Water Works and Improvement Co. v. Public Service Comm’n of West Virginia*
6 (*“Bluefield”*); and (2) *Federal Power Comm’n v. Hope Natural Gas Co.* (*“Hope”*).¹ In those
7 cases, the Court recognized that the fair rate of return on equity should be (1) comparable to
8 returns investors expect to earn on other investments of similar risk, (2) sufficient to assure
9 confidence in the company’s financial integrity, and (3) adequate to maintain and support the
10 company’s credit and to attract capital.

11

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

13 A. Yes. The Commission’s decision in Order No. 24,972 indicates that the Commission adheres to
14 the capital attraction standard articulated in the *Hope* and *Bluefield* decisions.² That Order also
15 states that the Commission is:

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

¹ See, *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).

² See, State of New Hampshire Public Utilities Commission, Docket No. DG 08-009, Order No. 24,972, *EnergyNorth Natural Gas, Inc. d/b/a National Grid NH, Notice of Intent to File Rate Schedules*, Order Granting Delivery Rate Increase, May 29, 2009, at 54-55.

1 company's responsibility.³

2
3 Based on those standards, the authorized ROE should provide the Company with the opportunity
4 to earn a fair and reasonable return, and should enable efficient access to external capital under a
5 variety of market conditions.

6
7 **IV. PROXY GROUP SELECTION**

8 **Q. As a preliminary matter, why is it necessary to select a group of proxy companies to**
9 **determine the Cost of Equity for Granite State?**

10 A. Since the ROE is a market-based concept, and Granite State is not a publicly traded entity, it is
11 necessary to establish a group of comparable publicly-traded companies to serve as its "proxy."
12 Even if Granite State were a publicly traded entity, short-term events could bias its market value
13 during a given period of time. A significant benefit of using a proxy group is that it serves to
14 moderate the effects of anomalous, temporary events associated with any one company.

15
16 **Q. Does the selection of a proxy group suggest that analytical results will be tightly clustered**
17 **around average (i.e., mean) results?**

18 A. No. The DCF approach, for example, defines the Cost of Equity as the sum of the expected
19 dividend yield and projected long-term growth. Despite the care taken to ensure risk
20 comparability, market expectations with respect to future risks and growth opportunities will vary
21 from company to company. Therefore, even within a group of similarly situated companies, it is
22 common for analytical results to reflect a seemingly wide range. At issue, then, is how to estimate

³ *Ibid.*, at 54. See also, Appeal of Conservation Law Foundation, 127 N.H. 606, 635 (1986).

1 the Cost of Equity from within that range. That determination necessarily must consider a wide
2 range of both empirical and qualitative information.

3
4 **Q. Please provide a summary profile of Granite State.**

5 A. Granite State provides electric distribution service to approximately 43,000 customers in southern
6 and western New Hampshire.⁴

7
8 **Q. How did you select the companies included in your proxy group?**

9 A. I began with the universe of companies that Value Line classifies as Electric Utilities, which
10 includes a group of 49 domestic U.S. utilities, and applied the following screening criteria:

- 11 • I excluded companies that do not consistently pay quarterly cash dividends;
- 12 • All of the companies in my proxy group have been covered by at least two utility industry
13 equity analysts;
- 14 • All of the companies in my proxy group have investment grade senior unsecured bond
15 and/or corporate credit ratings from S&P;
- 16 • I excluded companies whose regulated operating income over the three most recently
17 reported fiscal years represented less than 60.00% of combined income;
- 18 • I excluded companies whose regulated electric operating income over the three most
19 recently reported fiscal years represented less than 90.00% of total regulated operating
20 income; and
- 21 • I eliminated companies that are currently known to be party to a merger, or other
22 significant transaction.

⁴ See, Granite State Electric Company, FERC Form 3-Q for 2012Q2, at 123.1.

1

2 **Q. What companies met those screening criteria?**

3 A. The criteria discussed above resulted in an initial proxy group of the following 15 companies:

4 American Electric Power Company, Inc.; Cleco Corporation; Edison International; Empire

5 District Electric Company; Great Plains Energy Inc.; Hawaiian Electric Industries, Inc.;

6 IDACORP, Inc.; Integrys Energy Group, Inc.; Otter Tail Corporation; Pepco Holdings, Inc.;

7 Pinnacle West Capital Corporation; PNM Resources, Inc.; Portland General Electric Company;

8 Southern Company; and Westar Energy, Inc.

9

10 **Q. Do those companies constitute your final proxy group?**

11 A. No, I excluded two companies based on the most recently available financial information. First,

12 Edison International (“EIX”) recorded a loss of \$1.09 billion in its competitive power generation

13 segment⁵ resulting from an after-tax earnings charge (recorded in the fourth quarter of 2011)

14 relating to the impairment of its Homer City, Fisk, Crawford, and Waukegan power plants, wind

15 related charges, and other expenses.⁶ On December 17, 2012, EIX announced that it placed

16 Edison Mission Energy, the subsidiary that owns and operates unregulated electric generating

17 assets (including Homer City) into Chapter 11 bankruptcy.⁷ In its announcement, EIX noted that

18 it expected to record an after-tax charge of \$1.5 billion as a result of the bankruptcy. Given the

19 significant nature of those results, I have excluded EIX from the proxy group.

20

⁵ See, Edison International, SEC Form 10-K for the fiscal year ended December 31, 2011, at 53.

⁶ *Ibid.*, at 54.

⁷ See, Edison International, SEC Form 8-K dated December 16, 2012, at 1. See also, Edison Mission Energy, SEC Form 10-K for the fiscal year ended December 31, 2011, at 5.

1 I also note that in 2009 Integrys Energy Group, Inc. (“Integrys”) experienced operating loss of
2 \$114.6 million in its natural gas utility segment due primarily to a non-cash goodwill impairment
3 loss.⁸ Since then, the company’s gas utility operations consistently have comprised
4 approximately 50.00 percent of total regulated income. As such, I also have excluded Integrys
5 from the proxy group.
6

7 **Q. Why did you include vertically integrated utilities in your proxy group, when Granite State**
8 **is a distribution-only company?**

9 A. Although Granite State is a distribution-only company, there are no “pure play” state-
10 jurisdictional electric distribution-only companies that may be used as a proxy for the Company’s
11 New Hampshire electric distribution operations. In order to address that concern, I have expanded
12 the group of proxy companies to also include companies that are primarily electric and natural
13 gas distribution utilities.
14

15 **Q. How did you select the distribution utilities to include in the expanded proxy group?**

16 A. I relied on the same criteria noted above, with two differences: (1) I excluded companies with
17 significant regulated generating assets included in their rate base; and (2) I decreased the
18 threshold of regulated operating income derived from electric operations from 90% to 50%.
19

20 **Q. What companies met those screening criteria?**

21 A. The criteria discussed above resulted in a group of the following five companies: CenterPoint

⁸ See, Integrys, SEC Form 10-K for the fiscal year ended December 31, 2011, at 24.

1 Energy, Inc.; Consolidated Edison, Inc.; Northeast Utilities;⁹ Pepco Holdings, Inc.; and UIL
 2 Holdings Corporation.¹⁰

3
 4 **Q. Do these five companies have both electric and natural gas distribution operations?**

5 A. Yes, they do. Using a simple average of the data provided in Table 1, approximately 15.00
 6 percent of the five distribution companies' operating income has been derived from natural gas
 7 distribution operations.

8 **Table 1: Distribution Utilities – Segment Analysis¹¹**

Percent of Operating Income Attributable to Segment (2009 - 2011)	Gas Distribution	Electric Distribution	Other Operations	Total
CenterPoint Energy, Inc.	18.00%	47.00%	35.00%	100.00%
Consolidated Edison, Inc.	16.00%	77.00%	7.00%	100.00%
Northeast Utilities	7.00%	93.00%	0.00%	100.00%
Pepco Holdings, Inc.	4.00%	75.00%	21.00%	100.00%
UIL Holdings Corporation	30.00%	70.00%	0.00%	100.00%

9
 10
 11
 9 I note that Northeast Utilities' regulated generation assets are minimal (*i.e.*, Public Service Company of New Hampshire ("PSNH") owns approximately 1,200 MW of generation assets). The Commission has also opened an investigation into the market conditions affecting PSNH and the impact of continued ownership and operation of the generating assets.

10 I note that UIL closed its acquisition of three natural gas distribution companies from Iberdrola in November, 2010 (*see*, UIL Holdings Corporation SEC Form 8-K dated November 16, 2010).

11 *See*, CenterPoint Energy, Inc., SEC Form 10-K for the fiscal years ended December 31, 2009, December 31, 2010, and December 31, 2011, at 98; Consolidated Edison, Inc., SEC Form 10-K for the fiscal years ended December 31, 2009, December 31, 2010, and December 31, 2011, at 136; Northeast Utilities, SEC Form 10-K for the fiscal years ended December 31, 2009, December 31, 2010, and December 31, 2011, at 152-153 (I note that the Electric Distribution percentage for Northeast Utilities includes transmission and distribution); Pepco Holdings Inc., SEC Form 10-K for the fiscal year ended December 31, 2011, at 43-45; and UIL Holdings Corporation, SEC Form 10-K for the fiscal years ended December 31, 2009, December 31, 2010, and December 31, 2011, at 101-102.

1 **Q. Do you believe there is a meaningful difference in the risk profile of electric T&D and**
2 **natural gas distribution utilities?**

3 A. Yes, I do. As demonstrated in the S&P report titled *U.S. Regulated Water, Gas, And Electric*
4 *Utilities, Strongest to Weakest*,¹² for example, approximately 87% of the natural gas distribution
5 utilities covered are rated BBB+ or higher, while only 50% of electric T&D utilities, and 40% of
6 vertically integrated utilities, fall within those ratings grades. On that basis, it is apparent that not
7 only do natural gas utilities have higher credit ratings but there is a significant difference in credit
8 ratings between natural gas and electric distribution utilities, yet a comparatively small difference
9 between electric distribution utilities and vertically integrated electric utilities.

10

11 **Q. What would be the consequence of relying solely on a group of combination natural gas and**
12 **electric distribution companies?**

13 A. First, because there are few such companies, the resulting proxy group is relatively small in
14 number and, therefore, may not provide a reliable measure of the Company's Cost of Equity.
15 Even if those companies engaged only in regulated electric distribution operations, anomalous
16 events or data associated with only one company would skew the results, greatly complicating the
17 ability to develop an ROE estimate with a reasonable degree of confidence.

18

19 Equally important, in light of the credit rating distributions discussed above, relying on
20 companies whose risk profiles are substantially related to natural gas operations is more likely to
21 skew the results downward than considering the results of integrated companies would skew ROE

¹² See, Standard & Poor's, *U.S. Regulated Water, Gas, And Electric Utilities, Strongest to Weakest*, October 22, 2012.

1 estimates upward. Consequently, ROE estimates based on regulated electric utilities are more
2 likely to be representative of the risks and required returns for a company such as Granite State
3 than would estimates based solely on a group of combination natural gas and electric distribution
4 companies.

5
6 **Q. Based on the criteria and issues discussed above, what is the composition of your final proxy**
7 **group?**

8 A. As noted above, since it is difficult to draw firm conclusions from a relatively small proxy group
9 of combination natural gas and electric distribution companies, the initial proxy group of
10 vertically integrated utilities was expanded to include the four additional gas and electric
11 distribution utilities. The final proxy group is presented in Table 2 (below).

1

Table 2: Final Proxy Group

Company	Ticker
American Electric Power Company, Inc.	AEP
CenterPoint Energy, Inc.	CNP
Cleco Corporation	CNL
Consolidated Edison, Inc.	ED
Empire District Electric Company	EDE
Great Plains Energy Inc.	GXP
Hawaiian Electric Industries, Inc.	HE
IDACORP, Inc.	IDA
Northeast Utilities	NU
Otter Tail Corporation	OTTR
Pepco Holdings, Inc.	POM
Pinnacle West Capital Corporation	PNW
PNM Resources, Inc.	PNM
Portland General Electric Company	POR
Southern Company	SO
UIL Holdings Corporation	UIL
Westar Energy, Inc.	WR

2

3 **V. COST OF EQUITY ESTIMATION**

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

5 A. Regulated utilities primarily use common stock and long-term debt to finance their capital
 6 investments. The overall rate of return (“ROR”) weighs the costs of the individual sources of
 7 capital by their respective book values. While the cost of debt and cost of preferred stock can be
 8 directly observed, the Cost of Equity is market-based and, therefore, must be estimated based on
 9 observable market information.

10

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

2 A. I estimated the ROE using analyses based on market data to quantify a range of investor
3 expectations of required equity returns. By their very nature, quantitative models produce a range
4 of results from which the market required ROE must be estimated. As discussed throughout my
5 Direct Testimony, that estimation must be based on a comprehensive review of relevant data and
6 information, and does not necessarily lend itself to a strict mathematical solution. Consequently,
7 the key consideration in determining the ROE is to ensure that the overall analysis reasonably
8 reflects investors' view of the financial markets in general and the subject company (in the
9 context of the proxy companies) in particular.

10

11 **Q. Are you aware that the New Hampshire Commission has relied primarily on the DCF**
12 **approach in establishing the ROE for regulated utilities?**

13 A. Yes, I am aware that the Commission has expressed its preference for the DCF approach as the
14 primary method in determining the ROE. However, the Commission also has encouraged the use
15 of other methods as a test of the reasonableness of the DCF results. In prior proceedings, for
16 example, both Staff and the Commission supported the use of a three-stage DCF model. As the
17 Commission noted:

18 Staff testimony supports the view that a three-stage version of the DCF
19 represents a valuable refinement to the DCF model of estimating the cost of
20 capital looking forward over the long term. We agree. Given the computing
21 power available to analysts today, it is possible to more closely match growth

1 rate estimates to varying growth expectations over longer time horizons.¹³

2
3 As such, I have relied on two forms of the DCF model (the Constant Growth and Multi-Stage
4 forms) as my primary approaches, and the CAPM and Risk Premium models to assess my DCF
5 results.

6
7 **Constant Growth DCF Model**

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

9 A. Yes. In my experience, the Constant Growth DCF model is widely recognized in regulatory
10 proceedings, as well as in financial literature. Nonetheless, neither the DCF nor any other model
11 should be applied without considerable judgment in the selection of data and the interpretation of
12 results.

13
14 **Q. Please describe the DCF approach.**

15 A. The DCF approach is based on the theory that a stock's current price represents the present value
16 of all expected future cash flows. In its simplest form, the DCF model expresses the Cost of
17 Equity as the sum of the expected dividend yield and long-term growth rate, and is expressed as
18 follows:

19
$$P = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \dots + \frac{D_\infty}{(1+k)^\infty}$$
 Equation [1]

20
21 where P represents the current stock price, $D_1 \dots D_\infty$ represent expected future dividends, and k is

¹³ New Hampshire Public Utilities Commission, Docket No. DT 02-110, Order No. 24,265, *Verizon New Hampshire, Investigation into Cost of Capital*, Order Establishing Cost of Capital, January 16, 2004, at 65.

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

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

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

7
8 In essence, the Constant Growth DCF model assumes that the total return received by investors
9 includes the dividend yield, and the rate of growth. As explained below, under the model’s
10 assumptions, the rate of growth equals the rate of capital appreciation. That is, the model assumes
11 that the investor’s return is the sum of the dividend yield and the increase in the stock price.

12
13 **Q. What assumptions are required for the Constant Growth DCF model?**

14 A. The Constant Growth DCF model assumes: (1) a constant average annual growth rate for
15 earnings and dividends; (2) a stable dividend payout ratio; (3) a constant price-to-earnings
16 (“P/E”) multiple; and (4) a discount rate greater than the expected growth rate. Under those
17 assumptions, dividends, earnings, book value, and the stock price all grow at the same, constant
18 rate.

19
20 **Q. What market data did you use to calculate the dividend yield component of your DCF
21 model?**

22 A. The dividend yield is based on the proxy companies’ current annualized dividend, and average
23 closing stock prices over the 30-, 90-, and 180-trading day periods as of January 18, 2013.

1

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

3 A. I did so to ensure that the model's results are not skewed by anomalous events that may affect
4 stock prices on any given trading day. At the same time, the averaging period should be
5 reasonably representative of expected capital market conditions over the long term. In my view,
6 using 30-, 90-, and 180-day averaging periods reasonably balances those concerns.

7

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

10 A. Yes. Since utilities increase their quarterly dividends at different times throughout the year, it is
11 reasonable to assume that dividend increases will be evenly distributed over calendar quarters.
12 Given that assumption, it is appropriate to calculate the expected dividend yield by applying one-
13 half of the long-term growth rate to the current dividend yield.¹⁴ That adjustment ensures that the
14 expected dividend yield is representative of the coming twelve-month period, and does not
15 overstate the dividends to be paid during that time.

16

17 **Q. Is it important to select appropriate measures of long-term growth in applying the DCF
18 model?**

19 A. Yes. In its Constant Growth form, the DCF model (*i.e.*, as presented in Equation [2] above)
20 assumes a single growth estimate in perpetuity. This assumption requires a fixed payout ratio, and
21 the same constant growth rate for earnings per share ("EPS"), dividends per share, and book
22 value per share. Since dividend growth can only be sustained by earnings growth, the model

¹⁴ See, Attachment RBH-2.

1 should incorporate a variety of measures of long-term earnings growth.

2
3 **Q. Please summarize your inputs to the Constant Growth DCF model.**

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

- 5 1. The average daily closing prices for the 30-, 90-, and 180-trading days ended
6 January 18, 2013, for the term P_0 ; and
7 2. The annualized dividend per share as of January 18, 2013, for the term D_0 .

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

- 9 1. The Zacks consensus long-term earnings growth estimates;
10 2. The First Call consensus long-term earnings growth estimates;
11 3. The Value Line long-term earnings growth estimates; and
12 4. An estimate of Retention Growth.

13
14 **Q. How did you calculate the high and low DCF results?**

15 A. I calculated the proxy group mean high DCF results by using the maximum EPS growth rate as
16 reported by Value Line, Zacks, First Call, and the Retention Growth estimate for each proxy
17 group company in combination with the dividend yield for each of the proxy group companies.
18 The proxy group mean high results then reflect the average of the maximum DCF results for the
19 proxy group as a whole. I used a similar approach to calculate the proxy group mean low results
20 using instead the minimum of the Value Line, Zacks, First Call, and Retention Growth estimate
21 for each proxy group company.

1 **Q. Did you make any adjustments to the growth rates in your DCF analyses?**

2 A. Yes. I note that the Value Line EPS growth estimate for Otter Tail Power (“OTTR”) is more than
3 two standard deviations from the unadjusted group mean. At the same time, earnings growth
4 estimates from Zacks and First Call for OTTR are somewhat below the group mean, and are
5 identical to each other. Rather than eliminating OTTR’s DCF estimates altogether, therefore, I
6 removed the Value Line growth estimate.¹⁵

7

8 **Q. Are you aware that the New Hampshire Commission has indicated that it favors use of**
9 **growth forecasts aside from expected earnings per share growth?**

10 A. Yes, I am aware that the Commission has accepted the use of different estimates of growth,
11 including dividends per share, and book value per share. In support of that approach, the
12 Commission has observed that stock price appreciation is not the sole determinant of investors’
13 return, and that dividends are an important part of investors’ return from utility stocks. The
14 Commission has further stated that sole reliance on earnings growth is not appropriate since the
15 Constant Growth DCF model assumes a constant P/E ratio.¹⁶

16

17 **Q. In light of the Commission’s concerns, have you included measures of expected growth**
18 **aside from earnings growth projections?**

19 A. Yes, I have included a measure of Retention Growth in my DCF analysis. As discussed in more
20 detail below, the Retention Growth estimate models expected growth as a function of the

¹⁵ Please note that removing outlying growth rates may be considered for both high and low estimates. An alternative, and very reasonable approach, would be to consider both mean and median results.

¹⁶ See, State of New Hampshire Public Utilities Commission, Docket No. DG 08-009, Order No. 24,972, *Energy North Natural Gas, Inc. D/B/A National Grid NH, Notice of Intent to File Rate Schedules*, Order Granting Delivery Rate Increase, May 29,2009, at 62.

1 proportion of earnings that are reinvested back into the firm, the returns earned on invested equity
2 (that is, internally funded growth) and the expected issuance of common stock (externally funded
3 growth). I also note that the “market-to-book” approach presented by Staff in Docket No. DG 08-
4 009 relies on the Retention Growth model to estimate long-term growth.

5
6 **Q Please describe the Retention Growth model.**

7 A. The Retention Growth model, which is a generally recognized and widely taught method of
8 estimating long-term growth,¹⁷ is an alternative approach to the use of analysts’ earnings growth
9 estimates. In essence, the model is premised on the proposition that a firm’s growth is a function
10 of its expected earnings, and the extent to which it retains earnings to invest in the enterprise. In
11 its simplest form, the model represents long-term growth as the product of the retention ratio (*i.e.*,
12 the percentage of earnings not paid out as dividends, referred to below as (“b”) and the expected
13 return on book equity (referred to below as “r”). Thus, the simple “b x r” form of the model
14 projects growth as a function of internally generated funds. That form of the model is limiting,
15 however, in that it does not provide for growth funded from external equity.

16
17 The “br + sv” form of the Retention Growth estimate used in my DCF analysis is meant to reflect
18 growth from both internally generated funds (*i.e.*, the “br” term) and from issuances of equity
19 (*i.e.*, the “sv” term). The first term, which is the product of the retention ratio (*i.e.*, “b”, or the
20 portion of net income not paid in dividends) and the expected Return on Equity (*i.e.*, “r”)
21 represents the portion of net income that is “plowed back” into the Company as a means of

¹⁷ See, for example, Brealey, Meyers and Allen, Principles of Corporate Finance, 8th Ed, 2006, at 801-802. As discussed later in my Direct Testimony, the Retention Growth model is consistent with Staff’s “market-to-book” method.

1 funding growth. The “sv” term is represented as:

2
$$\left(\frac{m}{b} - 1\right) \times \text{Growth rate in Common Shares}$$
 Equation [3]

3 where $\frac{m}{b}$ is the Market-to-Book ratio.

4
5 In this form, the “sv” term reflects an element of growth as the product of (a) the growth in shares
6 outstanding, and (b) that portion of the market-to-book ratio that exceeds unity. As shown in
7 Attachment RBH-3, all of the components of the Retention Growth Model can be derived from
8 data provided by Value Line.

9
10 **Q. Do you have any concerns with the “Sustainable Growth” model in this proceeding?**

11 A. Yes, I do. To the extent that sustainable growth is used as a measure of long-term growth, the
12 determinants of the expected earned Return on Common Equity, including the projected level of
13 sales efficiency, profitability, and capitalization ratios, should remain constant over the projection
14 period, and beyond. If that is not the case, the model is an unreliable measure of the subject
15 company’s perpetual future growth.

16
17 One method of considering those issues is the “DuPont formula”, which decomposes the Return
18 on Common Equity (that is, the “r” component of the model) into three factors: the Profit Margin
19 (net income/revenues), Asset Turnover (revenues/net plant), and the Equity Multiplier (net
20 plant/equity). If any or all of those components is expected to change over time, the expected
21 equity return and, therefore, the “sustainable growth” estimate, likewise will be unstable. Since
22 the 2008 capital market dislocation, for example, capital-intensive companies such as utilities

1 have been focused on financial integrity and the ability to access the capital markets during
2 turbulent conditions. Under those conditions, the Equity Multiplier (*i.e.*, the ratio of assets to
3 equity) would decrease, indicating the expectation that utilities would finance an increasing
4 amount of their net plant with common equity. A direct consequence of that increased equity ratio
5 would be the dilution of the Return on Common Equity.

6
7 Similarly, if utilities are in period of accelerating capital expenditures, the ratio of revenues to
8 assets may be expected to decrease, suggesting that the increase in capital expenditures will out-
9 pace revenue growth during Value Line's three to five year projection period. Given that
10 fundamental elements of the "r" component of the retention growth model are likely to be
11 unstable over the near term, the "sustainable growth" model should be viewed with caution.

12
13 **Q. Why have you not relied on projected dividend and book value growth rates in your**
14 **Constant Growth DCF analysis?**

15 A. I disagree with the use of dividend and book value growth rates for several reasons. First,
16 earnings are the fundamental determinant of a company's ability to pay dividends. Management
17 decisions to conserve cash for capital investments, to manage the dividend payout for the purpose
18 of minimizing future dividend reductions, or to finance future earnings prospects can influence
19 dividend growth rates in near-term periods. Since dividends are discretionary, in the short run,
20 dividend growth may deviate significantly from earnings growth. Over the long run, however,
21 dividends are dependent on earnings.

22
23 Similarly, the book value of equity can increase only through increases to retained earnings, or

1 through the issuance of new equity. Both of those factors are derived from earnings: retained
2 earnings increase with the amount of earnings not distributed as dividends; and the price at which
3 new equity is issued is a function of the earnings per share and the then-current P/E ratio. In
4 addition, academic research has clearly indicated that measures of earnings and cash flow are
5 strongly related to returns.¹⁸

6
7 Lastly, while Zacks and First Call are consensus growth estimates, Value Line is the sole provider
8 of dividend and book value growth estimates. Putting aside the observations that if investor
9 services such as Zacks and First Call felt that projected dividend and book value growth rates
10 were important to investors they likely would provide them, the fact that Value Line growth rates
11 are developed by a single analyst introduces a potential element of bias. In fact, it is for that
12 reason that one of my screening criteria is that comparable companies must be followed by
13 multiple analysts.

14
15 **Q. Do you have any other comments regarding the use of dividend or book value growth rates**
16 **in the Constant Growth DCF model?**

17 A. Yes. As noted earlier, the Constant Growth DCF model assumes that earnings, dividends and
18 book value all grow at the same constant rate, and that the P/E ratio remain constant in perpetuity.
19 Under those strict assumptions, the DCF result does not vary if the stock is held in perpetuity, or
20 if it is held for only 2, 5, 10 or any other period and sold at the market price at the end of that

¹⁸ See, for example, Christofi, Christofi, Lori and Moliver, *Evaluating Common Stocks Using Value Line's Projected Cash Flows and Implied Growth Rate*, Journal of Investing (Spring 1999); see also, Harris and Marston, *Estimating Shareholder Rise Premia Using Analysts Growth Forecasts*, Financial Management, 21 (Summer 1992).

1 period. However, those assumptions rarely, if ever, hold in practice. Because investors are not
2 likely to hold stock in perpetuity, they expect a substantial portion of the return in the form of
3 capital appreciation. Since stock valuation levels are statistically related to earnings growth (but
4 not dividend or book value growth) earnings growth is the appropriate growth rate to use in the
5 DCF analysis.¹⁹

6
7 **Q. Are you aware that in prior proceedings, Staff also included the “market-to-book”**
8 **approach in its Constant Growth DCF calculations?**

9 A. Yes, I am.

10
11 **Q. Do you typically rely on that method in developing your DCF analyses?**

12 A. No, I do not. In light of the Commission’s acceptance of that model in Docket No. DG 08-009,
13 and given that the data required to calculate the model are derived from sources already included
14 in my Direct Testimony, however, I have included that approach in my DCF results.

15
16 **Q. Please describe the “market-to-book” model.**

17 A. As Staff pointed out in Docket No. DG 08-009,²⁰ the growth component of its “market-to-book”
18 approach is the sum of internal and external sources of growth. In that regard, the growth
19 component is the same as the “br + sv” method contained in the Retention Growth model
20 discussed earlier in this section of my Direct Testimony. The difference lies in the calculation of

¹⁹ That finding is corroborated by the common practice of valuing shares of common stock on the basis of P/E ratios.

²⁰ See, Docket No. DG 08-009, *Energy North Natural Gas, Inc. D/B/A National Grid NH, Notice of Intent to File Rate Schedules*, Direct Testimony of Pradip K. Chattopadhyay, October 31, 2008, at 26.

1 the dividend yield component. Whereas my application of the Constant Growth DCF model relies
2 on the actual, observed dividend and stock price data to calculate the dividend yield, the “market-
3 to-book” model estimates the dividend yield on the basis of several parameters, all of which are
4 provided by Value Line. As a consequence, the “market-to-book” method of estimating the
5 dividend yield is likely to deviate, perhaps substantially, from the actual dividend yield.

6
7 **Q. Please elaborate on that point.**

8 A. As noted in Staff’s testimony, the “market-to-book” method is specified as:

$$K_e = \left[\frac{r(1-b)}{\frac{P}{B}} \right] + \left[br + g \left(\frac{P}{B} - 1 \right) \right] \quad \text{Equation [4]}$$

9
10 where:

11 b = Retention Ratio;

12 r = Return on Book Equity;

13 P/B = Price/Book ratio; and

14 g = growth in the number of shares outstanding.²¹

15
16 As noted above, the second bracketed term is the “ $br + sv$ ” component of the “Sustainable

17 Growth” model. The first bracketed term, $\left[\frac{r(1-b)}{P/B} \right]$ can be re-arranged as:

$$[(1-b) \times r \times B]/P \quad \text{Equation [5]}$$

18
19 Equation [5], which is the product of the payout ratio ($1 - b$), the earned return on book equity (r)
20 and the book value of equity per share (B), simply is an expression of the expected dividend per

²¹ *Ibid.* Please note that the brackets included in Equation [4] have been added for the purpose of clarification.

1 share. The expected dividend per share divided by the market price (P) is the expected dividend
2 yield.

3
4 In essence, the “market-to-book” method combines the “Sustainable Growth” rate with an
5 algebraic expression of the dividend yield. Consequently, its application depends on estimates of
6 the expected payout ratio, the expected earned return on equity, and the expected price/book ratio.
7 Because the dividend yield is observable, the “market-to-book” method introduces an additional
8 element of potential estimation error that, in my view, is easily avoided. Nonetheless, since all of
9 the inputs required by the model are components of my Retention Growth model, and given that
10 the Commission has relied on the approach in prior proceedings, I have included the “market-to-
11 book” method in my DCF results (*see*, Attachment RBH-4). However, I note that the mean and
12 median results of the “market-to-book” method is below any reported authorized ROE since
13 1980.²²

14
15 **Multi-Stage DCF Model**

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

17 A. In order to address some of the limiting assumptions underlying the Constant Growth form of the
18 DCF model, I also considered the results of a Multi-Stage (three-stage) DCF Model. The Multi-
19 Stage model, which is an extension of the Constant Growth form, enables the analyst to specify
20 growth rates over three discreet stages. As with the Constant Growth form of the DCF model, the
21 Multi-Stage form defines the Cost of Equity as the discount rate that sets the current price equal
22 to the discounted value of future cash flows. Unlike the Constant Growth form, however, the

²² Source: Regulatory Research Associates.

1 Multi-Stage model must be solved in an iterative fashion.

2

3 **Q. Has the Commission accepted the use of a three-stage DCF model in prior proceedings?**

4 A. Yes, both the Commission and Staff noted the beneficial aspects of the model in Docket No. DT
5 02-110 (Order No. 24,265).²³ Similarly, in Order No. 24,552, the Commission noted that in a
6 prior Order (Order No. 24,473) it “reaffirmed the use of the Three Stage DCF model...”²⁴

7

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

9 A. As noted above, the Multi-Stage DCF model sets the subject company’s stock price equal to the
10 present value of future cash flows received over three “stages”. In the first two stages, “cash
11 flows” are defined as projected dividends. In the third stage, “cash flows” equal both dividends
12 and the expected price at which the stock will be sold at the end of the period (*i.e.*, the “terminal
13 price”). The terminal price is calculated based on the Gordon model, which defines the price as
14 the expected dividend divided by the difference between the Cost of Equity (*i.e.*, the discount
15 rate) and the long-term expected growth rate. In essence, the terminal price is defined by the
16 present value of the remaining “cash flows” in perpetuity. In each of the three stages, the dividend
17 is the product of the projected earnings per share and the expected dividend payout ratio. A
18 summary description of the model is provided in Table 3 (below).

19

²³ See, New Hampshire Public Utilities Commission, Docket No. DT 02-110, Order No. 24,265, *Verizon New Hampshire, Investigation into Cost of Capital*, Order Establishing Cost of Capital, January 16, 2004, at 31-34.

²⁴ New Hampshire Public Utilities Commission, Docket No. DE 04-177, Order No. 24,552, *Public Service Company of New Hampshire, Transition and Default Service Rates*, Order on Motions for Rehearing, December 2, 2005, at 13.

1

Table 3: 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 primary benefits relate to the flexibility provided by the model’s formulation. Since the
 5 model provides the ability to specify near, intermediate, and long-term growth rates, for example,
 6 it avoids the sometimes limiting assumption that the subject company will grow at the same,
 7 constant rate in perpetuity. In addition, by calculating the dividend as the product of earnings and
 8 the payout ratio, the model accommodates assumptions regarding the timing and extent of
 9 changes in the payout ratio to reflect, for example, increases or decreases in expected capital
 10 spending, or transition from current payout levels to long-term expected levels. In that regard,
 11 because the model relies on multiple sources of earnings growth rate assumptions, it is not limited
 12 to a single source, such as Value Line, for all inputs, and therefore mitigates the potential bias

1 associated with relying on a single source of growth estimates.²⁵

2
3 The model also enables the analyst to assess the reasonableness of the inputs and results by
4 reference to certain market-based metrics. For example, the stock price estimate can be divided
5 by the expected earnings per share in the final year to calculate the terminal P/E ratio. Similarly,
6 the terminal P/E ratio can be divided by the terminal growth rate to develop a Price to Earnings
7 Growth (“PEG”) ratio. To the extent that the projected P/E or PEG ratios are inconsistent with
8 either historical or expected levels, it may indicate incorrect or inconsistent assumptions within
9 the balance of the model.

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

12 A. I applied the Multi-Stage model to the proxy group described earlier in my Direct Testimony. My
13 assumptions with respect to the various model inputs are described in Table 4 (below).

²⁵ See, for example, Harris and Marston, *Estimating Shareholder Risk Premia Using Analysts’ Growth Forecasts*, Financial Management, 21 (Summer 1992).

1

Table 4: Multi-Stage DCF Model Assumptions

Component	Stage			
	Initial	First	Transition	Terminal
Stock Price	30-, 90-, and 180-day average stock price as of January 18, 2013			
Earnings Growth	2011 actual EPS escalated by Period 1 growth rate	EPS growth as average of (1) Value Line; (2) Zacks; (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 5.94 percent is based on the real GDP growth rate of 3.24 percent
 5 from 1929 through 2011,²⁶ and an inflation rate of 2.62 percent.²⁷ The GDP growth rate is
 6 calculated as the compound growth rate in the chain-weighted GDP for the period from 1929
 7 through 2011. The rate of inflation of 2.62 percent is a compound annual forward rate starting in
 8 ten years (*i.e.*, 2023, which is the beginning of the terminal period) and is based on the 30-day
 9 average projected inflation based on the spread between yields on long-term nominal Treasury

²⁶ See, Bureau of Economic Analysis, December 20, 2012 update.

²⁷ See, Board of Governors of the Federal Reserve System, Table H.15 Selected Interest Rates.

1 Securities and long-term Treasury Inflation Protected Securities, known as the “TIPS spread”.

2
3 In essence, the real GDP growth rate projection is based on the assumption that absent specific
4 knowledge to the contrary, it is reasonable to assume that over time, real GDP growth will revert
5 to its long-term mean. In addition, since estimating the Cost of Equity is a market-based exercise,
6 it is important to reflect the sentiments and expectations of investors to the extent possible. In that
7 important respect, the TIPS spread represents the collective views of investors regarding long-
8 term inflation expectations. Equally important, by using forward yields, we are able to infer the
9 level of long-term inflation expected by investors as of the terminal period of the Multi-Stage
10 model (that is, ten years in the future).

11
12 **Q. What were your specific assumptions with respect to the payout ratio?**

13 A. As noted in Table 4, the first two periods rely on the first year and long-term projected payout
14 ratios reported by Value Line for each of the proxy group companies.²⁸ Then by the end of the
15 second period (*i.e.*, the end of year 10), it is assumed that the payout ratio will converge to the
16 long-term industry average of 66.67 percent.²⁹

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

19 A. My Constant Growth and Multi-Stage DCF results are summarized in Table 5, below (*see also*,
20 Attachment RBH-2 and Attachment RBH-5).

²⁸ As reported in the Value Line Investment Survey as “All Div’ds to Net Prof.”
²⁹ Source: Bloomberg Professional

1

Table 5: DCF Results³⁰

	<i>Mean Low</i>	<i>Mean</i>	<i>Mean High</i>
Constant Growth DCF Results			
30-Day Average	7.92%	9.63%	11.35%
90-Day Average	7.90%	9.61%	11.33%
180-Day Average	7.91%	9.62%	11.34%
	<i>Low</i>	<i>Mean</i>	<i>High</i>
Multi-Stage DCF Results			
30-Day Average	9.32%	10.43%	11.16%
90-Day Average	9.46%	10.40%	11.07%
180-Day Average	9.60%	10.42%	11.06%

2

3 **Q. Did you give any weight to the Mean Low DCF results in developing your ROE range and**
 4 **recommendation?**

5 A. No, the mean low results are well below any reasonable estimate of the Company's Cost of
 6 Equity. Of the 1,391 rate cases since 1980 that disclosed the awarded ROE, for example, only one
 7 included an authorized ROE of 9.00 percent or lower.³¹ On that basis alone, the mean low results
 8 for both proxy groups are highly improbable. As such, I did not give those estimates any weight
 9 in arriving at my ROE range and recommendation.

10

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

12 A. Yes. As noted earlier, I also applied the CAPM and Risk Premium analyses in estimating the
 13 Company's Cost of Equity.

14

³⁰ DCF results presented in Table 5 are unadjusted (*i.e.*, prior to any adjustment for flotation costs).
³¹ Source: Regulatory Research Associates.

1 correlation of returns in between company j and the broad market. The Beta coefficient therefore
2 represents both relative volatility (*i.e.*, the standard deviation) of returns, and the correlation in
3 returns between the subject company and the overall market.

4
5 Intuitively, higher Beta coefficients indicate that the subject company's returns have been
6 relatively volatile, and have moved in tandem with the overall market. Consequently, if a
7 company has a Beta coefficient of 1.00, it is as risky as the market and does not provide any
8 diversification benefit.

9
10 **Q. Has the CAPM been affected by recent economic conditions?**

11 A. Yes. For example, the risk-free rate, " r_f " is represented by the yield on long-term U.S. Treasury
12 securities. During periods of increased equity market volatility, investors tend to allocate their
13 capital to low-risk securities such as Treasury bonds, thereby bidding down the yield on those
14 securities. In addition, since the 2008 Lehman Brothers bankruptcy filing, the Federal Reserve
15 has focused on maintaining low long-term interest rates. Thus, even if investors were to allocate
16 capital to more risky assets, Federal Reserve policy may have the continuing effect of
17 maintaining low Treasury yields.

18
19 Even considering the effect of Federal Reserve policy, capital markets continue to change, by
20 some measures quite significantly. For example, over the 90 trading days ended January 18, 2013,
21 the 30-year Treasury yield ranged from a low of 2.72 percent to a high of 3.12 percent. In
22 addition (and as discussed later in my Direct Testimony), the Equity Risk Premium is not
23 constant, and tends to move in the opposite direction as changes in interest rates. Consequently,

1 the CAPM results can be relatively volatile.

2
3 **Q. With those observations in mind, what assumptions did you include in your CAPM**
4 **analysis?**

5 A. Since utility assets represent long-term investments, I used two different estimates of the risk-free
6 rate: (1) the current 30-day average yield on 30-year Treasury bonds (*i.e.*, 2.97 percent); and (2)
7 the near-term projected 30-year Treasury yield (*i.e.*, 3.15 percent).³³

8
9 **Q. What Market Risk Premium did you use in your CAPM analysis?**

10 A. Because the models are forward-looking, I developed two forward-looking estimates of the
11 Market Risk Premium. The first approach uses the market required return, less the current 30-year
12 Treasury bond yield. To estimate the market required return, I calculated the average ROE based
13 on the Constant Growth DCF model. To do so, I relied on data from Bloomberg and Capital IQ,
14 respectively. For both Bloomberg and Capital IQ, I calculated the average expected dividend
15 yield (using the same one-half growth rate assumption described earlier) and combined that
16 amount with the average projected earnings growth rate to arrive at the average DCF result. I then
17 subtracted the current 30-year Treasury yield from that amount to arrive at the market DCF-
18 derived *ex-ante* Market Risk Premium estimate. The results of those two calculations are
19 provided in Attachment RBH-6.

20

³³ See, Blue Chip Financial Forecasts, Vol. 32, No. 1, January 1, 2013, at 2. Consensus projections of the 30-year Treasury yield for the six quarters ending June 2014. As noted above, the 30-year Treasury yield ranged from 2.72 percent to 3.12 percent in the 90 trading days ending January 18, 2013.

1 **Q. Please describe the second approach.**

2 A. The second approach is based on the fundamental financial principle that investors require higher
3 returns for higher risk. In essence, this approach uses market-based data to determine whether
4 investors expect future risk to be higher, lower, or approximately equal to historical market risk.
5 To the extent the market expects risk to be higher than historical levels, the Market Risk Premium
6 would be higher than historical levels; the converse also is true.

7
8 In terms of its application, this approach relies on the Sharpe Ratio, which is the ratio of the long-
9 term average Risk Premium for the S&P 500 Index, to the risk of that index.³⁴ The formula I
10 used for calculating the Sharpe Ratio is expressed as follows:

$$S_x = \frac{(R_x - R_f)}{\sigma_x} \quad \text{Equation [8]}$$

11
12 where:

13 S_x = Sharpe Ratio for the S&P 500 Index;

14 R_x = the average return of the S&P 500;

15 R_f = the rate of return of a risk-free security; and

16 σ_x = the standard deviation of the return on the S&P 500.

17 As shown in Attachment RBH-6, I calculated the constant Sharpe Ratio as the ratio of the
18 historical Market Risk Premium of 6.60 percent (the numerator of Equation [8] above)³⁵ and the

³⁴ The Sharpe Ratio is relied upon by financial professionals to assess the incremental return received for holding a risky (*i.e.*, more volatile) asset rather than a risk-free (*i.e.*, less volatile) asset. Risk is measured by the standard deviation of returns. That is, the higher the volatility of returns, the greater the risk.

³⁵ See, Morningstar Inc., Ibbotson SBBBI 2012 Valuation Yearbook, Large Company Stocks: Total Returns Table A-1, at 128.

1 historical standard deviation of 20.30 percent (the denominator of Equation [8]).³⁶ Equation [8]

2 can be re-arranged as:

$$MRP = S_x \times \sigma_{ex} \quad \text{Equation [9]}$$

4 Equation [9] basically states that the expected Market Risk Premium is determined by investors'
5 historical required return per unit of risk (the historical Sharpe Ratio) times expected market risk.

6 To measure expected market risk, I used the 30-day average of the Chicago Board Options
7 Exchange's ("CBOE") three-month volatility index (*i.e.*, the VXV) and the average of settlement
8 prices over the same 30-day period of futures on the CBOE's one-month volatility index (*i.e.*, the
9 VIX) for June 2013 through August 2013. Both of those indices are market-based, observable
10 measures of investors' expectations regarding future market volatility.

11
12 **Q. What Beta coefficients did you use in your CAPM model?**

13 A. My approach includes the average reported Beta coefficient from Bloomberg and Value Line for
14 each of the proxy group companies. While both of those services adjust their calculated (or raw)
15 Beta coefficients to reflect the tendency of the Beta coefficient to regress to the market mean of
16 1.00, Value Line calculates the Beta coefficient over a five-year period, while Bloomberg's
17 calculation is based on two years of data.³⁷

18

³⁶ The standard deviation is calculated from data provided by Morningstar in its annual Valuation Yearbook. (*See*, Morningstar Inc., Ibbotson SBBI 2012 Valuation Yearbook, Large Company Stocks: Total Returns Table B-1, at 168-169). I recognize that the VIX forward settlement prices are liquid for approximately six to eight months; nonetheless, that data represents a market-based measure of expected volatility that should be considered in estimating the *ex-ante* Market Risk Premium.

³⁷ Please note that while, in Docket No. DG 10-017, I separately calculated Beta coefficients, in this instance there is no meaningful difference between the Bloomberg Beta coefficients and those calculated over a 12-month period. Consequently, and for the purpose of narrowing the scope of analytical issues, I have not included calculated Beta coefficients in this proceeding.

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

2 A. The results of my CAPM analysis are summarized in Table 6, below (*see also*, Attachment RBH-
 3 8).

4 **Table 6: Summary of CAPM Results**

	<i>Sharpe Ratio Derived Market Risk Premium</i>	<i>Bloomberg Derived Market Risk Premium</i>	<i>Capital IQ Derived Market Risk Premium</i>
<i>Average Bloomberg Beta Coefficient</i>			
Current 30-Year Treasury (2.97%)	7.61%	9.89%	9.91%
Near Term Projected 30-Year Treasury (3.15%)	7.79%	10.07%	10.09%
<i>Average Value Line Beta Coefficient</i>			
Current 30-Year Treasury (2.97%)	7.74%	10.07%	10.09%
Near Term Projected 30-Year Treasury (3.15%)	7.92%	10.25%	10.27%

5
 6 **Q. Do you believe the CAPM results provide a reasonable range of ROE estimates at this time?**

7 A. Not entirely. As a practical matter, the low results are approximately 100 basis points below the
 8 lowest ROE ever authorized for an electric utility in at least 30 years. By that measure, the low
 9 results simply are not reasonable. As to the remaining results, as noted earlier in my Direct
 10 Testimony, the intended consequence of continued Federal Reserve intervention in the capital
 11 markets has been to maintain long-term Treasury yields at historically low levels. Since the
 12 CAPM defines the Cost of Equity in terms of Treasury yields, the effect of those actions decrease,
 13 rather substantially, the CAPM estimates. The effect of that policy, however, will not continue
 14 indefinitely; consensus forecasts call for the 30-year Treasury yield to increase to 4.70% (from

1 the current level of approximately 2.97%) in the 2014-2018 timeframe.³⁸ On balance, then, I do
2 not believe that the results presented in Table 6 fully reflect the appropriate range of ROE
3 estimates.

4
5 **Bond Yield Plus Risk Premium Approach**

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

7 A. This approach is based on the basic financial tenet that, since equity investors bear the residual
8 risk of ownership, their returns are subject to more risk than are the returns to bondholders. As
9 such, equity holders require a premium over the returns available to debt holders. Risk premium
10 approaches, therefore, estimate the Cost of Equity as the sum of an Equity Risk Premium³⁹ and a
11 bond yield. The Equity Risk Premium is the difference between the historical Cost of Equity and
12 long-term Treasury yields. Since we are calculating the risk premium for electric utilities, a
13 reasonable approach is to use actual authorized returns for electric utilities as the historical
14 measure of the Cost of Equity.

15
16 **Q. Please explain how you performed your Bond Yield Plus Risk Premium analysis.**

17 A. As discussed above, I first defined the Risk Premium as the difference between authorized ROEs
18 and the then-prevailing level of long-term (*i.e.*, 30-year) Treasury yield. I then gathered data from
19 1,391 electric utility rate proceedings between January 1, 1980 and January 18, 2013.⁴⁰ In
20 addition to the authorized ROE, I also calculated the average period between the filing of the case

³⁸ See, Blue Chip Financial Forecasts, Vol. 32, No. 12, December 1, 2012, at 14.

³⁹ The Equity Risk Premium is defined as the incremental return that an equity investment provides over a risk-free rate.

⁴⁰ Source: Regulatory Research Associates.

1 and the date of the final order (the lag period). In order to reflect the prevailing level of interest
2 rates during the pendency of the proceedings, I calculated the average 30-year Treasury yield
3 over the average lag period (approximately 201 days).

4
5 Because the data covers a number of economic cycles,⁴¹ the analysis also may be used to assess
6 the stability of the Equity Risk Premium. As noted above, the Equity Risk Premium is not
7 constant over time; prior research has shown that it is directly related to expected market
8 volatility, and inversely related to the level of interest rates.⁴² That finding is particularly relevant
9 given the historically low level of current Treasury yields.

10
11 **Q. How did you model the relationship between interest rates and the Equity Risk Premium?**

12 A. The basic method used was regression analysis, in which the observed Equity Risk Premium is
13 the dependent variable, and the average 30-year Treasury yield is the independent variable.
14 Relative to the long-term historical average, the analytical period includes interest rates and
15 authorized ROEs that are quite high during one period (*i.e.*, the 1980s) and that are quite low
16 during another (*i.e.*, the post-Lehman bankruptcy period). To account for that variability, I used
17 the semi-log regression, in which the Equity Risk Premium is expressed as a function of the
18 natural log of the 30-year Treasury yield:

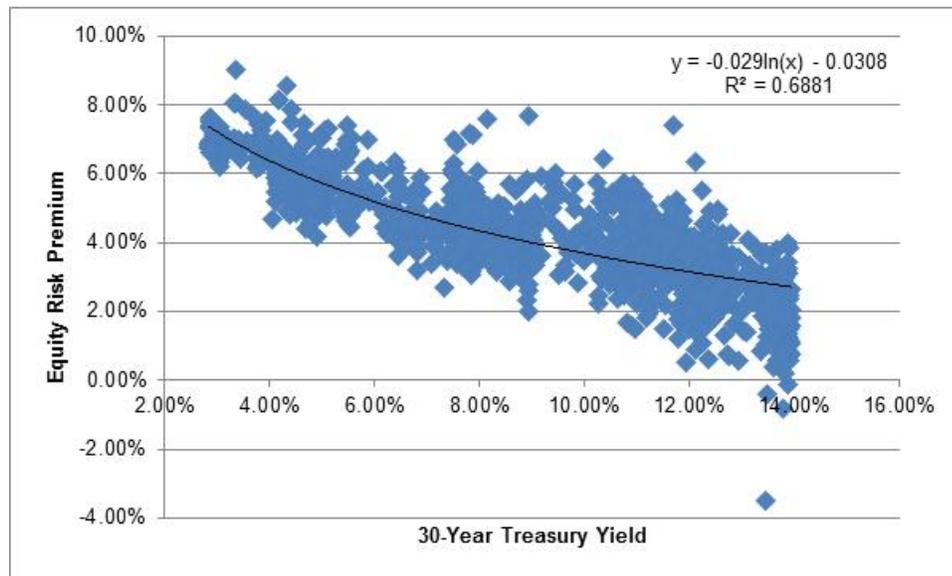
19
$$RP = \alpha + \beta(\text{LN}(T_{30}))$$
 Equation [10]

⁴¹ See, National Bureau of Economic Research, *U.S. Business Cycle Expansion and Contractions*.
⁴² 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.

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As shown on Chart 1 (below), the semi-log form is useful when measuring an absolute change in the dependent variable (in this case, the Risk Premium) relative to a proportional change in the independent variable (the 30-year Treasury yield).

Chart 1: Equity Risk Premium



As Chart 1 illustrates, over time there has been a statistically significant, negative relationship between the 30-year Treasury yield and the Equity Risk Premium. Consequently, simply applying the long-term average Equity Risk Premium of 4.39 percent would significantly understate the Cost of Equity and produce results well below any reasonable estimate. Based on the regression coefficients in Chart 1, however, the implied ROE is between 10.22 percent and 10.77 percent (see, Attachment RBH-9).

1 **VI. CAPITAL MARKET ENVIRONMENT**

2 **Q. Do economic conditions influence the required cost of capital and required return on**
3 **common equity?**

4 A. Yes. As discussed in Section V, the models used to estimate the Cost of Equity are meant to
5 reflect, and therefore are influenced by, current and expected capital market conditions.

6

7 **Q. Have you reviewed any specific indices to assess the relationship between current market**
8 **conditions and investor return requirements?**

9 A. Yes. I considered the relationship between Treasury yields and the Cost of Equity as a principal
10 measure of current capital market conditions. As discussed below, this measure provides
11 information that is relevant to the implementation of models used to estimate the Cost of Equity
12 and in the interpretation of the model results.

13

14 **Relationship Between Historically Low Treasury Yields and the Cost of Equity**

15 **Q. As a preliminary matter, has the Cost of Equity fallen in tandem with the recent decline in**
16 **long-term Treasury yields?**

17 A. No. The fear of taking the risks of equity ownership has motivated many investors to move their
18 capital into the relative safety of Treasury securities. In doing so, investors bid down yields to the
19 point that they currently are receiving yields on ten-year Treasury bonds that are below the rate of
20 inflation.⁴³ In effect, those investors have been willing to accept a *negative* real return on
21 Treasury bonds rather than be subject to the risk of owning equity securities.

22

⁴³ See, for example, *Treasurys Slide After Lackluster Sale*, The Wall Street Journal, August 8, 2012.

1 At the same time, the Federal Reserve's policy of buying longer-dated Treasury securities and
2 selling short-term securities also may have had the effect of lowering long-term Treasury yields.
3 That is, of course, the objective of the Federal Reserve's "maturity extension program" which
4 began in June 2011.⁴⁴ As the Federal Reserve noted:

5 Under the maturity extension program, the Federal Reserve intends to sell or
6 redeem a total of \$667 billion of shorter-term Treasury securities by the end
7 of 2012 and use the proceeds to buy longer-term Treasury securities. This
8 will extend the average maturity of the securities in the Federal Reserve's
9 portfolio.

10 ***

11 By reducing the supply of longer-term Treasury securities in the market, this
12 action should put downward pressure on longer-term interest rates, including
13 rates on financial assets that investors consider to be close substitutes for
14 longer-term Treasury securities. The reduction in longer-term interest rates,
15 in turn, will contribute to a broad easing in financial market conditions that
16 will provide additional stimulus to support the economic recovery.⁴⁵

17
18 Consequently, two factors are at work: (1) the continued focus on capital preservation on the part

⁴⁴ On September 13, 2012, the Federal Reserve announced that, in addition to continuing the maturity extension program announced in June 2011, it would begin buying mortgage-backed securities at a pace of \$40 billion per month. (*See*, Federal Reserve Press Release, September 13, 2012.) At its January 2013 meeting, the Federal Open Market Committee voted to continue its policy of purchasing, on a monthly basis, \$45 billion and \$40 billion of longer-term Treasury securities, and mortgage-backed securities, respectively. During that meeting, various participants expressed concern with potentially adverse consequences of the Federal Reserve's continued accommodative policies. (*See*, Minutes of the Federal Open Market Committee, January 29-30, 2013, at 13-15.)

⁴⁵ <http://www.federalreserve.gov/monetarypolicy/maturityextensionprogram.htm>

1 of investors has caused them to reallocate capital to the relative safety of Treasury securities,
2 thereby bidding up the price and bidding down the yield; and (2) the Federal Reserve's continued
3 policy of buying long-term Treasury securities in order to lower the yield. As the Federal Reserve
4 noted in its June 2012 Open Market Committee meeting minutes, the effect of those two factors
5 has been a continued decline in Treasury yields:

6 Yields on longer-dated nominal and inflation-protected Treasury securities
7 moved down substantially, on net, over the intermeeting period. The yield on
8 nominal 10-year Treasury securities reached a historically low level
9 immediately following the release of the May employment report. A sizable
10 portion of the decline in longer-term Treasury rates over the period appeared
11 to reflect greater safe-haven demands by investors, along with some increase
12 in market participants' expectations of further Federal Reserve balance sheet
13 actions.⁴⁶

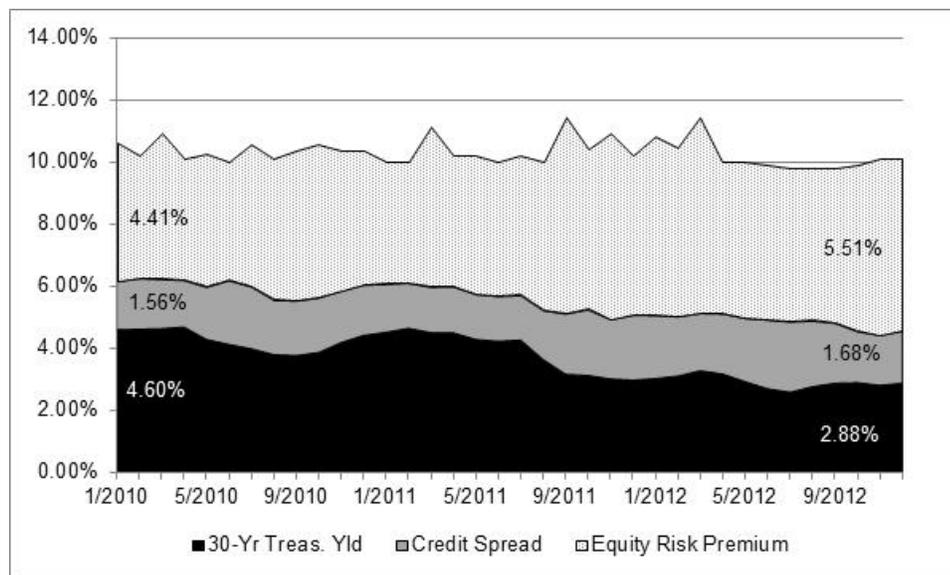
14
15 At issue, then, is whether those two factors, the continuing tendency of investors to seek the
16 relative safety of long-term Treasury securities and the Federal Reserve's policy of lowering
17 long-term Treasury yields, have caused the required return on equity to fall in a fashion similar to
18 the recent decline in interest rates. In large measure, that issue becomes a question of whether the
19 premium required by debt and equity investors also has remained constant as Treasury yields
20 have decreased. To the extent that the risk premium has increased, the higher premium has offset,
21 at least to some degree, the decline in Treasury yields, indicating that the Cost of Equity has not
22 fallen in lock step with the decline in interest rates.

⁴⁶ Minutes of the Federal Open Market Committee June 19–20, 2012, at 4.

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One method of performing that analysis is to analyze recently authorized ROEs for electric utilities on a “build-up” basis. From that perspective, the required market return represents the sum of: (1) long-term Treasury yields; (2) the credit spread (*i.e.*, the incremental return required by debt investors over Treasury yields; and (3) the Equity Risk Premium (*i.e.*, the incremental return required by equity investors over the cost of debt). As shown on Chart 2 (below), that has been the case; both debt and equity investors have required increased risk premiums as long-term Treasury yields have fallen.

Chart 2: Components of Authorized ROE (2010 – 2012)⁴⁷



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11

VII. CAPITAL STRUCTURE

Q. What is the Company’s proposed capital structure?

A. As described in the Direct Testimony of Company Witnesses ChristiAne G. Mason and Dr.

⁴⁷ Sources: Regulatory Research Associates and Bloomberg Professional.

1 Michael R. Schmidt, the Company has proposed a capital structure comprised of 55.00 percent
2 common equity and 45.00 percent long-term debt.

3
4 **Q. Is there a generally accepted approach to developing the appropriate capital structure for a
5 regulated electric utility?**

6 A. Yes, there are a number of generally accepted approaches to developing the appropriate capital
7 structure. The reasonableness of the approach depends on the nature and circumstances of the
8 subject company. In cases where the subject company does not issue its own securities, it may be
9 reasonable to look to the parent's capital structure or to develop a "hypothetical" capital structure
10 based on the proxy group companies or other industry data. Regardless of the approach taken,
11 however, it is important to consider the resulting capital structure in light of industry norms and
12 investor requirements. That is, the capital structure should enable the subject company to
13 maintain its financial integrity, thereby enabling access to capital at competitive rates under a
14 variety of economic and financial market conditions.

15
16 **Q. How does the capital structure affect the Cost of Equity?**

17 A. The capital structure relates to a company's financial risk, which represents the risk that a
18 company may not have adequate cash flows to meet its financial obligations, and is a function of
19 the percentage of debt (or financial leverage) in its capital structure. In that regard, as the
20 percentage of debt in the capital structure increases, so do the fixed obligations for the repayment
21 of that debt. Consequently, as the degree of financial leverage increases, the risk of financial
22 distress (*i.e.*, financial risk) also increases. Since the capital structure can affect the subject

1 company's overall level of risk,⁴⁸ it is an important consideration in establishing a just and
2 reasonable rate of return.

3
4 **Q. Please discuss your analysis of the capital structures of the proxy group companies.**

5 A. I calculated the average capital structure for each of the proxy group companies over the last eight
6 quarters. As shown in Attachment RBH-10, the mean of the proxy group actual capital structures
7 is 50.51 percent common equity and 49.49 percent long-term debt. The common equity ratios
8 range from 31.25 percent to 60.00 percent. Based on that review, it is apparent that the
9 Company's proposed capital structure is generally consistent with the capital structures of the
10 proxy group companies.

11
12 **Q. What is the basis for using average capital components rather than a point-in-time
13 measurement?**

14 A. Measuring the capital components at a particular point in time can skew the capital structure by
15 the specific circumstances of a particular period. Therefore, it is more appropriate to normalize
16 the relative relationship between the capital components over a period of time.

17
18 **Q. What is your conclusion regarding an appropriate capital structure for Granite State?**

19 A. Considering the average actual equity ratio of 50.51 percent and range of 31.25 percent to 60.00
20 percent for the proxy group companies, I believe that Granite State's proposed common equity
21 ratio of 55.00 percent is appropriate as it is consistent with the proxy group companies.

22

⁴⁸ See, Roger A. Morin, New Regulatory Finance, Public Utility Reports, Inc., 2006, at 45-46.

1 **VIII. COST OF DEBT**

2 **Q. What cost of debt has the Company requested in this proceeding?**

3 A. As described in the Direct Testimony of Company Witnesses ChristiAne G. Mason and Dr.
4 Michael R. Schmidt, the Company has proposed a cost of debt of 5.64 percent. That cost rate
5 reflects the interest rate associated with \$15 million of unsecured long-term debt acquired in the
6 transfer of ownership, approximately \$17 million of long-term debt issued in 2012, and a *pro*
7 *forma* adjustment reflecting the issuance of additional long-term debt to continue to support the
8 Company's proposed capital structure of 45.00 percent debt and 55.00 percent equity.⁴⁹

9
10 **Q. Please discuss your analysis of the Company's cost of debt.**

11 A. I calculated the embedded cost of debt for all authorized returns over the January 1, 2012 to
12 January 18, 2013 period. The mean of the embedded cost of debt authorized is 5.79 percent and
13 the median is 5.69 percent. The embedded cost of debt authorized range from 3.46 percent to 8.12
14 percent. Therefore, I believe the Company's proposed cost of debt of 5.64 percent is reasonable
15 and appropriate.

16
17 **IX. CONCLUSIONS AND RECOMMENDATION**

18 **Q. What is your conclusion regarding the Company's Cost of Equity?**

19 A. Based on the results presented in Table 7, I believe that a rate of return on common equity in the
20 range of 10.25 percent to 11.00 percent represents the range of equity investors' required rate of
21 return for investment in electric utilities similar to Granite State in today's capital markets.
22 Within that range, it is my view that an ROE of 10.50 percent is reasonable and appropriate.

⁴⁹ See, Schedule RR-6-1.

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Table 7: Summary of Analytical Results

	<i>Mean Low</i>	<i>Mean</i>	<i>Mean High</i>
Constant Growth DCF			
30-Day Average	7.92%	9.63%	11.35%
90-Day Average	7.90%	9.61%	11.33%
180-Day Average	7.91%	9.62%	11.34%
Multi-Stage DCF			
	<i>Low</i>	<i>Mean</i>	<i>High</i>
30-Day Average	9.32%	10.43%	11.16%
90-Day Average	9.46%	10.40%	11.07%
180-Day Average	9.60%	10.42%	11.06%
Market-to-Book	7.06%	8.47%	10.64%
Supporting Methodologies			
CAPM Results	<i>Sharpe Ratio Derived Market Risk Premium</i>	<i>Bloomberg Derived Market Risk Premium</i>	<i>Capital IQ Derived Market Risk Premium</i>
<i>Average Bloomberg Beta Coefficient</i>			
Current 30-Year Treasury (2.97%)	7.61%	9.89%	9.91%
Near Term Projected 30-Year Treasury (3.15%)	7.79%	10.07%	10.09%
<i>Average Value Line Beta Coefficient</i>			
Current 30-Year Treasury (2.97%)	7.74%	10.07%	10.09%
Near Term Projected 30-Year Treasury (3.15%)	7.92%	10.25%	10.27%
	<i>Low</i>	<i>Mid</i>	<i>High</i>
Bond Yield Risk Premium	10.22%	10.23%	10.77%

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Based on the proposed capital structure of 45.00 percent debt and 55.00 percent equity, the Company's proposed cost of debt of 5.64 percent, and my recommended 10.50 percent Return on Equity, the Company's proposed overall Rate of Return is 8.32 percent (*see* Table 8, below).

1

Table 8: Proposed Overall Rate of Return

Component	Percent of Total	Cost Rate	Weighted Cost Rate
Common Equity	55.00%	10.50%	5.78%
Long Term Debt	45.00%	5.64%	2.54%
Total	100.00%		8.32%

2

3 **Q. Does this conclude your Direct Testimony?**

4 A. Yes, it does.