



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

Docket No. DE 19-064

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

DIRECT TESTIMONY

OF

JOHN COCHRANE

April 30, 2019

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TABLE OF CONTENTS

I.	INTRODUCTION AND BACKGROUND	1
II.	PURPOSE AND OVERVIEW OF TESTIMONY	2
III.	REGULATORY PRINCIPLES.....	5
IV.	PROXY GROUP SELECTION	6
V.	COST OF EQUITY ANALYSIS.....	9
	A. Constant Growth DCF Method.....	12
	B. Multi-stage DCF	16
	C. Capital Asset Pricing Model	22
	D. Analytical Results and Adjustment for Flotation Costs.....	26
VI.	SMALL SIZE PREMIUM AND ROE RECOMMENDATION	30
	A. Small Size Premium.....	30
	B. ROE Recommendation	33
VII.	CAPITAL STRUCTURE.....	33
VIII.	COST OF DEBT	34
IX.	CONCLUSIONS AND RECOMMENDATIONS.....	34

ATTACHMENTS

Attachment	Title
JC-1	Resume of John Cochrane
JC-2	Summary of Results
JC-3	Proxy Group Selection
JC-4	Constant Growth DCF Results
JC-5	Multi-Stage DCF Results
JC-6	Proxy Group Betas
JC-7	Expected Market Return Calculation
JC-8	CAPM Results
JC-9	Flotation Costs
JC-10	Small Size Premium
JC-11	Proxy Group Capital Structure

1 **I. INTRODUCTION AND BACKGROUND**

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

3 A. My name is John Cochrane. I am a Senior Managing Director and head of the Power &
4 Utilities practice at FTI Consulting, Inc. (“FTI”). My business address is 200 State St, 9th
5 Floor, Boston, Massachusetts.

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

7 A. I am submitting testimony on behalf of Liberty Utilities (Granite State Electric) Corp.
8 d/b/a Liberty Utilities (“Granite State” or “the Company”).

9 **Q. Please describe your education and professional experience.**

10 A. I have more than 30 years of experience in utility finance. Prior to joining FTI, I held
11 senior executive positions at National Grid plc (“National Grid”), where I was most
12 recently Executive Vice President of Global Mergers & Acquisitions and Business
13 Development. Prior to holding that position, I was Executive Vice President, Chief
14 Financial Officer, and Treasurer for National Grid’s U.S. business. I also serve or have
15 served as a member of the Board of Directors of several utilities and other companies in
16 the energy sector. I hold a Bachelor’s degree in Biology from Harvard University and an
17 MBA from Northeastern University. A copy of my resume is provided as Attachment
18 JC-1.

19 **Q. Please describe FTI’s Power & Utilities practice.**

20 A. FTI is a worldwide consulting firm dedicated to helping organizations manage change,
21 mitigate risk, and resolve disputes. Our Power & Utilities practice brings these services

1 to firms in regulated and competitive energy industries. The services we provide our
2 utility clients include expert testimony, regulatory advice, support for strategic decision-
3 making, and advice regarding investments and capital allocation. Our team is comprised
4 of former utility executives, regulators, investors, and financial analysts that combine for
5 hundreds of years of experience in the regulated energy space.

6 **Q. Have you previously testified before the Commission?**

7 A. Yes, I have testified before the New Hampshire Public Utilities Commission in Docket
8 Nos. DG 06-107 and DF 92-219. A list of select testimony in proceedings in all
9 jurisdictions is included in Attachment JC-1.

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

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

12 A. The purpose of my testimony is to present evidence and provide recommendations
13 regarding the Return on Equity (“ROE”) the Company should be allowed to earn on the
14 equity portion of its rate base as well as recommendations regarding the Company’s
15 capital costs and capital structure.

16 **Q. Please summarize your conclusions regarding the authorized ROE for the**
17 **Company.**

18 A. Based on the analyses that I describe in this testimony, I conclude that the reasonable
19 range within which the Commission should authorize Granite State’s ROE is between
20 9.32% and 10.03%. I recommend that the Commission authorize the Company to earn an
21 ROE of 10.00%, which is towards the upper end of that range, because of a number of

1 operational and financial risks to which Granite State is exposed that other electric utility
2 companies are not.

3 **Q. Please summarize how you reached those conclusions.**

4 A. My recommendations regarding the reasonable range of ROE are based on quantitative
5 and qualitative analyses I undertook utilizing analytical approaches that are widely
6 accepted for this purpose in New Hampshire and elsewhere. I developed analyses using
7 two variants of the Discounted Cash Flow (“DCF”) method, the Constant Growth DCF
8 method, and the Multi-Stage DCF method, and also used the Capital Asset Pricing Model
9 (“CAPM”) to arrive at my preliminary estimate of a reasonable range of ROEs for
10 Granite State. I then undertook a quantitative analysis to adjust that range to account for
11 the costs that Granite State will incur in the issuance of new capital. Finally, I undertook
12 quantitative and qualitative analyses of the Company’s risk profile and the business
13 environment in which it operates to inform my recommendation that the Commission
14 authorize an ROE for Granite State at the upper end of that reasonable range. A
15 summary of the results from these analyses can be found in Attachment JC-2.

16 **Q. What are your recommendations regarding the Company’s proposed capital
17 structure and cost of debt?**

18 A. I find that the capital structure proposed by Messrs. Greene and Simek, which consists of
19 55% equity and 45% debt, is reasonable and consistent with other utility companies.
20 Regarding the cost of debt, the Company proposes to use its actual net cost of debt of
21 5.97%, which I also find reasonable.

1 **Q. What are your conclusions regarding Granite State’s total rate of return.**

2 A. I conclude that a total Rate of Return (“ROR”) of 8.19% is reasonable, based on an
3 authorized ROE of 10.00%, a weighted debt cost of 5.97%, and a capital structure that
4 includes 55% equity.

5 **Table 1. ROR Summary Calculation**

Cost of equity	10.00%	<i>a</i>
Capital structure equity weight	55.00%	<i>b</i>
Cost of debt	5.97%	<i>c</i>
Capital structure debt weight	<u>45.00%</u>	<i>d</i>
Overall rate of return	8.19%	$e = a*b + c*d$

6
7 **Q. How is the remainder of your testimony organized?**

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

- 9
- 10 • Section III describes the key regulatory principles underlying the estimation of the
cost of capital for a regulated utility;
 - 11 • Section IV describes the selection and composition of a proxy group of utility
12 companies I used to conduct the analyses that underlie my testimony;
 - 13 • Section V details the analyses I undertook to estimate Granite State’s cost of
14 equity;
 - 15 • Section VI describes the risk factors that I believe justify establishing Granite
16 State’s ROE at the upper range of reasonable ROEs;
 - 17 • Section VII discusses my findings regarding the Company’s proposed capital
18 structure;

- 1 • Section VIII discusses my findings regarding the Company’s proposed cost of
- 2 debt; and
- 3 • Section IX describes my conclusions and recommendations.

4 **III. REGULATORY PRINCIPLES**

5 **Q. Please describe the guiding principles to which you adhere in estimating the ROE**
6 **for a regulated utility.**

7 A. The United States Supreme Court established the standards for determining the fairness
8 or reasonableness of a utility’s allowed ROE in *Bluefield Water Works and Improvement*
9 *Co. v. Public Service Commission of Virginia* (“*Bluefield*”)¹ and *Federal Power*
10 *Commission v. Hope Natural Gas Co.* (“*Hope*”).² In those proceedings, the Court
11 established that a regulated utility’s ROE should be sufficient to attract capital and
12 support the company’s credit quality, and that the ROE should be consistent with the
13 returns investors would require in making investments of similar risk.

14 **Q. Did you review any relevant precedents in New Hampshire?**

15 A. Yes, I did. Commission Order No. 24,972 supports the *Hope* and *Bluefield* standards.
16 Specifically, that Order states that the Commission is:

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

¹ *Bluefield Waterworks & Improvement Co. v. Public Service Commission of West Virginia*, 262 U.S. 679 (1923).

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

1 equity capital necessary to provide the assets required for the
2 discharge of the company's responsibility.³

3 **Q. Please summarize what these standards require.**

4 A. Based on these standards, the return authorized in this proceeding should afford Granite
5 State the opportunity to earn a return that is:

- 6 • Adequate to attract capital at reasonable rates, allowing the Company to make the
7 capital investments it requires to provide safe, reliable service;
- 8 • Sufficient to ensure the Company's financial integrity; and
- 9 • Consistent with returns provided by investments in other utilities with comparable
10 risk profiles.

11 **IV. PROXY GROUP SELECTION**

12 **Q. Please briefly describe Granite State.**

13 A. Granite State provides electric-only distribution services to approximately 44,000
14 customers in New Hampshire. The Company is a wholly owned subsidiary of Liberty
15 Utilities Co. ("Liberty"). Liberty is a wholly owned subsidiary of Algonquin Power &
16 Utilities Corp. ("Algonquin"). Algonquin is based in Ontario, Canada, and owns
17 regulated utility companies and renewable generation assets in jurisdictions throughout
18 North America. Algonquin is traded on the Toronto Stock Exchange and the New York
19 Stock Exchange.

³ Order No. 24,972 at 54 (May 29, 2009) (quoting *Appeal of Conservation Law Foundation*, 127 N.H. 606, 635 (1986)).

1 **Q. Why is it necessary to use a proxy group to estimate Granite State's ROE?**

2 A. Granite State is not a publicly-traded company, which makes it impossible to directly
3 observe its cost of equity. Even if it were publicly traded, anomalous or transitory events
4 may mean that its current ROE is not generally reflective of its economic and financial
5 fundamentals or indicative of investor expectations moving forward. For both reasons, it
6 is standard practice to develop a "proxy group" of comparable, publicly-traded
7 companies that can be analyzed and from which inferences regarding Granite State's
8 ROE can be drawn.

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

10 A. Starting with the list of all companies categorized by Value Line as Electric Utilities, I
11 applied the following screening criteria.

12 Companies were included in the proxy group only if:

- 13 • They consistently paid quarterly dividends with no cuts over the past four years;
- 14 • They were covered by at least two industry analysts;
- 15 • They had positive earnings growth estimates from at least two industry analysts;
- 16 • They received at least 50% of their operating revenues from regulated electric
17 operations;
- 18 • They had investment grade long-term issuer ratings from Moody's or Standard &
19 Poors; and
- 20 • They have not been part of a merger or other significant transaction within the
21 past six months.

1 **Q. Have similar criteria been used to select proxy group companies in past proceedings**
2 **before the Commission?**

3 A. Yes, these criteria are similar to those used in past proceedings before the Commission.

4 **Q. Please identify the companies in your proxy group.**

5 A. The screening criteria discussed above is shown in Attachment JC-3 and resulted in a
6 proxy group includes the following 26 companies:

7 **Table 2. Proxy Group**

Company Name	Ticker
Ameren Corp.	AEE
American Electric Power	AEP
Avangrid, Inc.	AGR
ALLETE, Inc.	ALE
Avista Corporation	AVA
CMS Energy Corporation	CMS
Duke Energy Corporation	DUK
Consolidated Edison, Inc.	ED
El Paso Electric Company	EE
Edison International	EIX
Eversource Energy	ES
Hawaiian Electric	HE
IDACORP, Inc.	IDA
Alliant Energy Corporation	LNT
MGE Energy, Inc.	MGEE
NextEra Energy, Inc.	NEE
Northwestern Corporation	NWE
Otter Tail Corporation	OTTR
PNM Resources, Inc.	PNM
Pinnacle West Capital Corporation	PNW
Portland General Electric	POR
PPL Corporation	PPL
Southern Company	SO
Unitil Corp	UTL
WEC Energy Group, Inc.	WEC
Xcel Energy, Inc.	XEL

1 **Q. Why is neither Granite State nor Algonquin included in your proxy group of**
2 **companies?**

3 A. It is typical not to include the company that is the subject of a rate proceeding in the
4 composition of a proxy group in order to avoid any circularity issues that could bias
5 results. In addition, Granite State is not publicly traded nor does it make up the entirety
6 of a publicly-traded company. As the cost of equity is a market-based concept and
7 necessitates the use of publicly-observable data, the proxy group cannot include Granite
8 State and instead consists of publicly traded companies that are similar in business and
9 financial aspects to Granite State.

10 **V. COST OF EQUITY ANALYSIS**

11 **Q. Please explain the relevance of a regulated utility's ROE in the context of setting**
12 **retail electric rates.**

13 A. Utilities are allowed to earn a return on the capital investments they make to provide for
14 safe and reliable operation of their electric systems. Those returns contribute to the
15 utility's cost of service, which are recovered through rates approved by the Commission.
16 Regulators authorize a Rate of Return ("ROR") that utilities are allowed to earn on their
17 investments based on the weighted average cost of debt and cost of equity for
18 investments made. These authorized returns will reimburse investors for the capital they
19 have provided to the utility.

1 **Q. How is a regulated utility's ROE estimated?**

2 A. While a utility's cost of debt can generally be observed directly from market rates paid
3 for newly issued debt, the cost of equity must be estimated using market-based
4 information. Although methods vary, the generally accepted approach for doing so is to
5 identify a group of utility companies with similar risk and operating profiles as the utility
6 in question, apply various methodologies to determine their ROEs, and compile an
7 estimate of the utility's ROE based on the results of those analyses plus any adjustments
8 that are required to account for the specific operating and financial factors applicable to
9 the utility that is the subject of the analysis.

10 **Q. Which methods did you utilize to estimate Granite State's ROE?**

11 A. I utilized three different financial models to analyze the proxy group I identified and
12 estimate the Company's ROE. Those models are the Constant Growth DCF, the Multi-
13 Stage DCF, and the CAPM. I used those results to establish a preliminary range of
14 reasonable ROEs. I then adjusted that range to account for the costs that Granite State
15 incurs when issuing new common equity to fund investments in its system. Finally, I
16 analyzed the impact of the Company's small size as well as current conditions in the
17 capital markets to inform my recommendation that Granite State's ROE be established at
18 the upper end of the reasonable range.

19 **Q. Why did you use three models to estimate Granite State's ROE?**

20 A. It is widely accepted practice in New Hampshire and elsewhere to estimate ROE using
21 multiple models, and then synthesize a recommended range and point estimate from

1 those results, since any model developed will necessarily be beholden to certain
2 assumptions which could, under some conditions, limit the accuracy of the model.
3 Additionally, since the models rely on different data inputs and assumptions, using more
4 than one reduces the potential of some anomalous market result or transient market
5 conditions having an undue influence on results.

6 **Q. Has the Commission recognized the use of more than one analytical approach for**
7 **estimating ROE?**

8 A. Yes, it has done so on numerous occasions. I have reviewed every gas and electric rate
9 case filed before the Commission in the last five years. In each of those proceedings,
10 multiple analytical approaches were used to estimate the filing utility's ROE.

11 **Q. Has the Commission commented on the appropriateness of using DCF models to**
12 **estimate ROE in previous proceedings?**

13 A. Yes, it has. It is my understanding that DCF models are frequently used for this purpose
14 in New Hampshire.

15 **Q. Has the Commission and its Staff commented on the appropriateness of using the**
16 **Constant Growth DCF and Multi-Stage DCF models in previous proceedings?**

17 A. Yes, they have. The Constant Growth DCF model appears to enjoy widespread support
18 from both the Commission and its Staff. Regarding the Multi-Stage DCF model, the
19 Commission indicated in 2004 that, "Staff testimony supports the view that a three-stage

1 version of the DCF represents a valuable refinement to the DCF method of estimating the
2 cost of capital looking forward over the long term. We agree.”⁴

3 **Q. Is the Multi-Stage DCF method appropriate given current conditions in the utility
4 industry and capital markets?**

5 A. Yes, I believe that it is. As I discuss in further detail later in my testimony, the Multi-
6 Stage DCF method provides some flexibility to account for changing market conditions
7 through different growth rates over time. The Constant Growth DCF requires adherence
8 to several assumptions, including a constant earnings growth rate in perpetuity, which
9 may change with market conditions, and the Multi-Stage DCF provides some ability to
10 temper that assumption.

11 **A. Constant Growth DCF Method**

12 **Q. Please describe the Constant Growth DCF approach.**

13 A. The Constant Growth DCF method of estimating a utility’s ROE is based on the theory
14 that a company’s stock price represents the Present Value (“PV”) of all future dividend
15 payments. Dividend payments are assumed to continue at their current level into
16 perpetuity and stock prices can be observed in the market. The discount rate implied by
17 the dividends and the current stock price is equal to the company’s cost of equity. Thus,
18 the theory holds that a company’s stock price is equal to the following:

19
$$P_0 = \frac{D}{ROE - g}$$

⁴ *Verizon New Hampshire*, Order No. 24,265 at 65 (Jan. 16, 2004).

1 where P_0 is the current stock price, D is the current dividend, ROE is equal to the
2 discount rate required to yield the observable stock price given expected dividends, and g
3 is the expected growth rate in dividends. By restating the same equation, ROE can be
4 expressed as:

$$ROE = \frac{D}{P_0} + g$$

5
6 **Q. What assumptions are required by the Constant Growth DCF approach?**

7 A. The Constant Growth DCF approach relies on seven strict assumptions. *First*, dividend
8 payments are required to grow at a single, constant rate into perpetuity. *Second*, the
9 company's earnings are assumed to grow at a single, constant rate into perpetuity. *Third*,
10 the company's book value is assumed to grow at a single, constant ratio into perpetuity.
11 *Fourth*, the dividend payout ratio, which is the ratio between total dividends paid and the
12 net income of the company, is assumed to be held constant into perpetuity. *Fifth*, the
13 company's Price-to-Earnings Ratio ("PE Ratio"), the ratio of a company's stock price to
14 its per-share earnings, is assumed to be held constant into perpetuity. *Sixth*, the current
15 cost of equity is assumed to remain unchanged into perpetuity. *Seventh*, the method
16 requires a discount rate that is greater than the expected earnings growth rate.

17 **Q. Please summarize your approach to estimating ROE using the Constant Growth**
18 **DCF method.**

19 A. For each of the companies in the proxy group, I calculated ROE using the company's
20 current stock price and its current dividend payment, assuming that each of the

1 assumptions I describe above hold. The calculations are based on publicly available data
2 for stock prices and analyst estimates of earnings growth. The ROE estimate for Granite
3 State is based on the average of the ROE estimates for each proxy group company. Low,
4 Mid, and High estimates are developed based on which growth estimates are used, as I
5 describe in detail below.

6 **Q. Please explain the stock price data you used in your calculations.**

7 A. Rather than relying on a single stock closing price, I averaged the closing stock prices
8 over three periods: 30, 90, and 180 trading days. The periods I used for each calculation
9 are shown below:

10 **Table 3. Stock Price Averaging Periods**

Averaging Period	Start Date	End Date
30-day	January 25, 2019	March 8, 2019
90-day	October 26, 2018	March 8, 2019
180-day	June 20, 2018	March 8, 2019

11
12 **Q. Why is it necessary to use different averaging periods?**

13 A. I used the multiple averaging periods to reduce any bias that could be introduced by
14 anomalous market conditions if the stock price were based on the results of a single
15 trading day.

16 **Q. Did you make any adjustments to the dividend yield?**

17 A. Yes. To account for the fact that dividends are paid on a quarterly basis and may be
18 increased at different times, I have adjusted the dividend yield by one-half of the

1 expected long-term growth rate. This adjustment has been common practice both in New
2 Hampshire and elsewhere. In particular, the Federal Energy Regulatory Commission
3 (“FERC”) has stated:

4 For ratemaking purposes, the Commission rearranges the
5 DCF formula to solve for “k”, the discount rate, which
6 represents the rate of return that investors require to invest
7 in a company’s common stock, and then multiplies the
8 dividend yield by the express $(1 + .5g)$ to account for the fact
9 that dividends are paid on a quarterly basis. Multiplying the
10 dividend yield by $(1 + .5g)$ increases the dividend yield by
11 one half of the growth rate and produces what the
12 Commission refers to as the “adjusted dividend yield.”⁵

13 **Q. Please identify the source of the growth expectations assumptions you used in your**
14 **calculations.**

15 A. For each company in the proxy group, I used the latest earnings growth estimate as
16 reported by Yahoo Finance, Value Line, and Zacks. These sources are widely used in
17 regulatory proceedings in New Hampshire and elsewhere.

18 **Q. Please describe the results of your analysis using the Constant Growth DCF method.**

19 A. Using the stock prices from each of the three averaging periods, I developed three ROE
20 estimates, which vary by the earnings growth estimate relied on. My Mid ROE
21 calculation is based on average earnings growth estimates from Zacks, Value Line, and
22 Yahoo Finance. The Low ROE and High ROE calculations use the earnings growth

⁵ Opinion No. 531, 147 FERC ¶ 61,234 at p. 9.

1 estimates that are the lowest and highest, respectively, of the three sources. My
2 calculations are provided in Attachment JC-4 and the results are shown below:

3 **Table 4. Constant Growth DCF Method Calculation Results**

Averaging Period	Low	Mid	High
30-day	8.03%	8.82%	9.75%
90-day	8.10%	8.89%	9.83%
180-day	<u>8.15%</u>	<u>8.93%</u>	<u>9.87%</u>

4
5 I note that the results do not change significantly based on the stock price averaging
6 period utilized. Therefore, I have averaged the results for each of the three averaging
7 periods to calculate the Low, Mid, and High Estimates shown below in Table 5.

8 **Table 5. Average Constant Growth DCF Results**

Low	Mid	High
8.09%	8.88%	9.82%

9
10 **B. Multi-stage DCF**

11 **Q. What other types of DCF analysis did you utilize to estimate Granite State's ROE?**

12 A. I also utilized a Multi-Stage (three stage) DCF method to estimate the ROE.

13 **Q. Please explain the Multi-Stage DCF.**

14 A. Like the Constant Growth DCF, the analytical basis for the Multi-Stage DCF is the
15 assumption that a utility's stock price is equal to the PV of the cash flows that will be
16 received by the stock's holder. The Multi-Stage DCF assumes that those cash flows are
17 received in three different periods. Stage 1 includes cash flows from dividend payments

1 received in years 1 through 5 in the future. Stage 2 includes cash flows from dividend
2 payments received in years 6 through 10. Stage 3 includes cash flows received thereafter.
3 As with my calculations using the Constant Growth DCF method, I estimated Granite
4 State's ROE using the stock prices from the three averaging periods (30-day, 90-day, and
5 180-day) and developed a Low, Mid, and High ROE estimate using each averaging
6 period.

7 **Q. Why did you choose the Multi-Stage DCF method to augment your Constant**
8 **Growth DCF results?**

9 A. As described earlier in my testimony, the Constant Growth DCF relies on a number of
10 strict assumptions, including constant growth in dividend payments, company earnings,
11 and company book value at a single, constant rate into perpetuity as well as the fact that
12 the company's current cost of equity will likewise remain constant into perpetuity. In
13 actuality, these and other factors can change over time. A Multi-Stage DCF model
14 allows for the specification of different growth rates over multiple stages, which reduces
15 the likelihood of establishing Granite State's ROE based on financial metrics that may
16 not be sustainable in the long-term.

17 **Q. How did you estimate the dividend payments in Stage 1?**

18 A. In Stage 1, my estimate of dividend payments are based on the earnings growth estimates
19 from Zacks, Yahoo Finance, and Value Line. For the Mid ROE estimate, I used the
20 average of the three sources. For the Low and High ROE estimates, I used the lowest and
21 highest, respectively, of those three estimates.

1 **Q. How did you estimate the dividend payments in Stage 3?**

2 A. Beginning 11 years into the future, I assume that dividend payments will grow at the
3 same rate as the long-term growth of the economy as a whole, as measured by U.S. Gross
4 Domestic Product (“GDP”). My estimate of long-term GDP growth is based on historical
5 real GDP growth plus an adjustment for expected inflation.

6 **Q. How did you calculate the historical GDP?**

7 A. Using quarterly data from the U.S. Bureau of Economic Analysis as reported by the
8 Federal Reserve Bank of St. Louis, I calculated that over the period 1929 to 2017, the
9 U.S. economy grew at an average rate of 3.22% per year. .

10 **Q. How did you develop your estimate of inflation?**

11 A. I averaged three sources. First, I used the average of the last 180 trading days as of
12 March 11, 2018, of the 10-Year Breakeven Inflation Rate reported by the Federal
13 Reserve Bank of St. Louis. The 10-Year Breakeven Inflation Rate represents a measure
14 of expected inflation derived from 10-Year Treasury constant Maturity Securities.
15 Second, I used the annual growth rate of the Consumer Price Index (“CPI”) from 2028–
16 2050 for all urban consumers as projected by the Energy Information Administration
17 (“EIA”). Third, I used the annual growth rate of the GDP chain-type price index from
18 2028–2050 as reported by the EIA. The inflation measures and the average are shown in
19 Table 6 below.

Table 6. Inflation Assumption

10-year Breakeven Inflation Rate	1.95%
CPI	2.31%
GDP Chain-Type Price Index	2.29%
Average	2.18%

Q. Please summarize your nominal GDP growth estimate.

A. My nominal GDP estimate was developed by combining my estimates of real GDP growth and inflation, each of which are described above. My results are shown in Table 7 below.

Table 7. Long-Term GDP Growth Estimate

Real GDP Growth	3.22%
Inflation	2.18%
Nominal GDP Growth	5.40%

Q. How did you estimate the cash flows received in Stage 2?

A. Earnings Growth in Stage 2 are designed to provide for a gradual transition between Stage 1 and Stage 3. In all cases, there are significant differences between the earnings outlook for Stage 1, which is based on the analysts' earnings outlook, and the long-term GDP outlook. Since there is no reason to believe that there will be a step change in company earnings between years 5 and 6 of the forward-looking period, I assumed that the Stage 2 earnings growth rates would provide a "bridge" between Stages 1 and 3 such that a linear transition occurs in the growth rates between years 5 and 11.

1 An illustrative example is provided below. Here, the company is assumed to have a
2 Stage 1 growth rate of 6.00%. The Stage 3 growth rate is 5.40%, based on the calculation
3 shown in Table 7. Growth rates for years 6-10 provide for a linear transition between
4 Stages 1 and 3.

5 **Table 8. Stage 2 Growth Rates Calculation Illustrative Example**

<i>a</i>	$b=(g-a)/6+a$	$c=(g-a)/6+b$	$d=(g-a)/6+c$	$e=(g-a)/6+d$	$f=(g-a)/6+e$	<i>g</i>
First Stage (Year 5)	Year 6	Year 7	Year 8	Year 9	Year 10	Third Stage (Year 11)
6.00%	5.90%	5.80%	5.70%	5.60%	5.50%	5.40%

6

7 **Q. Does the PV of the cash flows received in Stage 3 assume that the stock is held into**
8 **perpetuity?**

9 A. Not necessarily. The PV of the Stage 3 cash flows is equal to the PV of a series of
10 dividend payments based on the Stage 3 earnings growth rate into perpetuity. In other
11 words, the PV of the Stage 3 cash flows is calculated using the Constant Growth DCF
12 method. As I discuss earlier in my testimony, financial theory indicates that the stock
13 price is equal to the discounted value of the dividend payments. As such, the PV of the
14 Stage 3 cash flows is the same whether the investor sells the stock or holds it into
15 perpetuity.

16 **Q. What are the results of your analysis using the Multi-Stage DCF method?**

17 A. The results of my analysis using the Multi-Stage DCF method are shown in Table 9 and
18 the calculations are provided in Attachment JC-5.

Table 9. Multi-Stage DCF Method Calculation Results

Averaging Period	Low	Mid	High
30-day	8.84%	9.02%	9.24%
90-day	8.91%	9.09%	9.32%
180-day	8.96%	9.14%	9.37%

As was the case with the Constant Growth method, these results do not vary significantly based on the stock price averaging period. Therefore, I based my Low, Mid, and High estimates of Granite State's ROE from the simple average of the three averaging periods. The results are shown below.

Table 10. Multi-Stage DCF Results

Low	Mid	High
8.91%	9.08%	9.31%

Q. What do you conclude about your results from both the Constant Growth and Multi-Stage DCF models?

A. The DCF model results rely on historical averages of abnormally high utility stock prices that result in low dividend yields. In its latest report on the electric utility industry, Value Line notes that:

Even after a pullback in late 2018, most stocks in the Electric Utility Industry are still priced expensively, in our view. Many of the equities are still trading within our 2021-2023 Target Price Range. The industry's average dividend yield is

1 3.5%, and some stocks have yields that aren't significantly
2 higher than the median of all stocks under our coverage.⁶

3 With the expectation that dividend yields will increase,⁷ using current utility stock
4 valuations and low dividend yields will result in an underestimated ROE under the DCF
5 methodology. Therefore, I conclude that it is reasonable to recommend an ROE towards
6 the higher end of the range of results. Additionally, in order to moderate the effect of the
7 DCF models tendency towards understating the ROE when utility stock prices are
8 abnormally high and dividend yields abnormally low, I have also considered results from
9 the CAPM method described below.

10 **C. Capital Asset Pricing Model**

11 **Q. Please summarize the CAPM method.**

12 A. CAPM describes the relationship between the price of a security and the return that
13 investors will require to hold it. The analytical basis is that any security is subject to
14 market risk and that investors will require higher returns for holding riskier assets, all else
15 being equal. In the case of a regulated utility stock, the required return is equal to the
16 ROE. Analysis of the risk profile and market conditions to which the proxy group is
17 exposed using CAPM yields an ROE estimate for Granite State.

18 **Q. Please provide the analytical form of the CAPM.**

19 A. The CAPM is defined as follows:

⁶ Value Line Investment Survey, Electric Utility (West) Industry, January 25, 2019.

⁷ Value Line's projected 3-5 year dividend yields are higher than current dividend yields for 25 of the 27 proxy group companies.

1
$$RR_i = R_f + \beta_i(R_m - R_f)$$

2 where:

3 RR_i is the required return of the investment, which is equal to the ROE;

4 R_f is the risk-free rate;

5 β_i is the beta coefficient of the investment; and

6 R_m is the expected return of the securities market as a whole.

7 **Q. Please explain the meaning and significance of the risk-free rate.**

8 A. Investors require compensation for risk and for the time-value of money; the risk-free
9 rate accounts for the latter. The risk-free rate is set at the return that investors could
10 achieve while exposing themselves to zero risk. It is the minimum return any investor
11 will accept since, by definition, taking on more than zero risk will require compensation
12 beyond this amount. It is typical for the risk-free rate to be estimated using yields on
13 U.S. Treasury bonds.

14 **Q. How did you estimate the risk-free rate?**

15 A. I estimated the risk-free rate by taking the average of the yields on 30-year constant
16 maturity U.S. Treasury securities as reported by the U.S. Department of the Treasury
17 over the last 30 trading days as of March 11, 2018. Using this approach, I estimate the
18 risk-free rate to be 3.03%.

19 **Q. Please explain the meaning and significance of the beta coefficient.**

20 A. The beta coefficient is a measure of a security's systematic, or non-diversifiable, risk. It
21 indicates a stock's riskiness (volatility) compared to that of the market as a whole and is

1 indexed to the latter. If a stock has a beta coefficient of 1.0, it is exactly as risky as the
2 market. A higher coefficient indicates that the stock is riskier than the market and,
3 conversely, a lower coefficient means that the security is less risky than the market.

4 Beta is calculated by analyzing the returns of a security and the returns of the market as a
5 whole over some historical period and is mathematically defined as:

$$\beta_i = \frac{\text{Covariance}(R_i, R_m)}{\text{Variance}(R_m)}$$

7 where β_i is the beta coefficient of the security, R_i is the return of the security, and R_m is
8 the return of the market as a whole. Calculation of the covariance between R_i and R_m
9 measures the degree to which the returns of the security and market returns move
10 together while the variance of R_m measures the degree of volatility in the market.

11 **Q. How did you estimate the beta coefficient?**

12 A. The beta coefficient I use in my CAPM analysis is based on the average of the beta
13 coefficients for the companies in my proxy group, excluding Evergy, Inc. (“Evergy”),
14 which equals 0.57. The proxy group betas are reported by Value Line and are shown
15 below in Table 11 and included as Attachment JC-6.

16 **Table 11. Proxy Group Beta Coefficients**

Company	Beta
Ameren Corp	0.55
American Electric Power	0.55
Avangrid, Inc.	0.30
ALLETE, Inc.	0.65
Avista Corporation	0.65

CMS Energy Corporation	0.55
Duke Energy Corporation	0.50
Consolidated Edison, Inc.	0.40
El Paso Electric Company	0.65
Edison International	0.55
Eversource Energy	0.60
Hawaiian Electric	0.60
IDACORP, Inc.	0.55
Alliant Energy Corporation	0.60
MGE Energy, Inc.	0.60
NextEra Energy, Inc.	0.55
Northwestern Corporation	0.55
Otter Tail Corporation	0.75
PNM Resources, Inc.	0.65
Pinnacle West Capital Corp.	0.55
Portland General Electric	0.60
PPL Corporation	0.70
Southern Company	0.50
Unitil Corp	0.55
WEC Energy Group, Inc.	0.50
Xcel Energy, Inc.	<u>0.50</u>
Average	0.57

1

2 **Q. Please explain the meaning and significance of the expected market return.**

3 A. The primary relevance of the expected market return is that it is used to calculate the
4 Market Risk Premium, which is defined by the term $(R_m - R_f)$. This represents the return
5 that investors can expect from the securities market as a whole above and beyond the
6 return that would be provided by a risk-free investment.

7 **Q. How did you calculate the expected market return?**

8 A. I calculated the expected market return by applying the Constant Growth DCF method
9 described earlier in my testimony to the companies in the S&P 500 Index as reported by

1 Value Line. Using this approach, I estimate that the expected market return is 16.53%.

2 My calculations are provided in Attachment JC-7.

3 **Q. What were the results of your CAPM analysis?**

4 A. Based on the risk-free rate, beta, and market risk premium calculations I describe above,
5 the CAPM method indicates that Granite State's ROE is 10.66%, as shown below in
6 Table 12 and in Attachment JC-8.

7 **Table 12. CAPM Results**

Risk-free rate	3.03%	<i>a</i>
Beta	0.57	<i>b</i>
Expected market return	16.53%	<i>c</i>
Market risk premium	13.49%	$d = c - a$
ROE	10.66%	$e = a + b * d$

8
9 **D. Analytical Results and Adjustment for Flotation Costs**

10 **Q. Briefly summarize your results using the two DCF and CAPM methods.**

11 A. As I previously described, using the Constant Growth DCF method, I calculated
12 estimates of Granite State's ROE that range from 8.09% to 9.82%. Using the Multi-
13 Stage DCF method, I calculated estimates of ROE that range from 8.91% to 9.31%.
14 Using the CAPM method, I estimate that Granite State's ROE is 10.66%.

15 **Q. How have you aggregated the estimates you developed using the three models.**

16 A. I aggregated them using simple averaging. As shown below in Table 13, I developed
17 preliminary Low, Mid, and High ROE estimates using the three methods by averaging
18 the results of the Constant Growth DCF, the Multi-Stage Growth DCF, and the CAPM.

1 The averages yield a range of preliminary ROE estimates for Granite State of 9.22% to
2 9.93%.

3 **Table 13. Aggregation of Preliminary Analytical Results**

	Low	Mid	High
Constant Growth DCF	8.09%	8.88%	9.82%
Multi-Stage DCF	8.91%	9.08%	9.31%
CAPM	<u>10.66%</u>	<u>10.66%</u>	<u>10.66%</u>
Average	9.22%	9.54%	9.93%

4
5 **Q. Have you made any adjustments to your preliminary range?**

6 A. Yes, I have. I have incorporated a small adder to account for security flotation costs to
7 my estimate.

8 **Q. What are security flotation costs?**

9 A. Flotation costs are expenses that companies incur when they issue new common stock.
10 Flotation costs include underwriting, legal expenses, issuance preparation, and other
11 expenses that companies incur when they issue new securities.

12 **Q. Should flotation costs be recovered through ROE rather than through operating
13 expenses?**

14 A. Yes, they should. A utility's cost to issue new stock is part of its capital rather than
15 operating costs. If a company cannot recover its flotation costs through ROE, its actual
16 ROE will be less than those required by investors to own the stock. This will, in turn,
17 impair the company's ability to attract the capital required to operate a safe and reliable
18 system. This situation could become particularly problematic if other utilities with whom

1 the Company competes to attract capital are allowed recovery of their flotation costs
2 while Granite State is not.

3 **Q. Are flotation costs accounted for in the DCF and CAPM models you used to develop**
4 **the preliminary estimates shown in Table 13?**

5 A. No, they are not. The DCF and CAPM models are designed to estimate the returns that
6 an investor would require for holding a stock based on expected dividend payments (in
7 the case of the DCF models) and/or has a certain risk profile (in the case of the CAPM).
8 For purposes of this proceeding, that required return is used as a proxy for the Company's
9 ROE since the authorized return must match investor requirements in order for Granite
10 State to attract capital. Because neither the DCF nor the CAPM models are primarily
11 designed to estimate the ROE for a regulated utility, neither take flotation costs into
12 consideration.

13 **Q. How did you estimate Granite State's flotation cost adjustment?**

14 A. I estimated Granite State's flotation costs by examining the costs of issuing equity
15 incurred by the proxy group companies and Algonquin in their two most recent common
16 equity issuances. After calculating the average flotation costs for the proxy group and
17 Algonquin, I adjusted the Constant Growth DCF model to incorporate a dividend yield
18 that would allow investors to recover costs associated with the issuance of equity. The
19 resulting dividend yield is calculated by dividing the current dividend yield by one minus
20 the weighted average flotation costs of the proxy group companies. The difference
21 between the resulting ROE from the adjusted Constant Growth DCF and the unadjusted

1 Constant Growth DCF is the flotation cost adjustment. My calculations can be found in
2 Attachment JC-9.

3 **Q. What is your estimate of the appropriate adder to Granite State's ROE estimate to**
4 **cover flotation costs?**

5 A. Using this method, I estimate that the ROE adder required to cover flotation costs is
6 0.10%.

7 **Q. Please update your preliminary ROE range to account for flotation costs.**

8 A. In Table 14, below, I add the flotation costs to the preliminary ROE estimates I
9 previously described.

10 **Table 14. ROE Range**

	Low	Mid	High
Preliminary estimate	9.22%	9.54%	9.93%
Flotation costs	<u>0.10%</u>	<u>0.10%</u>	<u>0.10%</u>
ROE estimate	9.32%	9.64%	10.03%

11

12 **Q. Do these calculations support the range of reasonable ROEs for Granite State?**

13 A. Yes, they do. Based on the information shown in Table 14, I conclude that Granite
14 State's authorized ROE should fall within the reasonable range of 9.32% to 10.03%.

15 **Q. Is the midpoint in the range your recommendation for Granite State's authorized**
16 **ROE?**

17 A. No, it is not. There are multiple factors related to Granite State's risk profile as well as
18 current conditions in capital markets that lead me to conclude that establishing Granite

1 State's ROE at or near the midpoint of the range will not allow it to attract sufficient
2 capital to maintain its financial integrity and fund a safe and reliable system.

3 **VI. SMALL SIZE PREMIUM AND ROE RECOMMENDATION**

4 **Q. Please explain the factors that support your conclusion that Granite State's ROE**
5 **should be established towards the high end of the range of reasonable ROEs you**
6 **previously described.**

7 A. Granite State is considerably smaller than the utilities in the proxy group, a situation that
8 creates risk for the Company's investors for which they will need to be compensated with
9 a higher return.

10 **A. Small Size Premium**

11 **Q. Please explain why smaller utilities are riskier than larger ones.**

12 A. There is a broad body of evidence supporting the existence of a "firm size effect" on
13 firms in general, and utilities in particular, that requires smaller companies to provide
14 higher returns than larger companies in the same industries.⁸ Smaller electric utilities
15 have smaller customer bases, have fewer financial resources, and are less diversified in
16 terms of customers and geography.⁹ These challenges increase the investors' risks of
17 owning securities in small companies which, in turn, requires them to pay a higher return
18 in order to attract capital.

⁸ Shannon Pratt and Roger Grabowski, *Cost of Capital: Applications and Examples*, 3rd Edition, New Jersey, John Wiley & Sons, 2008 at Chapter 12; Duff & Phelps, *2018 Cost of Capital: Annual US Guidance and Examples*, 2018 at Chapter 4 pp. 1-7; Rolf W. Banz, "The Relationship between Return and Market Value of Common Stocks", *Journal of Financial Economics* (March 1981) at pp. 3-18.

⁹ Duff & Phelps, *2018 Cost of Capital: Annual US Guidance and Examples*, 2018 at Chapter 4 p. 2.

1 **Q. How does Granite State compare in size to the other utilities in the proxy group?**

2 A. The Company's operations are significantly smaller than those of the proxy group
3 companies. As shown in Attachment JC-10, Granite State had less than half (42%) of the
4 customers of the smallest company by customer count in the proxy group, and only 3% of
5 the median number of customers. Granite State is also much less well capitalized than
6 the other proxy group companies. Attachment JC-10 shows the actual market
7 capitalization for the proxy group companies based on recent data and estimates the
8 implied market capitalization for Granite State.

9 **Q. How did you estimate Granite State's capitalization?**

10 A. Because the Company is not a standalone publicly-traded entity, I have estimated its
11 market capitalization by applying the median market-to-book ratio of the proxy group
12 companies to Granite State's equity of \$66.1 million.¹⁰ The resulting implied market
13 capitalization for Granite State is approximately \$139.5 million, or less than 1% of the
14 median market capitalization for the proxy group companies.

15 **Q. What did you conclude regarding a small size premium for Granite State's ROE?**

16 A. By calculating an implied market capitalization for the Company, I was able to evaluate
17 the impact of Granite State's small size on its ROE relative to the proxy group
18 companies. In its Cost of Capital Navigator, Duff & Phelps calculate size premia
19 associated with deciles of market capitalizations, as well as categorizations of Mid Cap,

¹⁰ Shareholder equity was calculated by applying the Company's proposed equity ratio of 55% to its rate base of \$120.2 million as of the end of 2018.

1 Low Cap, and Micro Cap.¹¹ As shown in Attachment JC-10, both the mean market
2 capitalization of the proxy group companies of \$17.6 billion and the median market
3 capitalization of \$14.4 billion fall into the second decile, corresponding to a size premium
4 of approximately 0.52%. Granite State's implied market capitalization falls in the tenth
5 decile, which includes market capitalizations up to \$321.6 million, and also in the Micro
6 Cap category, which includes market capitalizations up to \$727.8 million. According to
7 Duff & Phelps data, Granite State would merit a size premium of between 3.39% and
8 5.22%, which is 2.87% to 4.70% higher than the size premium for the mean and median
9 of the proxy group.

10 **Q. Do you propose to adjust your reasonable range to account for the size premium?**

11 A. No, I do not. Estimating the size premium is a complex analysis that lacks the
12 transparency of the calculations on which I relied for other aspects of my testimony.
13 While it is clear that Granite State is exposed to the small size premium, the magnitude of
14 the impact of this influence is a matter of debate in the academic literature and limitations
15 regarding data availability make the estimation less robust. I have therefore used the
16 results of the size premium analysis to inform my recommendation that Granite State's
17 authorized ROE should be set at the high end of the reasonable range I previously
18 described. I view this as a conservative approach.

¹¹ Duff & Phelps defines Mid Cap companies as companies with market capitalizations between \$2,996 million and \$13,455.8 million, Low Cap companies as companies with market capitalizations between \$730 million and \$2,992.3 million, and Micro Cap companies as companies with market capitalizations between \$2.5 million and \$727.8 million. Granite State falls in the Micro Cap category, while the majority of companies in the proxy group are larger than the Mid Cap range and tend to fall in the first and second deciles of market capitalization (between \$13,513 million and \$1,073,390.6 million).

1 **Q. Is it important to account for the small size premium in establishing ROE?**

2 A. Yes, it is. Granite State competes with other utilities to attract the capital it needs to
3 maintain its financial integrity and fund a safe and reliable system. Because its small size
4 makes it a riskier investment than other utilities, it will need to offer enhanced returns in
5 order to remain an attractive investment.

6 **B. ROE Recommendation**

7 **Q. Given the impact of the small size premium as well as current conditions in capital
8 markets, what is your recommendation regarding Granite State's authorized ROE.**

9 A. I recommend that Granite State be authorized to earn an ROE of 10.00% which, for
10 reasons I discuss, is at the upper end of the reasonable range of ROEs that I established
11 using the analyses that support my testimony.

12 **VII. CAPITAL STRUCTURE**

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

14 A. As described in the testimony of Messrs. Greene and Simek, the Company has proposed a
15 capital structure of 55% common equity and 45% debt.

16 **Q. What is the Company proposing to include for debt in its capital structure?**

17 A. As described by Messrs. Greene and Simek, 45% of the capital structure is comprised of
18 long-term debt.

1 **Q. Have you compared this proposed capital structure to the other companies in the**
2 **proxy group?**

3 A. Yes, I have. I calculated the average capital structure for the proxy group companies
4 over the past five years and compared it to Granite State's proposed capital structure. As
5 shown in Attachment JC-11, over this period, the capital structure of the proxy group
6 was, on average, comprised of approximately 51% common equity and 49% debt. Over
7 that same period, the maximum average equity weight for the proxy group companies
8 was approximately 77% while the minimum was approximately 32%.

9 **Q. What is your conclusion regarding the Company's proposed capital structure?**

10 A. I conclude that the Company's proposed capital structure is reasonable.

11 **VIII. COST OF DEBT**

12 **Q. What is the Company's proposed cost of debt?**

13 A. As described by Messrs. Greene and Simek, the Company proposes a cost of debt of
14 5.97%.

15 **Q. What is your conclusion regarding the Company's proposed cost of debt?**

16 A. As described in the Company's testimony, the proposed cost of debt is based on Granite
17 State's actual cost of debt. I conclude that it is reasonable.

18 **IX. CONCLUSIONS AND RECOMMENDATIONS**

19 **Q. Please summarize your conclusions**

20 A. I have four primary conclusions. *First*, I conclude that the Company's ROE should fall
21 between the range of 9.32% and 10.03%. *Second*, I conclude that the authorized ROE

1 should be established on the high side of the range given the risks associated with Granite
2 State's small size and current conditions in the capital markets. *Third*, I conclude that the
3 Company's proposed capital structure is reasonable. *Fourth*, I conclude that the
4 Company's proposed cost of debt is reasonable.

5 **Q. Please summarize your recommendations.**

6 A. I recommend that the Commission authorize an ROE for Granite State of 10.00%, that it
7 accept the Company's proposed capital structure and debt costs, and that it authorize a
8 total ROR of 8.19%.

9 **Q. Does this conclude your testimony?**

10 A. Yes.

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