



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

Docket No. DG 19-161

Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty Utilities
Distribution Service Rate Case

DIRECT TESTIMONY

OF

JOHN COCHRANE

November 27, 2019

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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 (EnergyNorth Natural Gas) Corp.
8 d/b/a Liberty Utilities (“EnergyNorth” 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 Commission in several proceedings, most recently in
8 DE 19-064. A list of select testimony in proceedings in other jurisdictions is included in
9 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 EnergyNorth’s ROE is between
20 8.76% and 10.29%. 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.

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

2 A. My recommendations regarding the reasonable range of ROE are based on quantitative
3 and qualitative analyses I undertook utilizing analytical approaches that are widely
4 accepted for estimating a utility's cost of capital in New Hampshire and elsewhere. I
5 developed analyses using two variants of the Discounted Cash Flow ("DCF") method, the
6 Constant Growth DCF method and the Multi-Stage DCF method, and I also used the
7 Capital Asset Pricing Model ("CAPM") to arrive at my preliminary estimate of a
8 reasonable range of ROEs for EnergyNorth. I then undertook a quantitative analysis to
9 adjust that range to account for the costs that EnergyNorth will incur in the issuance of
10 new capital. Finally, I undertook quantitative and qualitative analyses of the Company's
11 risk profile, including a small size premium, and the business environment in which it
12 operates to inform my recommendation that the Commission authorize an ROE for
13 EnergyNorth of 10.00%, which is towards the upper end of my reasonable range. A
14 summary of the results from these analyses can be found in Attachment JC-2.

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

17 A. I find that the Company's current capital structure, which consists of 50.00% equity and
18 50.00% long-term debt is reasonable and consistent with other utility companies.
19 Regarding the cost of debt, the Company proposes to use its actual net cost of debt of
20 4.417% for long-term debt, which I also find reasonable.

Q. What are your conclusions regarding EnergyNorth's total rate of return?

A. I conclude that a total Rate of Return ("ROR") of 7.21% is reasonable, based on an authorized ROE of 10.00%, a long-term debt cost of 4.417%, and a capital structure that includes 50.00% equity.

Table 1. ROR Summary Calculation

Cost of Equity	10.00%	<i>a</i>
Capital structure equity weight	50.00%	<i>b</i>
Cost of long-term debt	4.417%	<i>c</i>
Capital structure long-term debt weight	50.00%	<i>d</i>
Overall rate of return	7.21%	$g = a*b + c*d$

Q. How is the remainder of your testimony organized?

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

- Section III describes the key regulatory principles underlying the estimation of the cost of capital for a regulated utility;
- Section IV describes the selection and composition of a proxy group of utility companies I used to conduct the analyses that underlie my testimony;
- Section V details the analyses I undertook to estimate EnergyNorth's cost of equity;
- Section VI describes the risk factors that I believe justify establishing EnergyNorth's ROE at the upper range of reasonable ROEs;
- Section VII discusses my findings regarding the Company's proposed capital structure;

- Section VIII discusses my findings regarding the Company's proposed cost of debt; and
- Section IX summarizes my conclusions and recommendations.

III. REGULATORY PRINCIPLES

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

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

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

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

[B]ound to set a rate of return that falls within a zone of reasonableness, neither so low to result in a confiscation of company property, nor so high as to result in extortionate charges to customers. A rate falling within the zone should, 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).

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

Q. Please summarize what these standards require.

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

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

IV. PROXY GROUP SELECTION

Q. Please briefly describe EnergyNorth.

A. EnergyNorth provides gas distribution services to approximately 94,000 customers in New Hampshire. The Company is a wholly owned subsidiary of Liberty Utilities Co. ("Liberty"). Liberty is a wholly owned subsidiary of Algonquin Power & Utilities Corp. ("Algonquin"). Algonquin is based in Ontario, Canada, and owns regulated utility companies and renewable generation assets in jurisdictions throughout North America. Algonquin is traded on the Toronto Stock Exchange and the New York 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 EnergyNorth's ROE?**

2 A. EnergyNorth 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 EnergyNorth'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 Gas Utilities, I
11 applied the following screening guidelines.

12 Companies were generally included in the proxy group if:

- 13 • They received at least 60% of their operating income or net income from
14 regulated gas operations;
- 15 • They had investment-grade issuer ratings from either Standard & Poors ("S&P")
16 or Moodys;
- 17 • They consistently paid quarterly dividends with no cuts over the past four years;
- 18 • They were covered by at least two industry analysts;
- 19 • They had positive earnings growth estimates from at least two industry analysts;
- 20 • They have not been part of a merger or other significant transaction within the
21 past six months.

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

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

Q. Please identify the companies in your proxy group.

A. The proxy group includes the following eight companies:

Table 2. Proxy Group

Company Name	Stock Ticker
Atmos Energy	ATO
Chesapeake Utilities	CPK
NiSource Inc.	NI
New Jersey Resources	NJR
ONE Gas, Inc.	OGS
South Jersey Industries	SJI
Spire, Inc.	SR
Southwest Gas	SWX

Q. Do any of the companies shown in Table 2 not meet every aspect of your screening guidelines?

A. Yes, Chesapeake Utilities is not publicly rated by either Moodys or S&P. However, it has a Value Line Financial Strength rating of A, which is comparable to or higher than the rest of the proxy group companies. I have therefore included it in the proxy group.

1 **Q. Were there any companies that met each aspect of your screening guidelines that**
2 **you excluded from the proxy group?**

3 A. Yes. NW Natural meets every criteria of the guidelines, but Value Line reports a
4 projected Earnings Per Share (“EPS”) growth rate of 27% for the company, which
5 projection is much higher than the growth rates projected by the other data sources I used.
6 As I discuss later in my testimony, EPS for proxy group members is an important input to
7 my estimate of the reasonable ROE range and a very high EPS projection for any
8 constituent company could have a potentially disproportional influence on my final
9 recommendations. I have therefore excluded NW Natural from the proxy group.

10 **Q. Why is neither EnergyNorth nor Algonquin included in your proxy group of**
11 **companies?**

12 A. It is typical to not include the firm that is the subject of a rate proceeding in the
13 composition of a proxy group in order to avoid any circularity issues that could bias
14 results. In addition, EnergyNorth is not publicly traded nor does it make up the entirety
15 of a publicly-traded company. Because the cost of equity is a market-based concept and,
16 therefore, readily observable and accessible data must be used, the proxy group cannot
17 include EnergyNorth and instead consists of publicly-traded companies that are similar in
18 business and financial risks to EnergyNorth.

1 **V. COST OF EQUITY ANALYSIS**

2 **Q. Please explain the relevance of a regulated utility's ROE in the context of setting**
3 **retail gas rates.**

4 **A.** Utilities are allowed to earn a return on the capital investments they make to provide for
5 safe and reliable operation of their natural gas systems. Those returns contribute to the
6 utility's cost of service, which are recovered through rates approved by the Commission.
7 Regulators authorize a ROR that utilities are allowed to earn on their investments based
8 on the weighted average cost of debt and cost of equity for investments made. These
9 authorized returns will reimburse investors for the capital they have provided to the
10 utility.

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

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

1 **Q. Which methods did you utilize to estimate EnergyNorth's ROE?**

2 A. I utilized three different financial models to analyze the proxy group and estimate the
3 Company's ROE. Those models are the Constant Growth DCF, the Multi-Stage DCF,
4 and the CAPM. I used those results to establish a preliminary range of reasonable ROEs.
5 I then adjusted that range to account for the costs that EnergyNorth incurs when issuing
6 new common equity to fund investments in its system.

7 **Q. Why did you use three models to estimate EnergyNorth's ROE?**

8 A. It is widely accepted practice in New Hampshire and elsewhere to estimate ROE using
9 multiple models, and then synthesize a recommended range and point estimate from
10 those results, since any given model will necessarily be beholden to certain assumptions
11 which, under some conditions, could limit the accuracy of the model. Additionally, since
12 the models rely on different data inputs and assumptions, using more than one reduces
13 the potential of some anomalous market result or transient market conditions having an
14 undue influence on results.

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

17 A. Yes, it has done so on numerous occasions. In each of the gas and electric rate cases filed
18 before the Commission in the last five years, multiple analytical approaches were used to
19 estimate the filing utility's ROE.

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

3 A. Yes, they have. The Constant Growth DCF model appears to have widespread support
4 from both the Commission and its Staff. Regarding the Multi-Stage DCF model, the
5 Commission indicated in 2004 that, “Staff testimony supports the view that a three-stage
6 version of the DCF represents a valuable refinement to the DCF method of estimating the
7 cost of capital looking forward over the long term. We agree.”⁴

8 **Q. Did you use the three-stage version of the DCF in your analysis?**

9 A. Yes, I did.

10 **A. Constant Growth DCF Method**

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

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

18
$$P_0 = \frac{D}{ROE - g}$$

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:

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

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

8 A. The Constant Growth DCF method relies on the assumption that a company's dividend
9 payments, earnings, and book value will grow at a constant rate, and that its current cost
10 of equity, its dividend payout ratio, the ratio between a company's total dividend
11 payments to its net income, and its Price-Earnings Ratio ("PE Ratio"), which is the ratio
12 of its stock price to its earnings, will all remain constant. The Constant Growth DCF
13 method also requires a discount rate that is greater than the expected earnings growth
14 rate. Assuming that each of these assumptions hold true, I calculated the ROE for each of
15 the companies in the proxy group using publicly available data for stock prices and
16 analyst estimates of earnings growth. The ROE estimate for EnergyNorth is based on the
17 average of the ROE estimates for each proxy group company. Low, Mid, and High
18 estimates are developed based on which growth estimates are used, as I describe in detail
19 below.

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

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

Table 3. Stock Price Averaging Periods

Averaging Period	Start Date	End Date
30-day	August 7, 2019	September 18, 2019
90-day	May 13, 2019	September 18, 2019
180-day	January 2, 2019	September 18, 2019

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

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

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

A. Yes. To account for the fact that dividends are paid on a quarterly basis and may be increased at different times, I have adjusted the dividend yield by one-half of the expected long-term growth rate. This adjustment has been common practice both in New Hampshire and elsewhere. In particular, the Federal Energy Regulatory Commission (“FERC”) has stated:

For ratemaking purposes, the Commission rearranges the DCF formula to solve for “k”, the discount rate, which represents the rate of return that investors require to invest in a company’s common stock, and then multiplies the

dividend yield by the express $(1 + .5g)$ to account for the fact that dividends are paid on a quarterly basis. Multiplying the dividend yield by $(1 + .5g)$ increases the dividend yield by one half of the growth rate and produces what the Commission refers to as the “adjusted dividend yield.”⁵

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

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

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

A. Using the stock prices from each of the three averaging periods, I developed three ROE estimates, which vary by the earnings growth estimate relied on. My Mid ROE calculation is based on average earnings growth estimates from Zacks, Value Line, and Yahoo Finance. The Low ROE and High ROE calculations use the earnings growth estimates that are the lowest and highest, respectively, of the three sources. My calculations are provided in Attachment JC-2 and the results are shown below:

Table 4. Constant Growth DCF Method Calculation Results

Averaging Period	Low	Mid	High
30-day	7.55%	9.20%	11.35%
90-day	7.54%	9.19%	11.33%
180-day	7.63%	9.28%	11.42%

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

I have averaged the results for each of the three averaging periods to calculate the Low, Mid, and High Estimates shown below in Table 5.

Table 5. Average Constant Growth DCF Results

Low	Mid	High
7.57%	9.22%	11.36%

B. Multi-stage DCF

Q. What other types of DCF analysis did you utilize to estimate EnergyNorth's ROE?

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

Q. Please explain the Multi-Stage DCF.

A. Like the Constant Growth DCF, the analytical basis for the Multi-Stage DCF is the assumption that a utility's stock price is equal to the PV of the cash flows that will be received by the stock's holder. The Multi-Stage DCF assumes that those cash flows are received in three different periods. Stage 1 includes cash flows from dividend payments received in years 1 through 5 in the future. Stage 2 includes cash flows from dividend payments received in years 6 through 10. Stage 3 includes cash flows received thereafter. As with my calculations using the Constant Growth DCF method, I estimated EnergyNorth's ROE using the stock prices from the three averaging periods (30-day, 90-day, and 180-day) and developed a Low, Mid, and High ROE estimate using each averaging period. As I describe earlier in my testimony, the use of Multi-Stage DCF in addition to other models is standard practice in New Hampshire and elsewhere, and the

1 use of a Multi-Stage DCF that includes three stages has specifically been recommended
2 by the Commission for the estimation of utility ROEs.

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

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

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

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

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

14 A. Using quarterly data from the U.S. Bureau of Economic Analysis as reported by the
15 Federal Reserve Bank of St. Louis, I calculated that over the period 1929 to 2018, the
16 U.S. economy grew at an average rate of 3.22% per year.

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

18 A. I averaged three sources. First, I used the average of the last 180 trading days as of
19 August 18, 2019, of the 10-Year Breakeven Inflation Rate reported by the Federal
20 Reserve Bank of St. Louis. The 10-Year Breakeven Inflation Rate represents a measure
21 of expected inflation derived from 10-Year Treasury constant Maturity Securities.

Second, I used the annual growth rate of the Consumer Price Index (“CPI”) from 2028–2050 for all urban consumers as projected by the Energy Information Administration (“EIA”). Third, I used the annual growth rate of the GDP chain-type price index from 2028–2050 as reported by the EIA. The inflation measures and the average are shown in Table 6 below.

Table 6. Inflation Assumption

10-year Breakeven Inflation Rate	1.75%
CPI	2.31%
GDP Chain-Type Price Index	2.29%
Average	2.12%

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	2.12%
Nominal GDP Growth	5.34%

Q. How did you estimate earnings growth for 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.

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

Table 8. Stage 2 Growth Rates Calculation Illustrative Example

a	$b=(g-a)/6+a$	$c=(g-a)/6+b$	$d=(g-a)/6+c$	$e=(g-a)/6+d$	$f=(g-a)/6+e$	g
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%

Q. Does setting the Stage 3 growth to your GDP outlook into perpetuity imply that an investor holding a company’s stock would hold it into perpetuity?

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

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

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

Table 9. Multi-Stage DCF Method Calculation Results

Averaging Period	Low	Mid	High
30-day	8.06%	8.38%	8.85%
90-day	8.04%	8.36%	8.83%
180-day	8.14%	8.47%	8.95%

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 from the simple average of the three averaging periods. The results are shown below.

Table 10. Multi-Stage DCF Results

Low	Mid	High
8.08%	8.40%	8.88%

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

A. The DCF model relies on historical averages of high utility stock prices and dividend yields. Over the past several months, dividend yields have been well below historical norms, largely because of broader market and economic conditions. Value Line notes that:

1 Stocks of companies within Value Line's Natural Gas Utility
2 Industry have performed fairly well, in general, during the
3 past few months. It seems those price movements can be
4 traced, to some degree, to investor interest in these shares'
5 appealing, reliable dividends. Indeed, the payouts have
6 provided a measure of much-needed stability during this
7 turbulent period for the financial markets (reflecting, among
8 other things, concerns about United States/China trade
9 tensions and uncertainty regarding the manner by which the
10 United Kingdom's upcoming exit from the European Union
11 will take place). Another driver of some of these equities has
12 been decent near-term earnings prospects, supported by such
13 factors as new rates and a growing customer base.⁶

14 Using current utility stock valuations and low dividend yields as a result of adverse and
15 potentially transitory market conditions will result in an underestimated ROE under the
16 DCF methodology. This is one of the reasons why I recommend an ROE towards the
17 higher end of the range of results. Additionally, in order to moderate the effect of the
18 DCF models tendency towards understating the ROE when utility stock prices are
19 abnormally high and dividend yields abnormally low, I have also considered results from
20 the CAPM method described below.

21 **C. Capital Asset Pricing Model**

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

23 A. CAPM describes the relationship between the price of a security and the return that
24 investors will require to hold it. The analytical basis is that any security is subject to
25 market risk and that investors will require higher returns for holding riskier assets, all else
26 being equal. In the case of a regulated utility stock, the required return is equal to the

⁶ Value Line Investment Survey, "Natural Gas Utility", August 30, 2019.

1 ROE. Analysis of the risk profile and market conditions to which the proxy group is
2 exposed using CAPM yields an ROE estimate for EnergyNorth.

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

4 A. The CAPM is defined as follows:

$$5 \quad RR_i = R_f + \beta_i(R_m - R_f)$$

6 where:

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

8 R_f is the risk-free rate;

9 β_i is the beta coefficient of the investment; and

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

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

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

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

19 A. I estimated the risk-free rate by taking the average of the yields on 30-year constant
20 maturity U.S. Treasury securities as reported by the U.S. Department of the Treasury
21 over recent trading periods. Specifically, I averaged the yields on the 30-year treasuries

for each of 30, 90, and 180 trading days, with each period ending as of September 18, 2019. The results of that analysis are shown below:

Table 11. Average Yields of 30-Year U.S. Treasuries

Period	Average
30-day Average	2.11%
90-day Average	2.44%
180-day Average	2.71%

Q. Why did you use multiple averaging periods to estimate the treasury yields?

A. In recent months, yields on U.S. Treasuries have fallen to unusually low levels, which likely reflects investors' concerns about the global economic outlook and their resulting preferences for low-risk securities. Such concerns can be driven by uncertainties about global trade, political considerations, and other factors, many of which may be short-lived. Because of the recent volatility, I chose to utilize multiple averaging periods to estimate the treasury yield input to my CAPM calculations to reduce the possibility of biasing my results by relying on outcomes from what may be transitory market conditions.

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

A. The beta coefficient is a measure of a security's systematic, or non-diversifiable, risk. It indicates a stock's riskiness (volatility) compared to that of the market as a whole and is indexed to the latter. If a stock has a beta coefficient of 1.0, it is exactly as risky as the market. A higher coefficient indicates that the stock is riskier than the market and, conversely, a lower coefficient means that the security is less risky than the market.

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

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

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

Q. How did you estimate the beta coefficient?

A. The beta coefficient I use in my CAPM analysis is based on the average of the beta coefficients for the companies in my proxy group, which equals 0.66. The proxy group betas are reported by Value Line and are shown below in Table 12 and included as Attachment JC-6.

Table 12. Proxy Group Beta Coefficients

Company	Beta
Atmos Energy	0.60
Chesapeake Utilities	0.65
NiSource Inc.	0.55
New Jersey Resources	0.70
ONE Gas, Inc.	0.65
South Jersey Industries	0.80
Spire, Inc.	0.65
Southwest Gas	<u>0.70</u>
Average	0.66

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

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

Q. How did you calculate the expected market return?

A. I calculated the expected market return by applying the Constant Growth DCF method described earlier in my testimony to the companies in the S&P 500 Index as reported by Value Line. Using this approach, I estimate that the expected market return is 14.42%. My calculations are provided in Attachment JC-7. The expected market risk premiums that result from reducing the expected market return by the risk-free rates I estimated for each of the three averaging periods is shown below:

Table 13. Calculation of Market Risk Premium

	30-day Average	90-day Average	180-day Average
Expected Market Return	14.42%	14.42%	14.42%
Risk-Free Rate	2.11%	2.44%	2.71%
Market Risk Premium	12.31%	11.98%	11.71%

Q. What were the results of your CAPM analysis?

A. Based on the three risk-free rate estimates I developed as well as the beta, and market risk premium calculations I describe above, the CAPM method indicates that EnergyNorth's ROE is between 10.26% and 10.47%, with an average ROE of 10.37% based on the three

risk-free rates I used. My calculations are summarized below in Table 14 and are also provided in Attachment JC-8.

Table 14. CAPM Results

		30-day Average	90-day Average	180-day Average
Risk-free rate	<i>a</i>	2.11%	2.44%	2.71%
Beta	<i>b</i>	0.66	0.66	0.66
Expected market return	<i>c</i>	<u>14.42%</u>	<u>14.42%</u>	<u>14.42%</u>
Market risk premium	$d = c - a$	<u>12.31%</u>	<u>11.98%</u>	<u>11.71%</u>
ROE	$e = a + b*d$	10.26%	10.37%	10.47%
Average ROE	<i>Average of e</i>	10.37%		

D. Analytical Results and Adjustment for Flotation Costs

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

A. As I previously described, using the Constant Growth DCF method, I calculated estimates of EnergyNorth's ROE that range from 7.51% to 11.25%. Using the Multi-Stage DCF method, I calculated estimates of ROE that range from 8.04% to 8.95%. Using the CAPM method, I calculated estimates of ROE that range from 10.26% to 10.47%.

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

A. I aggregated them using simple averaging. As shown below in Table 15, I developed preliminary Low, Mid, and High ROE estimates using the three methods by averaging the results of the Constant Growth DCF, the Multi-Stage Growth DCF, and the CAPM.

The averages yield a range of preliminary ROE estimates for EnergyNorth of 8.66% to 10.17%.

Table 15. Aggregation of Preliminary Analytical Results

	Low	Mid	High
Constant Growth DCF	7.57%	9.22%	11.36%
Multi-Stage DCF	8.08%	8.40%	8.88%
CAPM	<u>10.37%</u>	<u>10.37%</u>	<u>10.37%</u>
Average	8.67%	9.33%	10.20%

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

A. Yes, I have. I have incorporated an adder to account for security flotation costs in my estimate.

Q. What are security flotation costs?

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

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

A. Yes, they should. A utility's cost to issue new stock is part of its capital rather than operating costs. If a company cannot recover its flotation costs through ROE, its actual ROE will be less than those required by investors to own the stock. This will, in turn, impair the company's ability to attract the capital required to operate a safe and reliable 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 EnergyNorth 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 15?**

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
10 EnergyNorth to attract capital. Because neither the DCF nor the CAPM models are
11 primarily designed to estimate the ROE for a regulated utility, neither take flotation costs
12 into consideration.

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

14 A. I estimated EnergyNorth'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

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

Q. What is your estimate of the appropriate adder to EnergyNorth's ROE estimate to cover flotation costs?

A. Using this method, I estimate that the ROE adder required to cover flotation costs is 0.07%.

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

A. In Table 16, below, I add the flotation costs to the preliminary ROE estimates I previously described.

Table 16. ROE Range

	Low	Mid	High
Preliminary estimate	8.67%	9.33%	10.20%
Flotation costs	<u>0.08%</u>	<u>0.08%</u>	<u>0.08%</u>
ROE estimate	8.76%	9.41%	10.29%

Based on the information shown in Table 16, I conclude that EnergyNorth's authorized ROE should fall within the reasonable range of 8.76% to 10.29%.

E. Revenue Decoupling

Q. Does EnergyNorth utilize a revenue decoupling mechanism?

A. Yes, the Commission approved decoupling in Docket No. DG 17-048. Since then, EnergyNorth adjusts customer bills monthly for weather variations through its Normal Weather Adjustment ("NWA"), and annually reconciles actual and benchmark base

1 revenue per customer through the Revenue Decoupling Adjustment Factor (“RDAF”)
2 included in its Local Distribution Adjustment Charge (“LDAC”).⁷

3 **Q. Did you adjust your ROE recommendation to account for the new mechanism?**

4 A. No, I did not.

5 **Q. Why?**

6 A. Nearly all of the gas utility subsidiaries of proxy group of companies utilize decoupling
7 mechanisms, including mechanisms that adjust for abnormal weather. As such, there is
8 no empirical basis or reason to assume that EnergyNorth is materially less risky than the
9 other proxy group companies. Since the impact of decoupling is already reflected in the
10 required returns for the proxy companies, no adjustment is required. In fact, if the
11 Company did not have a decoupling mechanism that adjusts for effects of both weather
12 and customer consumption decisions, I would recommend that an upward adjustment be
13 applied to its ROE to account for a risk not adequately reflected in the proxy group.

14 **Q. Please summarize the prevalence of decoupling mechanisms among the companies**
15 **in your proxy group.**

16 A. My proxy group consists of eight holding companies which own 30 operating companies.
17 25 of these subsidiaries (83%) utilize revenue decoupling. I have compiled a listing of
18 the subsidiary companies in Attachment JC-10.

⁷ Liberty Utilities, “Revenue Decoupling,” at <https://new-hampshire.libertyutilities.com/concord/residential/decoupling-explained.html>.

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

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

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

8 **A. Small Size Premium**

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

10 A. There is a broad body of evidence supporting the existence of a "firm size effect" on
11 firms in general, and utilities in particular, that requires smaller companies to provide
12 higher returns than larger companies in the same industries.⁸ Smaller utilities have
13 smaller customer bases, have fewer financial resources, and are less diversified in terms
14 of customers and geography.⁹ These challenges increase the investors' risks of owning
15 securities in small companies which, in turn, require them to pay a higher return in order
16 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 EnergyNorth 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-11, EnergyNorth had slightly more than half
4 (59%) of the customers of the smallest company by customer count in the proxy group,
5 and only 5% of the median number of customers. EnergyNorth is not as well-capitalized
6 as the other proxy group companies. Attachment JC-11 shows the actual market
7 capitalization for the proxy group companies based on recent data and estimates the
8 implied market capitalization for EnergyNorth.

9 **Q. How did you estimate EnergyNorth'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 EnergyNorth's equity of \$167.3 million.¹⁰ The resulting implied market
13 capitalization for EnergyNorth is approximately \$417.4 million, or less than 9% of the
14 median market capitalization for the proxy group companies.

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

16 A. By calculating an implied market capitalization for the Company, I was able to evaluate
17 the impact of EnergyNorth's small size on its ROE relative to the proxy group
18 companies. In its Cost of Capital Navigator, Duff & Phelps calculates 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 equity ratio of 50.00% to its proposed test year rate base of \$334.6 million.

1 Low Cap, and Micro Cap.¹¹ As shown in Attachment JC-11, both the mean market
2 capitalization of the proxy group companies of \$5.9 billion and the median market
3 capitalization of \$4.7 billion fall into the fourth decile, corresponding to a size premium
4 of approximately 0.85%. EnergyNorth's implied market capitalization falls in the ninth
5 decile and Micro Cap category, both of which include market capitalizations up to \$727.8
6 million. According to the Duff & Phelps data, EnergyNorth merits a size premium of
7 between 2.46% and 3.39%, which is 1.61% to 2.54% higher than the size premium for
8 the mean and median of the proxy group.

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

10 A. No, I do not. Estimating the size premium is a complex analysis that lacks the
11 transparency of the calculations on which I relied for other aspects of my testimony.
12 While it is clear that EnergyNorth is exposed to the small size premium, the magnitude of
13 the impact of this influence is a matter of debate in the academic literature and limitations
14 regarding data availability make the estimation less robust. I have therefore used the
15 results of the size premium analysis as an additional input to inform my recommendation
16 that EnergyNorth's authorized ROE should be set at 10.00% which is towards the high
17 end of the reasonable range I previously described.

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. EnergyNorth falls in the MicroCap category, while the majority of companies in the proxy group tend to fall in the Mid Cap range.

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

2 A. Yes, it is. EnergyNorth 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 EnergyNorth's authorized ROE.**

9 A. I recommend that EnergyNorth be authorized to earn an ROE of 10.00%.

10 **VII. CAPITAL STRUCTURE**

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

12 A. As described in the joint testimony of David Simek and Kenneth Sosnick, the Company
13 has proposed a capital structure of 50.00% common equity and 50.00% long-term debt.

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

15 A. As described by Messrs. Simek and Sosnick, 50.00% of the capital structure is comprised
16 of long-term debt.

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

19 A. Yes, I have. I calculated the average capital structure for the proxy group companies
20 over the past five years and compared it to EnergyNorth's proposed capital structure. As
21 shown in Attachment JC-12, over this period, the capital structure of the proxy group

1 was, on average, comprised of approximately 54% common equity and 45% long-term
2 debt. Over that same period, the maximum average equity weight for the proxy group
3 companies was approximately 69% while the minimum was approximately 39%.

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

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

6 **VIII. COST OF DEBT**

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

8 A. As described by Messrs. Simek and Sosnick, the Company proposes a cost of long-term
9 debt of 4.417%.

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

11 A. As described in the Company's testimony, the proposed cost of debt is based on
12 EnergyNorth's actual cost of debt. I conclude that it is reasonable.

13 **IX. CONCLUSIONS AND RECOMMENDATIONS**

14 **Q. Please summarize your conclusions**

15 A. I have four primary conclusions. *First*, I conclude that the Company's ROE should fall
16 between the range of 8.76% and 10.29%. *Second*, I conclude that the authorized ROE
17 should be established on the high side of the range given the risks associated with
18 EnergyNorth's small size and current conditions in the capital markets. *Third*, I conclude
19 that the Company's proposed capital structure is reasonable. *Fourth*, I conclude that the
20 Company's proposed cost of debt is reasonable.

1 **Q. Please summarize your recommendations.**

2 A. I recommend that the Commission authorize an ROE for EnergyNorth of 10.00%, that it
3 accept the Company's proposed capital structure and debt costs, and that it authorize a
4 total ROR of 7.21%.

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

6 A. Yes.