

STATE OF NEW HAMPSHIRE  
BEFORE THE  
PUBLIC UTILITIES COMMISSION

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EnergyNorth Natural Gas, Inc. d/b/a National Grid NH  
Docket DG 10-017

Direct Testimony  
of  
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October 22, 2010

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**I. QUALIFICATIONS**

2 **Q. PLEASE STATE YOUR NAME, OCCUPATION, AND ADDRESS.**

3 A. My name is John W. Wilson. I am President of J.W. Wilson & Associates,  
4 Inc. Our offices are at 1601 North Kent Street, Suite 1104, Arlington,  
5 Virginia, 22209.

6 **Q. PLEASE OUTLINE YOUR EDUCATIONAL BACKGROUND.**

7 A. I hold a B.S. degree with senior honors and a Masters Degree in Economics  
8 from the University of Wisconsin. I have also received a Ph.D. in  
9 Economics from Cornell University. My major fields of study were  
10 industrial organization and public regulation of business, and my doctoral  
11 dissertation was a study of utility pricing and regulation.

12 **Q. HOW HAVE YOU BEEN EMPLOYED SINCE THAT TIME?**

13 A. After completing my graduate education I was an assistant professor of  
14 economics at the United States Military Academy, West Point, New York.  
15 In that capacity, I taught courses in both economics and government.  
16 While at West Point, I also served as an economic consultant to the  
17 Antitrust Division of the United States Department of Justice.

18 After leaving West Point, I was employed by the Federal Power  
19 Commission, first as a staff economist and then as Chief of FPC's Division

1 of Economic Studies. In that capacity, I was involved in regulatory matters  
2 involving most phases of FPC regulation of electric utilities and the natural  
3 gas industry. Since 1973 I have been employed as an economic consultant  
4 by various clients, including federal, state, provincial and local  
5 governments, private enterprise and nonprofit organizations. This work has  
6 pertained to a wide range of issues concerning public utility regulation,  
7 insurance rate regulation, antitrust matters and economic and financial  
8 analysis. In 1975 I formed J.W. Wilson & Associates, Inc., a Washington,  
9 D.C. corporation.

10 **Q. WOULD YOU PLEASE DESCRIBE SOME OF YOUR**  
11 **ADDITIONAL PROFESSIONAL ACTIVITIES?**

12 A. I have authored a variety of articles and monographs, including a number of  
13 studies dealing with utility regulation and economic policy. I have  
14 consulted on regulatory, financial and competitive market matters with the  
15 Federal Communications Commission, the National Academy of Sciences,  
16 the Ford Foundation, the National Regulatory Research Institute, the  
17 Electric Power Research Institute, the U.S. Department of Justice Antitrust  
18 Division, the Federal Trade Commission Bureau of Competition, the  
19 Commerce Department, the Department of the Interior, the Department of  
20 Energy, the Small Business Administration, the Department of Defense, the  
21 Tennessee Valley Authority, the Federal Energy Administration, and

1 numerous state and provincial agencies and legislative bodies in the United  
2 States and Canada.

3 Previously, I was a member of the Economics Committee of the U.S. Water  
4 Resources Council, the FPC Coordinating Representative for the Task  
5 Force on Future Financial Requirements for the National Power Survey, the  
6 Advisory Committee to the National Association of Insurance  
7 Commissioners (NAIC) Task Force on Profitability and Investment  
8 Income, and the NAIC's Advisory Committee on Nuclear Risks.

9 In addition, I have testified as an expert witness in court proceedings  
10 dealing with competition in the electric power industry and on regulatory  
11 matters before more than 50 Federal and State regulatory bodies throughout  
12 the United States and Canada. I have also appeared on numerous occasions  
13 as an expert witness at the invitation of U.S. Senate and Congressional  
14 Committees dealing with antitrust and regulatory legislation. In addition, I  
15 have been retained as an expert on regulatory matters by more than 25 State  
16 and Federal regulatory agencies. I have also participated as a speaker,  
17 panelist, or moderator in many professional conferences and programs  
18 dealing with business regulation, financial issues, economic policy and  
19 antitrust matters. I am a member of the American Economic Association  
20 and an associate member of the American Bar Association and the ABA's  
21 Antitrust, Insurance and Regulatory Law Sections.

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**II. OVERVIEW OF TESTIMONY**

2 **Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS**  
3 **PROCEEDING?**

4 A. I am presenting testimony in this proceeding on behalf of the Commission  
5 Staff.

6 **Q. PLEASE SUMMARIZE YOUR TESTIMONY?**

7 A. My testimony in this case deals with EnergyNorth Natural Gas, Inc.'s  
8 ("ENNG" or "the Company") requested rate of return. My analysis  
9 concerning ENNG's rate of return focuses on the Company's cost of  
10 common equity capital.

11 While ENNG is requesting a common equity return of 11.0 percent, the  
12 evidence that I present shows that a more reasonable equity allowance,  
13 under present financial circumstances, would be in the 9.0 percent range.  
14 Especially in view of the decline in interest rates and other money costs that  
15 have occurred in recent years, an 11.0 percent equity return allowance  
16 would not be just and reasonable in this case.

17 **Q. WHAT IS RATE OF RETURN?**

18 A. Rate of return is often described as the profit, expressed as a percentage of  
19 the utility's invested capital (measured as rate base), that the utility is

1 allowed to include in its rates. From an economist's perspective it is not  
2 precisely right to call this allowed "profit" because it includes both the cost  
3 of debt capital (interest expense) as well as the allowed return on  
4 stockholders' equity investment in the company.

5 For example, if a utility has \$100 million invested in rate base and this is  
6 funded with \$50 million of debt, with an average interest of 6%, and \$50  
7 million of equity, which the Commission has determined requires a return  
8 of 10% (cost of equity or "ROE"), the allowed rate of return would be 8%  
9 or \$8 million annually. This amount, along with all expenses and taxes,  
10 would be the capital cost portion of the revenue requirement reflected in the  
11 utility's rates.

12 **Q. IS THE DETERMINATION OF A UTILITY'S RATE OF RETURN**  
13 **ALLOWANCE A CONTROVERSIAL ASPECT IN MOST RATE**  
14 **CASES?**

15 A. Yes. Rate of return accounts for a substantial portion of a utility's rates.  
16 While the debt component of rate of return is usually a straightforward  
17 reflection of the Company's actual interest costs as stated on its books, the  
18 equity return component is largely a matter of judgment and is typically  
19 hotly contested. Disputes about required rate of return allowances in rate

1 cases often center on the use of particular cost of capital estimation models  
2 used by the various parties.

3 **Q. IS STRICT ADHERENCE TO THE RESULTS OF MODELS**  
4 **ESSENTIAL TO GETTING THE RATE OF RETURN “RIGHT” IN**  
5 **A REGULATORY PROCEEDING LIKE THIS?**

6 A. No. Models can be either helpful or confusing, and their results are highly  
7 dependent on implementation. Ultimately, the “right” ROE determination  
8 in this (and any) rate case is very largely a matter of informed judgment.  
9 While “experts” may be able to offer the Commission facts, analyses and  
10 insights that will help to inform a reasonable range within which that  
11 essential judgment can be exercised, it is ultimately a determination that  
12 must depend on the Commission’s priorities, objectives and exercise of  
13 discretion, which no model, set of “expert” calculations, or sworn opinions  
14 can replace.

15 **III. THE DCF MODEL**

16 **Q. DO YOU DISAGREE WITH THE DESCRIPTION OF THE**  
17 **DISCOUNTED CASH FLOW (DCF) MODEL THAT ENNG’S**  
18 **EXPERT, MR. HEVERT HAS PRESENTED IN HIS DIRECT**  
19 **TESTIMONY?**

20 A. Mr. Hevert’s basic description of what he refers to as “the Constant Growth

1 DCF model” conforms with my own. However, I disagree with some of his  
2 elaborations such as his “Multi-Stage” DCF model, in particular, his use of  
3 projected GDP growth as a proxy for long term growth in DCF analysis and  
4 his adjustments for “flotation costs.”

5 Discounted cash flow (or DCF) models are frequently used as a method for  
6 measuring the cost or required return on a firm's common equity capital.  
7 The DCF model is based upon two fundamental principles. First, it is  
8 based on the principle that rational investors evaluate the risks and expected  
9 returns of securities in capital markets and establish prices for particular  
10 securities which adequately compensate them for the risks they perceive.  
11 Second, the model is based on the proposition that the total equity returns  
12 received by shareholders consist of dividends and capital gains, and these  
13 returns are measured in terms of the current dividend yield plus the  
14 expected rate of dividend growth. The DCF model, which combines yield  
15 and growth information to produce an estimated total return expected by  
16 stock investors, is the following:

$$\begin{array}{rcccl} 17 & \text{Total Return} & & \text{Current} & \text{Expected Dividend} \\ & \text{to Investor} & = & \text{Dividend Yield} & + \text{Growth Rate} \\ 18 & & & & \end{array}$$

19 The model makes no separate provision for capital gains because they are  
20 fully accounted for in the dividend growth component. That is, capital  
21 gains are a consequence of price appreciation which, in turn, is a

1 consequence of rising dividends and expected dividend growth.

2 Since an individual investor cannot control either the current dividend rate  
3 or the dividend growth rate, his decision about the adequacy of returns is  
4 reflected by his buy, sell, and hold decisions. If the expected return  
5 exceeds the required return, the price of common stock will be greater than  
6 the stock's book value. If the expected return is lower than investor  
7 requirements, the market price will fall below book value. If investor  
8 expectations and requirements are the same, the stock will trade at a price  
9 equal to book value.

10 In other words, the DCF procedure for estimating the cost of equity capital  
11 reflects the fact that the maximum price a logical investor will pay for a  
12 security is an amount equal to the present value of the dividends that he or  
13 she expects to receive over the years during which the security is held plus  
14 its resale price, including capital gains, when the security is sold.  
15 Algebraically, this principle can be represented by the following equation:

16

$$17 \quad P_0 = \frac{D_1}{1 + R} + \frac{D_2}{(1+R)^2} + \dots + \frac{D_t}{(1+R)^t} + \frac{P_t}{(1+R)^t}$$

18

19 where  $P_0$  is the price of a company's common stock today;  $D_1, D_2 \dots D_t$  are  
20 expected dividends in subsequent periods;  $P_t$  is the expected resale price of  
21

1 the stock at some time in the future; and R is the discount rate or required  
2 return (sometimes referred to as the opportunity cost of capital). This  
3 algebraic statement becomes an infinite geometric progression (because  $P_t$   
4 and all subsequent resale values depend on expected dividends and resale  
5 prices at that point in the future, and dividends are assumed to grow at a  
6 constant annual rate) which reduces algebraically to the familiar DCF  
7 formula:

$$8 \quad R = D/P + g$$

9 where g is the expected annual rate of dividend growth.

10 The market price is the present value of all cash flows expected in the  
11 future, discounted at a rate equal to the rate of return investors require on  
12 the investment. Present value is the current worth of expected future  
13 returns – that is, what an investor would be willing to pay today in order to  
14 obtain the expected cash flows in the future. Today's price is the present  
15 value of these expected cash flows, discounted at a rate that reflects the cost  
16 of capital, including the risk perceived by investors that their expectations  
17 will not be met.

18 The most controversial aspect of DCF analysis is usually estimating the  
19 growth component of the model, rather than the underlying model or  
20 theory, itself. Thus, while Mr. Hevert and I disagree substantially on the

1           calculated DCF outcome in this case, we have little fundamental  
2           disagreement about the basic model itself.

3   **Q.   WHAT EXPECTATIONS ARE IMPORTANT IN DCF ANALYSIS?**

4   A.   Investors' collective expectations regarding dividend growth are central to  
5       the discounted cash flow approach and are the key to estimating the cost of  
6       common equity capital. While analysts may opine on what they think  
7       investors' dividend growth expectations may be, the only way in which  
8       investors reveal their collective expectations is in the market prices that  
9       they establish for common stock. Investors establish prices for common  
10      stocks on the basis of their collective expectations of future income streams  
11      (dividends and capital gains) relative to their return requirements for the  
12      level of perceived risk. It is the consensus of investor expectations that  
13      establishes the price of common equities, and those expectations are  
14      ultimately concerned with investors' expected future income streams (i.e.,  
15      dividends). This means that it is the expected growth in dividends which is  
16      most important in estimating "g" in the DCF calculation.

17      Although dividend yields are easy to estimate with published data, the  
18      expected dividend growth component, "g", is not as easy. Although  
19      analysts often publish their earnings expectations, which, overall, tend to be  
20      somewhat bullish, there is no published consensus value for the dividend

1 expectations that investors hold. That analysts' forecasts are somewhat  
2 more bullish than investors' actual expectations is evident from stock  
3 market prices, which are typically lower than analysts' price forecasts. This  
4 differential may be consistent with the notion that really valuable analysts  
5 are those who know something that the market does not already know. In  
6 any event, in estimating an equity cost rate one must determine, on the  
7 basis of factual information, what the most reasonable estimate of dividend  
8 growth expectations held by investors is at any point in time. If investors  
9 accept analysts' earnings growth forecasts at face value and without any  
10 discounting, and if they expect that firms will increase their dividend  
11 payouts in lock-step with earnings growth, then analysts' earnings forecasts  
12 may serve as a proxy for the investor dividend growth expectations that are  
13 central to the DCF model.

14 In this regard, it is important to emphasize that the task of the rate of return  
15 analyst is to determine what dividend growth rate investors are expecting,  
16 and not to forecast a growth rate that analysts expect. Nor does it matter  
17 whether investors' expectations turn out to be right or wrong. Today's  
18 common stock prices, which enter the DCF calculation through the  
19 dividend yield term, depend upon today's expectations for future growth.  
20 Of course, expectations and requirements may be different at different  
21 times, and, therefore, the cost of common equity is likely to change over

1 time.

2 For example, when interest rates are very high, it is likely that required  
3 equity returns are higher than when interest rates are low. Similarly, when  
4 expected long-term inflation rates are high, it is likely that the cost of  
5 common equity will be higher than when long-term inflation expectations  
6 are low. A cost of common equity established at one point in time may be  
7 quite different from that established previously, or different than that found  
8 to be true in the future. Also, while tomorrow's hindsight may prove that  
9 today's expectations were wrong, that does not and cannot possibly affect  
10 today's cost of capital. That is why it is necessary only for the rate of return  
11 analyst to estimate, as accurately as possible, what investor expectations  
12 actually are, and not whether they are correct.

13 **Q. DO YOU AGREE WITH MR. HEVERT'S DCF CALCULATIONS?**

14 A. I have some disagreements with his specific calculations. First, the  
15 calculations should be updated to reflect current known and measurable  
16 financial circumstances. Second, Mr. Hevert's "flotation cost" adjustment  
17 should be removed. Third, projected gross domestic product ("GDP")  
18 growth is not a proper proxy for expected growth in earnings per share of  
19 common stock. Fourth, in addition to earnings per share growth,  
20 consideration should also be given to growth in book value per share and

1 growth in dividends per share. Expected dividend growth is particularly  
2 important because dividend yield and dividend growth are the expected  
3 payouts relevant to investors. Expected earnings growth and expected book  
4 value growth are relevant as determinants of, and therefore proxies for,  
5 expected dividend growth.

6 **Q. WHAT OTHER SPECIFIC DISAGREEMENTS DO YOU HAVE**  
7 **WITH MR. HEVERT'S COST OF EQUITY ANALYSIS THAT**  
8 **SHOULD BE NOTED?**

9 A. As I explain in more detail below, I disagree both with his use of long term  
10 debt interest rates as "risk free" and with the excessive risk premium  
11 spreads (between the cost of equity and the cost of risk free debt) that he  
12 uses in deriving his capital asset pricing model (CAPM) cost of equity  
13 estimates. Long term debt is far from risk free, and the risk premiums  
14 adopted by Mr. Hevert are well in excess of reasonable estimates.

15 Also, I disagree with Mr. Hevert's conclusions regarding the Company's  
16 relative risks. First, it is incorrect to claim that ENNG's small size in  
17 relation to Mr. Hevert's proxy group implies greater financial risk. ENNG  
18 is a small part of a very large Company, National Grid, and all of ENNG's  
19 equity capital is obtained in financial markets by National Grid. As the  
20 Commission was told repeatedly in the Keyspan merger case, the Company

1 claims that National Grid's large size provides substantial capital market  
2 benefits. Those claimed benefits should be recognized in considering the  
3 appropriate regulatory capital cost allowance in this proceeding. ENNG, as  
4 part of National Grid, is substantially larger than the companies in Mr.  
5 Hevert's proxy group.

6 Further, while I do not advocate revenue decoupling, it cannot be  
7 reasonably denied that if the revenue decoupling benefits that ENNG is  
8 seeking in this case are granted, that will result in a significant shift of  
9 normal utility business risks from the Company's owner to its ratepayers.  
10 Thus, regardless of the merits of Mr. Hevert's argument that some of his  
11 proxy group companies also have some form of revenue decoupling or cost  
12 tracker protection, decoupling would significantly reduce ENNG's business  
13 risks compared to what they were previously.

14 Finally, I recommend that the Commission decline to provide the "stay out"  
15 equity return premium proposed by Mr. Hevert. Unlike thirty years ago, it  
16 is uncommon today for utilities to file general rate cases on a cycle of less  
17 than two years, and any decoupling mechanism will likely extend that time  
18 frame. Second, if there were an unforeseen catastrophic event in the near  
19 future, it is questionable whether it would be possible or even desirable to  
20 enforce a stay-out commitment – especially if that would imperil service.  
21 Third, especially with decoupling, relatively frequent rate cases, rather than

1 long stay-out periods, are a very important aspect of consumer protection.  
2 Ultimately, there is no sound basis for concluding that there is any cost  
3 basis for an equity return premium for the stay-out commitment proposed  
4 here.

5 **Q. DO YOU AGREE WITH MR. HEVERT'S SELECTED PROXY**  
6 **GROUP?**

7 A. I have elected to use the same group that was chosen by Mr. Hevert. This  
8 will eliminate what could be extended subjective arguments about which  
9 companies are more or less comparable to ENNG or National Grid (a  
10 matter that the Commission can consider in exercising its judgment) and  
11 allow the Commission to more productively direct its attention to the more  
12 critical issues. One could, for example, argue that South Jersey Industries  
13 ("SJI") should be removed from the proxy group because of its substantial  
14 non-utility business.<sup>1</sup> But this would trigger arguments about which  
15 measure to use, and, as shown in my exhibits, the difference with and  
16 without SJI is not great. In this case, essentially the same information and  
17 issues for resolution can be placed before the Commission without  
18 extended debate about the makeup of the proxy group.

19 **Q. PLEASE DESCRIBE YOUR DCF COST OF EQUITY ESTIMATES.**

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<sup>1</sup> In 2008 and 2009 SJI's non-utility income from continuing operations was 49.0% and 33.2% of the Company's total earnings, and non-utility "economic" earnings were 42.0% and 45.2 % of total earnings, respectively.

1 A. I begin by examining the same group of gas distribution utilities that Mr.  
2 Hevert uses in his DCF analysis. While cases like this often begin with a  
3 dispute about what group of companies to use for comparison purposes,  
4 that is not a necessary argument here. Exhibit \_\_\_ (JW-1) is similar to Mr.  
5 Hevert's (RBH-2). The differences are that: (1) I have updated the analysis  
6 to reflect more recent information; (2) I present results including and  
7 excluding SJI; and (3) my results do not include the flotation cost  
8 adjustment shown in Mr. Hevert's exhibit.

9 **Q. WHAT IS SHOWN IN EXHIBIT \_\_\_(JW-1)?**

10 A. In Exhibit\_\_\_(JW-1) I present constant growth DCF results for the  
11 comparable gas distribution utility group using 30 day, 90 day and 180 day  
12 pricing periods (as does Mr. Hevert in RBH-2).

13 **Q. WHAT ARE THE DCF RESULTS SHOWN IN EXHIBIT \_\_\_(JW-1)?**

14 A. The results are all in the 7.4% to 9.7% percent range, as summarized below.  
15 I have used the same "low", "mean" and "high" categories as in Mr.  
16 Hevert's analysis. My results are somewhat lower than his largely because  
17 of updating.

18 **Q. HAVE YOU PERFORMED ANY ADDITIONAL DCF**  
19 **CALCULATIONS?**

1 A. Yes. I performed the same “constant growth” DCF calculations using  
2 projected dividends and book value growth, rather than projected earnings,  
3 and I have also made a fundamental DCF analysis.

4 Despite the fact that the DCF model is explicitly designed to estimate  
5 common equity cost based on stock prices and investors’ dividend  
6 expectations (dividend yield plus dividend growth), Mr. Hevert elects to  
7 consider only earnings forecasts (as a proxy for dividend growth) rather  
8 than considering dividend growth forecasts directly. He argues that his  
9 regression analysis (shown in RBH-4) shows that during the period 3/04 –  
10 6/08 expected earnings growth is the only statistically significant  
11 determinant (out of earnings, dividends and book value) of differences in  
12 his natural gas utilities’ price/earnings ratios. But his statistical analysis of  
13 pooled cross section and time series data is not compelling, or even very  
14 informative. While forecasted earnings are “statistically significant” in his  
15 regressions, they explain only 3.3% of the variation in the gas utility P/E  
16 ratios over the 52 month period considered<sup>2</sup>, leaving 97% of the variation  
17 unexplained. In short, Mr. Hevert’s earnings growth regression reveals  
18 hardly anything about what causes P/E ratios to vary over time and between  
19 companies. It is an extremely unsatisfactory model – certainly not one that  
20 should be relied upon to conclude that 100% reliance should be placed on

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<sup>2</sup> Adding forecasted book value and dividend growth to the regression increases explained variation to 4.4%, but worsens statistical significance.

1 earnings growth forecasts and zero reliance on dividend and book value  
2 growth.

3 While I do not contend that dividend or book value growth results are  
4 superior in this case to the earnings growth indications in Exhibit \_\_ (JW-  
5 1), I present them here for the Commission's consideration in Exhibits \_\_\_\_  
6 (JW-2) and (JW-3), again using 30, 90 and 180 day pricing periods. The  
7 results for all of these constant growth DCF calculations are summarized  
8 below. Dividend growth expectations indicate a current cost of common  
9 equity capital of about 7 percent, while book value growth forecasts  
10 indicate an equity cost rate of about 8.5 percent. Note that while earnings  
11 per share growth estimates have three sources (Value Line, Zacks and First  
12 Call), the dividend and book value estimates are made only by Value Line.

DCF Cost of Equity Estimates

	<u>Earnings Growth</u>	<u>Dividend Growth</u>	<u>Book Value Growth</u>
30 day pricing			
Low	7.61% (7.38)		
Medium	8.59% (8.36)	7.12% (6.86)	8.40% (8.40)
High	9.61% (9.23)		
90 day pricing			
Low	7.68% (7.44)		
Medium	8.65% (8.42)	7.18% (6.93)	8.46% (8.46)
High	9.68% (9.30)		
180 day pricing			
Low	7.72% (7.47)		
Medium	8.70% (8.45)	7.24% (6.96)	8.51% (8.49)
High	9.72% (9.33)		
Average	8.66% (8.38)	7.18% (6.92)	8.46% (8.45)

Values in parenthesis are without SJI.

1 Q. HAVE YOU ALSO PERFORMED A FUNDAMENTAL DCF  
2 ANALYSIS?

3 A. Yes, I have.

4 Q. **WHAT IS A FUNDAMENTAL DCF CALCULATION?**

5 A. A fundamental DCF calculation uses retained earnings as the measure of  
6 expected growth. This alternative DCF approach has the advantage of  
7 avoiding analysts' forecasts of growth that often exceed actual investor  
8 expectations. Because retained earnings provide for growth in equity and  
9 growth in equity provides for business growth, the rate of earnings plow-  
10 back (i.e., those earnings not paid out in dividends) serves as a basis for  
11 estimating future dividend growth. If the funds that are retained and  
12 reinvested earn the allowed return and the allowed return is equal to the  
13 cost of capital, retained earnings provide a good estimate of future growth.

14 For example, if a company with a stock price and book value of \$50 per  
15 share earns \$5.00 (10%) and pays out a dividend of \$2.50, its dividend  
16 yield is 5% (i.e.,  $2.50/50$ ). Expected growth will also be 5% because, if the  
17 10% earnings rate is maintained, the \$2.50 that is retained will permit  
18 earnings to increase by that amount (i.e.,  $\$2.50 \times 10\% = \$0.25$  which is 5%  
19 of \$5.00). Likewise, the retention of \$2.50 of earnings within the  
20 corporation will cause the book value of its stock to increase by 5% (i.e.,

1           \$2.50 is 5% of \$50.00). In this case, the dividend yield of 5% plus  
2           expected growth of 5% equals 10%, which is the cost of capital.

3   **Q. PLEASE SUMMARIZE THE RESULTS OF YOUR**  
4   **FUNDAMENTAL DCF CALCULATION.**

5   A. My fundamental DCF results are presented in Exhibit\_\_\_ (JW-4). Once  
6           again, I have used the same group of eight proxy gas utilities, and I have  
7           used dividend and retained earnings projections from The Value Line  
8           Investment Survey for each company. As shown in Exhibit\_\_\_ (JW-4), this  
9           fundamental DCF approach indicates an average cost of common equity for  
10          the gas utility proxy group of 8.7 percent.

11 **Q. HAVE YOU PREPARED MULTI-STAGE DCF CALCULATIONS?**

12 A. Yes; I have prepared multi-stage DCF analyses in the same format as  
13          presented by Mr. Hevert. These are presented in Exhibit\_\_\_ (JW-5).

14 **Q. WHAT ARE THE DIFFERENCES BETWEEN YOUR MULTI-**  
15 **STAGE DCF ANALYSIS AND THOSE PRESENTED BY MR.**  
16 **HEVERT?**

17 A. There are two significant differences. First, as in the constant growth DCF  
18          models discussed above, I have updated the underlying data for known and  
19          measurable changes. Second, I strongly disagree with Mr. Hevert's use of

1 projected gross domestic product (GDP) as a measure of expected long  
2 term growth in earnings per share for the proxy gas utility group.  
3 Therefore, instead of GDP growth, I have used the estimate for sustainable  
4 growth as an appropriate measure of expected long term earnings growth.

5 **Q. WHY DO YOU DISAGREE WITH MR. HEVERT'S USE OF**  
6 **PROJECTED GDP AS A MEASURE OF THE EXPECTED LONG**  
7 **TERM GROWTH IN EARNINGS PER SHARE FOR THE PROXY**  
8 **GAS UTILITY GROUP?**

9 A. The growth rate that is relevant in the DCF cost of capital model is the rate  
10 of growth in dividends per share of stock – not total economic growth. The  
11 two measures are substantially different because a large part of total  
12 economic growth reflects growth in the number of shares, not just growth  
13 per share. Thus, if a company's earnings and dividends double over 10  
14 years, and the number of shares outstanding remains the same, the value of  
15 each share doubles. However, if growth in the company's earnings and  
16 dividends is financed by selling additional shares, the resulting per share  
17 growth value is less than double. Likewise, if GDP or total corporate  
18 earnings double over 10 years, and this reflects the development and  
19 growth of new businesses as well as the growth in the number of shares  
20 issued by existing businesses, then total growth is spread over more shares,  
21 and growth per share is less than double.

1 Q. PLEASE EXPLAIN WHY THAT IS SO.

2 A. Whether in terms of earnings or GDP, the economy grows over time for  
3 two distinct reasons:

4 1) Individual business enterprises grow,

5 and

6 2) The number of business enterprises grows.

7 Furthermore, when individual business enterprises grow:

8 1) New equity capital is raised from new equity issues, and

9 2) Existing equity investments grow over time due to retained earnings

10 and other accumulations to existing shares.

11 Earnings growth per share will be the same as total earnings growth only if  
12 all growth is attributable to existing shares -- i.e. if there are no new firms  
13 and existing firms issue no new shares of stock.

14 If a company's earnings and the market value of its equity capital doubles  
15 over ten years, and it still has the same number of shares outstanding, the  
16 value of each share doubles, reflecting a 7.18% annual rate of growth over  
17 the ten years:

18 
$$(1.0718)^{10} = 2.0$$

19 If, on the other hand, a company's earnings and market value double, but

1 this growth is financed by selling additional shares, the resulting per share  
2 value is less than double and the annual per share growth rate is less than  
3 7.18%:

4 Likewise, if GDP or total corporate earnings double over 10 years and this  
5 reflects growth in the number of corporations as well as growth in the  
6 number of shares issued by some corporations, growth per share is less than  
7 double.

8 In short, it is obvious that total growth measures, like growth in GDP, total  
9 corporate earnings or total dividends over a long period of time will not  
10 provide a good proxy for earnings or dividend growth per share. Over any  
11 long period of time there will also be substantial growth in population,  
12 households, number of investors, number of corporations, and corporate  
13 shares outstanding.

14 **Q. ARE THERE ADDITIONAL REASONS FOR REJECTING GDP**  
15 **GROWTH AS A MEASURE OF PER SHARE EARNINGS**  
16 **GROWTH IN MR. HEVERT'S MULTI-STAGE DCF**  
17 **CALCULATION?**

18 A. Yes. The GDP growth percentage in Mr. Hevert's analysis exceeds his  
19 own sustainable growth percentage by a significant margin. This alone

1 makes the GDP growth percentage an illogical proxy for per share earnings  
2 growth.

3 **Q. WHAT ARE THE RESULTS OF YOUR MULTI-STAGE DCF**  
4 **ANALYSIS?**

5 A. Following Mr. Hevert's computational procedure, but updating the data and  
6 using sustainable growth per share rather than GDP growth as the long term  
7 earnings growth estimate, the multi-stage DCF results are as follows:

8

	<u>30 day price</u>	<u>90 day price</u>	<u>180 day price</u>
Full Proxy Group	9.19%	9.26%	9.31%
w/o SJI	8.71%	8.78%	8.81%

9 These results and the calculations behind them are summarized in Exhibit  
10 \_\_\_\_ (JW-5).

11 **IV. CAPITAL ASSET PRICING MODEL**

12 **Q. HAVE YOU ALSO PERFORMED CAPITAL ASSET PRICING**  
13 **MODEL CALCULATIONS TO AS A CHECK ON YOUR DCF**  
14 **ESTIMATES OF ENNG'S COST OF EQUITY CAPITAL?**

15 A. Yes, I have.

16

1 **Q. PLEASE DESCRIBE THE CAPITAL ASSET PRICING MODEL**  
2 **(“CAPM”).**

3 A. The CAPM is, like the DCF model, one of the most widely used techniques  
4 to estimate the cost of equity capital. The fundamental principle underlying  
5 the CAPM is that investors require compensation for risk when making an  
6 investment – that is, a higher return than is required for a riskless  
7 investment. In other words, while the DCF model estimates the cost of  
8 equity capital directly by examining expected dividend flows and market  
9 prices, the CAPM estimates required returns by evaluating the relative risk  
10 of alternative investments.

11 In comparison with the expected return on a risk-free investment, a risky  
12 investment must provide investors with a risk premium – an expected  
13 return higher than the riskless rate. The most commonly used measure of a  
14 risk-free asset is a short term (e.g., 90 day) U.S. Treasury security, which  
15 has little or no default or inflation price risk. It should be emphasized that  
16 only very short term Treasury debt can be assumed to be risk-free. Long  
17 term debt, even long term U.S. Treasury debt, which locks investors into  
18 U.S. dollar denominated assets for many years, can be very risky, as  
19 inflation or international currency fluctuations can significantly impair  
20 investment value.

1 For example, investors who locked their investments into long term  
2 treasuries in 2000 saw the purchasing value of their investment decline  
3 substantially in terms of buying power in relation to other world currencies.  
4 Likewise, long term bond values fell dramatically during periods of high  
5 inflation in the 1980s. Only very short term treasury debt is substantially  
6 free of these currency and inflation risks. Just as these risks caused the real  
7 asset value of long term Treasury bonds to decline in the past, they could  
8 do so again in the next decade. Utility equity investments, on the other  
9 hand, are far more protected from these risks by the regulatory process  
10 itself, which adjusts allowed returns as money costs change.

11 **Q. HOW DOES THE CAPM MODEL WORK?**

12 A. CAPM separates the total risk of an investment into two parts: systematic  
13 risk and unsystematic risk. Systematic risk is unavoidable; it affects all  
14 assets to a greater or lesser degree. For example, a sharp rise in inflation  
15 would affect all stocks to a greater or lesser degree. The size of the risk  
16 premium for each stock is determined in proportion to the stock's co-  
17 movement with the market for all stocks. A stock that is twice as volatile  
18 as the average requires a risk premium that is double the average risk  
19 premium. A stock that is half as volatile as the average requires a risk  
20 premium that is half the average, etc. All systematic risk is rewarded with a  
21 risk premium that is above the risk-free rate of return, and that varies in

1 direct proportion to the stock's relative volatility. The relative risk of each  
2 stock is measured by a value known as beta ("B"), which is a measure of  
3 the stock's relative volatility in comparison with the volatility of the entire  
4 market.

5 In contrast, unsystematic risk is that portion of total risk that can be avoided  
6 by diversifying. Unsystematic risk is not rewarded with a risk premium.

7 The CAPM defines the cost of equity for each company's stock as equaling  
8 the riskless rate plus an increment equal to the amount of systematic risk  
9 that goes with the investment:

$$10 \quad K_n = R_f + B_n (R_m - R_f)$$

11 where,

12  $K_n$  = the cost of equity for company n

13  $R_f$  = the riskless rate of return

14  $B_n$  = the beta for the stock of company n

15  $R_m - R_f$  = the expected market risk premium

16 (i.e., the average difference between the expected returns for the  
17 diversified market portfolio and the riskless return).

18

1 **Q. WHAT ARE THE APPROPRIATE VALUES FOR THESE**  
2 **VARIABLES IN THIS CASE?**

3 A. At the present time, riskless treasury bills are yielding less than 1%, and the  
4 highest value in recent years has been about 5%. Thus,  $R_f = 1.0$  to 5.0%.  
5 With regard to risk premium, surveys and academic analyses indicate that  
6 the expected market risk premium  $R_m$  is in the range of 3% to 6%. For  
7 example, according to Dinson, March and Staunton (“Risks and Returns in  
8 the 20th and 21st Centuries,” Business Strategy Review, Volume 11, Issue  
9 2):

10 “It has become clear that the current level of the equity risk premium  
11 is unlikely to be as high as was considered reasonable in the mid-  
12 1990s. The arithmetic mean of 8½% recommended by Ross,  
13 Westerfield and Jaffe (1993), the 8-9% suggested (with caveats) by  
14 Bealey and Myers (2000), and the 7½% recommended by Wetson,  
15 Chung and Sui (1997), and a similar figure inferred from the  
16 Copeland, Koller and Murrin (1995) geometric mean of 5-6%, all  
17 look excessive. The market is almost certainly building lower risk  
18 premia than this into stock prices....The cost of capital has thus  
19 fallen substantially in recent years.”

20

21 Also, according to Eugene F. Fama of the University of Chicago and  
22 Kenneth R. French of The Massachusetts Institute of Technology, the risk  
23 premium over the past half-century was about 4%. Their calculation is  
24 based on going back to the past and analyzing what kinds of returns  
25 investors had a reasonable right to expect for the future, given companies’  
26 dividend yields and expected growth rates. Risk premiums exceeding 4%

1           were, they say, the result of a series of surprises, such as the end of the  
2           Cold War and the development of the computer – windfalls that investors  
3           do not count on to repeat themselves. Fama and French expect stocks to  
4           outperform risk-free securities by only 3% to 3.5% a year in the long term.  
5           (See E.F. Fama and K.R. French, “Dividend Yields and Expected Stock  
6           Returns,” *Journal of Financial Economics*, 22 (1), 3-25, and “Business  
7           Conditions and Expected Returns on Stocks and Bonds,” *Journal of*  
8           *Financial Economics*, 25 (1), 23-49.)

9           Among the people who have studied the equity premium closely, most  
10          think it is probably in the range of 3 to 5 percentage points above treasury  
11          bills. On the other hand, rank-and-file finance professors have often  
12          continued to peg the long-term premium at about 6 to 7%, according to a  
13          comprehensive survey published by Ivo Welch of Yale University. Welch,  
14          himself, agrees with the 3-5 percent range. According to his analysis, a 3%  
15          geometric equity premium estimate and a 5% arithmetic estimate are more  
16          accurate than the 6% to 7% consensus of the profession. (See Ivo Welch,  
17          “Views of Financial Economists on the Equity Premium and on  
18          Professional Controversies” (University of California, Los Angeles and  
19          Yale University, 2001)). More recent surveys indicate that, as of 2007-  
20          2008, finance professors estimated equity premiums in a slightly lower 4%  
21          to 6% range, centering around 5%. (See Ivo Welsh, “The Consensus

1 Estimate for the Equity Premium by Academic Financial Economists”,  
2 National Bureau of Economic Research, January 18, 2008 and Pablo  
3 Fernandez, “Market Risk Premium Used in 2008”, IESE Business School,  
4 2009).

5 As shown in Exhibit\_\_\_(JW-7), the average beta value for the eight proxy  
6 gas utilities is 0.675. Using 0.675 as the beta estimate and the mid point of  
7 both the risk free rate and risk premium range, the CAPM cost of equity  
8 estimate, using the risk free cost of money before premium, is:

9 
$$K = 3.0\% + .675 (5.0\%) = 6.4\%$$

10 Using the average of the high and low monthly ten year treasury rate over  
11 the last five years, the CAPM cost of equity is:

12 
$$3.88\% + .675 (5.0\%) = 7.26\%$$

13 CAPM equity return calculations are summarized in Exhibit\_\_\_ (JW-6).

14 Q. ARE YOU AWARE THAT THE COMMISSION USED THE TEN-  
15 YEAR TREASURY RATE AS THE RISK FREE RATE IN ENNG’S  
16 LAST RATE CASE?

17 A. Yes, I am. While I caution that a locked-in return for ten years is not risk  
18 free, as discussed above, I do include a CAPM calculation using the ten-  
19 year treasury as a proxy for the risk free rate on page 2 of Exhibit \_\_\_ (JW-

1           6). At the time of this writing the ten-year treasury rate is 2.4 percent.  
2           Over the past five years, the average monthly ten year treasury rate has  
3           ranged from 2.65 percent to 5.11 percent. This range is reflected on page 2  
4           of Exhibit \_\_\_\_ (JW-6). As shown there, using ten-year U.S. Treasury rates  
5           as a proxy for the risk-free rate, the CAPM approach indicates an equity  
6           cost range of 4.7% to 9.8%.

7   **Q.   HOW DO YOUR CAPM RESULTS DIFFER FROM THE CAPM**  
8   **RESULTS PRESENTED BY MR. HEVERT?**

9   A.   Mr. Hevert's CAPM results range from 9.98% to 11.17%. These results are  
10   substantially overstated because Mr. Hevert incorrectly uses interest on  
11   long term (30 year) bonds as the "risk free" rate, and his risk premium  
12   spread (7.38%) is excessive, as discussed above.

13                                   **V.   CAPITAL STRUCTURE**

14   **Q.   WHAT CAPITAL STRUCTURE DOES ENNG RECOMMEND FOR**  
15   **RATEMAKING PURPOSES IN THIS CASE?**

16   A.   The Company is proposing a capital structure for ratemaking purposes  
17   comprised of 50% common equity and 50% debt.

18   **Q.   DOES THIS PROPOSAL REFLECT THE COMPANY'S ACTUAL**  
19   **CAPITAL STRUCTURE?**

1 A. No. It is my understanding that this capital structure reflects the  
2 Company's agreement with Staff and the Commission's approval in the last  
3 rate case as provided in Order No. 24,777.

4 **Q DO YOU USE THE SAME 50/50 CAPITAL STRUCTURE IN**  
5 **MAKING YOUR RATE OF RETURN RECOMMENDATION?**

6 A. Yes. However, I have adjusted the debt component to include short term  
7 debt. The Company's total year-end debt was comprised of \$13.6 million  
8 of short term debt and \$80 million of long term debt. I used these two  
9 amounts to pro-rate debt capitalization for ratemaking purposes between  
10 short term and long term debt. The Company has historically incurred  
11 short term debt to fund a portion of its assets and is likely to do so in the  
12 future. Short term debt is at historically low cost rates and is beneficial in  
13 reducing current overall capital costs. While today's short term commercial  
14 debt costs are well under 1.0% (less than 1/20<sup>th</sup> of the gross-of-tax cost of  
15 common equity capital), it is not likely that they will stay at that level for  
16 the long term. I have therefore used the Company's average test year  
17 monthly short term debt cost rate of 1.95% for the recommended short term  
18 debt component of the Company's capital structure.

1

**VI. COMPARATIVE RISKS**

2 **Q. MR. HEVERT HAS SUGGESTED THAT HIS PROPOSED ROE**  
3 **ALLOWANCE MAY BE WARRANTED BECAUSE ENNG MAY BE**  
4 **PERCEIVED AS BEING EXCEPTIONALLY RISKY. IS THERE**  
5 **MERIT TO THAT CONTENTION?**

6 A. No.

7 **Q. WHAT SPECIFIC ARGUMENTS HAS MR. HEVERT MADE IN**  
8 **THIS CASE REGARDING ENNG'S COMPARATIVE RISKS?**

9 A. Mr. Hevert argues that ENNG is exceptionally risky because it is small, and  
10 because it currently has no revenue decoupling or weather normalization  
11 clauses in its rates.

12 **Q. WHAT IS YOUR RESPONSE TO EACH OF THESE ARGUMENTS?**

13 A. As discussed above, the argument that ENNG is more risky than the proxy  
14 gas utility group is spurious. ENNG is part of National Grid, a much larger  
15 company than any of the proxy group. All of ENNG's equity capital is  
16 obtained in markets by National Grid or through retained earnings. Also,  
17 while I do not advocate revenue decoupling, it cannot be denied that  
18 decoupling would transfer substantial normal business risk from the  
19 Company's stockholders to its ratepayers. My recommended equity return

1 allowance in this case is at the upper end of indicated current common  
2 equity costs, and is premised on the assumption that ENNG does not have  
3 revenue decoupling. If revenue decoupling is adopted by the Commission,  
4 the appropriate common equity return allowance should be at least 100  
5 basis points less.

6 **Q. IS THERE EMPIRICAL EVIDENCE DEMONSTRATING THAT**  
7 **REGULATED GAS UTILITIES ARE LESS RISKY BUSINESSES THAN**  
8 **COMPETITIVE UNREGULATED ENTERPRISES?**

9 A. Yes. Analyses of stock market indices reflect the comparatively stable and  
10 low-risk nature of common stock investments in regulated gas utilities.

11 **Q. WHAT STOCK MARKET INDICES HAVE YOU REVIEWED?**

12 A. In addition to the beta coefficients that I have used above in the CAPM cost of  
13 equity analyses, Value Line also publishes indices of safety, price stability and  
14 earnings predictability for a wide variety of firms in all sectors of the economy.  
15 As shown in Exhibit\_\_\_(JW-7), the proxy gas utility companies have an average  
16 safety index of 2.00 on a scale from 1 to 5, where 1 is the highest safety rating.  
17 Also, price stability is ranked at 100 at the upper end of the scale from 5 to 100,  
18 where 100 is the highest stability rating. The average earnings predictability  
19 index for these companies is 88.13 on a scale from 5 to 100, and average  
20 “financial strength” is B++. By all of these measures, the financial risks of these

1 proxy gas utilities are indicated to be below average risk for publicly owned firms  
2 in the U.S. economy.

3 **VII. FLOTATION COSTS**

4 **Q. SHOULD A FLOTATION COST ADJUSTMENT BE ADDED TO**  
5 **ENNG’S RETURN ON EQUITY ALLOWANCE?**

6 A. No. Flotation costs are the costs of issuing securities. In public stock and  
7 bond offerings there can be significant underwriter costs and other related  
8 securities issuance expenditures. ENNG is, in fact, compensated for all of  
9 its debt flotation costs, as the cost of debt is computed in relation to  
10 “proceeds” after deducting issuance costs, and not in relation to the  
11 “principal amount” of debt issues. In the case of equity, none of ENNG’s  
12 common equity capital involves public offerings, as the Company is wholly  
13 owned by National Grid. All of the Company’s equity growth is derived  
14 from retained earnings and direct equity funding by National Grid. Thus,  
15 ENNG incurs no equity flotation costs.

16 **Q. HAS THE COMMISSION ADDRESSED THE COMMON EQUITY**  
17 **FLOTATION COST ISSUE IN OTHER RECENT CASES?**

18 A. Yes. This issue was addressed in Order No. 24,473 in PSNH case DE 04-  
19 177 in which the Commission said: “[T]he Commission has historically  
20 denied the inclusion of such an adjustment to the return on equity and we

1 find no basis in this record to depart from established practice. We reject,  
2 therefore, Dr. Morin's requested adjustment for flotation costs." More  
3 recently, on May 29, 2009, in Order No. 24,972 in ENNG case DG 08-009  
4 the Commission said: "More recently, another attempt to persuade the  
5 Commission to adopt a flotation cost was made and rejected in *Public*  
6 *Service Company of New Hampshire, supra*, 90 NH PUC 230, 250 (2005)  
7 on the basis of arguments similar to those made here by Staff and OCA.  
8 We find no basis in this record to depart from established practice." See  
9 also *Pennichuck Water Works, Inc.*, 70 PUC 850, 862-863 (1985). The  
10 same resolution is appropriate here.

11

12 **VIII. ECONOMIC ENVIRONMENT**

13 **Q. HOW DO YOU RESPOND TO MR. HEVERT'S ARGUMENTS**  
14 **ABOUT THE CURRENT ECONOMIC ENVIRONMENT?**

15 A. While today's economic environment is uncertain, and, arguably, even  
16 more uncertain than it has been at some other times, I do not know of any  
17 time when the economic environment was certain or settled. Moreover,  
18 and more importantly, in times of relative uncertainty, investments in  
19 companies like ENNG and National Grid, that sell essential services in  
20 monopoly franchised markets and that enjoy legal protections permitting

1 price increases in relation to costs even in depressed economic times, are  
2 typically viewed as less risky than companies that are more exposed to the  
3 vagaries of competitive markets.

4 **IX. CONCLUSION**

5 **Q. PLEASE SUMMARIZE YOUR RECOMMENDATION**  
6 **CONCERNING THE RATE OF RETURN ON COMMON EQUITY**  
7 **CAPITAL AND THE OVERALL RATE OF RETURN**  
8 **APPROPRIATE FOR ENNG'S GAS UTILITY RATES IN THIS**  
9 **CASE.**

10 A. As summarized in Exhibit\_\_\_ (JW-8), there is a substantial range of  
11 common equity cost estimates. The average for the constant growth DCF  
12 models (including SJI) is 8.1 percent. The multi-stage DCF estimate is  
13 9.25 percent; the fundamental DCF estimate is 8.7 percent; and the CAPM  
14 indications center around 8 to 9 percent. Overall, these indications suggest  
15 a current 8 to 9 percent common equity cost range for ENNG.

16 **Q. WHAT IS YOUR SPECIFIC EQUITY RETURN**  
17 **RECOMMENDATION IN THIS CASE?**

18 A. As I said at the outset of my testimony, the determination of an appropriate  
19 ROE allowance within a zone of reasonableness is a matter of the  
20 Commission exercising its discretion in balancing the public interest

1 objectives of consumer protection and incentives for adequate service and  
2 capital attraction. The empirical evidence and calculations that I have  
3 provided define an ROE zone of reasonableness within a range from about  
4 8 percent to 9.5 percent for comparable gas utilities. Within this zone of  
5 reasonableness, and assuming that revenue decoupling is not adopted, I use  
6 9.0 percent for ENNG, together with the previously established capital  
7 structure of 50% equity and 50% debt (adjusted to include short term debt  
8 at an interest cost of 1.95%), to calculate a recommended return on rate  
9 base.

10 **Q. WHAT IS THE RETURN ON RATE BASE THAT RESULTS FROM**  
11 **THIS ROE ALLOWANCE AND CAPITAL STRUCTURE?**

12 A. Based on my recommended 9.0% ROE allowance, together with a proposed  
13 capital structure comprised of 50% equity and 50% debt (including short  
14 term debt at an interest cost of 1.95%), the Company's overall allowed  
15 return on its gas utility rate base would be 7.586 percent.

	<u>Ratio</u>	<u>Cost</u>	<u>Allowed Return</u>	
16				
17	Long Term Debt	42.73%	6.89	2.944%
18	Short Term Debt	7.27%	1.95%	0.142
19	Common Equity	50.00%	9.0%	4.500%
20		Overall Return		7.586%

21 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

1 A. Yes, it does.