THE STATE OF NEW HAMPSHIRE

BEFORE THE

NEW HAMPSHIRE PUBLIC UTILITIES COMMISSION

Docket No. DE 09-035

DIRECT TESTIMONY OF

George J. Eckenroth

Request for Permanent Delivery Rates

June 30, 2009

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I. INTRODUCTION

1

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

3 A. My name is George J. Eckenroth. I am the Director of Corporate Financial Policy for

4 Northeast Utilities Service Company. I am providing this testimony on behalf of Public

5 Service Company of New Hampshire ("PSNH" or the "Company"). My business address

6 is 107 Selden Street, Berlin, Connecticut.

7 **Q. Have you previously testified before this Commission?**

8 A. Yes. I have testified on numerous occasions before this Commission. A list of my

9 background and experience is attached as Attachment GJE - 1.

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

11 A. The purpose of this testimony is (1) to describe current capital market conditions as they

12 pertain to companies in general and to electric utilities in particular; (2) discuss PSNH's

13 financial condition; (3) recommend an appropriate capital structure for PSNH; and (4)

14 recommend an overall rate of return ("ROR"), also known as a Weighted Average Cost

15 of Capital ("WACC"), for PSNH that reflects the cost of capital for each component of its

16 distribution ratemaking capitalization.

II. SUMMARY

17

18 **Q. Please summarize your testimony.**

19
20 A. The United States economy, as well as the global economy in general, is in a period of

21 extraordinary instability. These conditions have resulted in exceptionally high risk

22 aversion by investors, which is reflected in historically high risk premiums on both debt

23 and equity. These high risk premiums have raised the cost of capital for all companies,

	1	including electric utilities. Meanwhile, PSNH's credit metrics have been weakening to a
	2	degree that has provoked published comments by the major rating agencies. Further, the
	3	rating agencies, which have been criticized for their laxness that may have contributed to
	4	the current credit crisis, undoubtedly will be stricter in some of their practices in the
	5	future.

6   In order to ensure that PSNH has access to the financial markets under these conditions,

7   certain steps are needed. First, PSNH's ratemaking capital structure needs to be

8   strengthened. Second, PSNH needs an allowed return on equity ("ROE") that is

9   consistent with the current requirements of investors. Third, PSNH needs rates that are

10   set at a level that permits PSNH a realistic opportunity to earn its allowed ROE over the

11   period that new rates will be in affect.

12   I have utilized three well-established methods to estimate the appropriate allowed ROE

13   for PSNH. Each of these methods supports an ROE well in excess of 11 percent. I

14   recognize, however, that a sharp increase in allowed ROE may be problematic to PSNH's

15   customers under current challenging economic conditions. Further, allowed ROEs in

16   recent regulatory decisions around the country have averaged closer to 10.5 percent. For

17   that reason, I am recommending a 10.5 percent allowed ROE rather than the 11.5 percent

18   or higher ROE that my analyses would fully support. With a 10.5 percent ROE and my

19   recommended capital structure, PSNH's appropriate WACC is 8.11 percent.

Proposed Ratemaking Capital Structure
and the Weighted Cost of Capital

	Ratio	Cost Embedded	Cost Weighted
Long-Term Debt	48.88%	5.61%	2.74%
Common Equity	51.12%	10.50%	5.37%
			8.11%

1	**III.**	**CURRENT MARKET CONDITIONS**		
2	**Q.**	**Please describe current capital market conditions and their effects on the cost of**		
3		**capital**		
4	A.	Security prices have declined severely as we have faced the most serious credit crisis		
5		since the 1930s. The debt and equity markets remain extremely volatile due to the		
6		ongoing financial crisis and the economic downturn. Investors remain apprehensive		
7		about committing long-term capital.		
8		This can be seen most clearly with the use of a risk premium-type model. Using such a		
9		model, the cost of debt will equal a benchmark interest rate, such as the yield on 30-year		
10		treasury bonds, plus a risk premium or "credit spread" to compensate investors for the		
11		incremental risk of corporate securities relative to those issued by the U.S. government.		
12		The table below shows that the credit spread on BBB/Baa bonds has increased from 133		
13		basis points in May 2007 to 425 basis points as of May 2009. Over the same period, 30-		
14		year Treasury bonds yields have decreased only 67 basis points. This 292 basis point		
15		increase in the credit spread greatly outweighed the 67 basis point decline in treasury		
16		yields, resulting in a net increase in the cost of debt of 225 basis points.		

	May-07	May-09	Basis Point Change
30-year Treasury Yields [1]	4.90%	4.23%	-67
Bond spreads for BBB/Baa rated utility bond	1.33%	4.25%	292
All-in Bond Yields [2]	6.23%	8.48%	225

Source: [1] Federal Reserve Statistical Release H15

[2] Mergent Bond Record for May '07and Barclays Capital for May '09

1   It is evident from this data that intensified concerns about risks in the capital markets

2   have triggered an increase in the credit spreads and confirms that investors have

3   reassessed their tolerance for risk. As Standard & Poor's ("S&P") observed in December

4   2008:

5   > The Standard & Poor's composite spreads widened to new five-year highs
6   > yesterday, leaving the investment-grade spread at 554 basis points (bps)
7   > and the speculative grade spread at 1,598 bps, both well more than triple their
8   > five-year moving averages. ... [W]ith speculative-grade defaults on the rise, a
9   > higher preponderance of credit downgrades, and a general malaise about the
10 > future of the economy, we expect spreads to remain at their elevated levels for
11 > some time until confidence is restored to the market.[1]

12 It is apparent that investors have not recovered, either financially or psychologically,

13 from the effects of the financial crisis, and may not recover for many years to come.

14 **Q.   Have equity risk premiums increased along with the increase in credit spreads?**

15 A.   Yes. In order to invest in common stock, investors require a substantial risk premium

16 over and above the return on debt as compensation for the incremental risk of equity

17 relative to debt. For this reason, the cost of equity has undergone an increase similar to

18 the increase in the cost of debt. The relationship between the cost of debt and the cost of

19 equity is addressed in more detail below in the sections covering the Capital Asset

20 Pricing Model and Risk Premium Model.

21 **Q.   Do these higher risk premiums in the capital markets affect utilities in the same way**

22 **as they affect other companies?**

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[1] Standard & Poor's Corporation, "Credit Trends: U. S. Composite Credit Spreads Daily", RatingsDirect (Dec. 2, 2008).

1   A.   Yes, the effects on utilities have been very similar to those of other types of companies.

2   As shown in the graph below, utilities face significantly higher costs of debt due to the

3   higher credit spreads they now must pay relative to treasury bonds.[2]

Utility Bond Yields — —▲— – 30-year Treasury Bond Yields
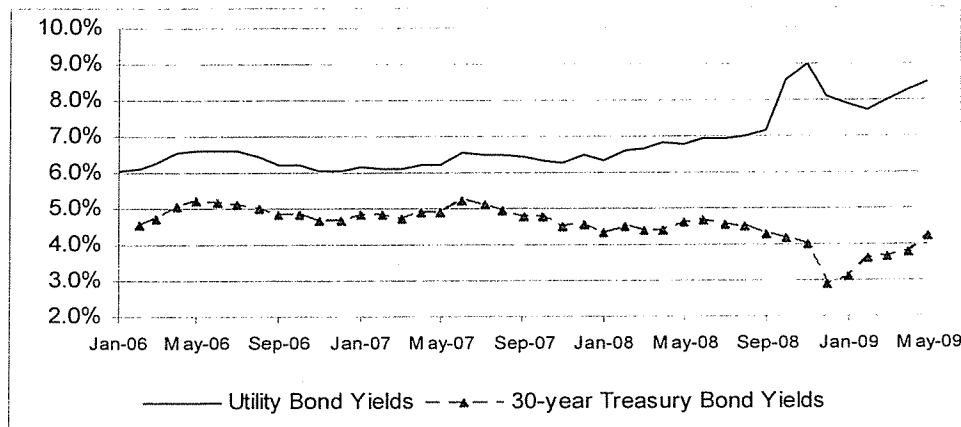
4   Commenting in December 2008, S&P confirmed this trend, stating that:

5   Regulated electric issuers continued to access debt markets during the fourth
6   quarter of 2008 at rates in line with the 10-year average of about 8% for five-year
7   notes, not the abnormally low interest rate environment of the 2000's which is a
8   distant memory.[3]

9   As noted above, because an equity risk premium must be added to the higher cost of debt,

10   the cost of equity has also increased sharply. In fact, a Managing Director with Fitch

11   Ratings ("Fitch") observed that with debt costs at present levels, "significantly

12   higher regulated returns will be required to attract equity capital."[4] Fitch

13   concluded:

14   The collapse in secondary market debt pricing and in equity valuations is
15   worrisome. We see new debt now priced at around 9% or higher pushing

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[2] Monthly utility yields are from Mergents Bond Record, except May 2009 provided by Barclays Capital. The Treasury rates are from Federal Reserve, www.federalreserve.gov/releases/h15/data.htm.

[3] Standard & Poor's Corporation, "Industry Report Card: U. S. Electric Utility Credit Quality Remains Strong Amid Continuing Economic Downturn," RatingsDirect (Dec. 19, 2008).

[4] Fitch Ratings Ltd., "EEI 2008 Wrap-Up: Cost of Capital Rising", Global Power North America Special Report (Nov. 17, 2008).

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| 1 | | up against average authorized ROEs for utilities of around 10.25% to |
| 2 | | 10.50%. [5] |

3 **Q.** **Are these conditions expected to continue into the foreseeable future?**

4 A. Yes. It is clear that the events since September 2008 have undoubtedly marked a

5 significant transition in investors' expectations and there is very little indication that the

6 conditions confronting the economy and financial markets will be resolved quickly. As

7 Fitch recently concluded, "higher corporate interest rates are likely to prevail through

8 2009 and into the foreseeable future. Moreover, the fact that market volatility may

9 complicate the evaluation of the cost of equity provides no basis to ignore the upward

10 shift in investors' risk perceptions and required rates of return for long-term capital."[6]

11 **Q.** **Will these capital market conditions also affect utilities' access to the capital and**

12 **credit markets?**

13 A. Possibly. An October 1, 2008, Wall Street Journal report confirmed that

14 dislocations in credit markets were impacting the utility sector:

15 Disruptions in credit markets are jolting the capital-hungry utility sector,
16 forcing companies to delay new borrowing or come up with different-
17 often more costly-ways of raising cash. [7]
18
19 Under these conditions, companies that are not highly rated may have great

20 difficulty in raising needed capital.

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[5] Fitch Ratings Ltd., "Investing In An Unpredictable World", Fitch Ratings' 20th Annual Global Power Breakfast" (Nov. 10, 2008).

[6] Grabelsky, Glen, "Surviving the Present, Preparing for the Future", Fitch Ratings' 20th annual Global Power Breakfast (Nov 10, 2008).

[7] Wall Street Journal "Turmoil in Credit Markets Send Jolt to Utility (Oct. 1, 2008).

IV. PSNH'S FINANCIAL CONDITION

2 Q. **Please describe conditions in the electric utility industry.**

3 A. Over the last decade and a half, investors have witnessed steady erosion in credit quality

4 throughout the utility industry, both as a result of perceptions of higher risks in the

5 industry and the weakened financial conditions of the utilities themselves. Edison

6 Electric Institute ("EEI") has reported that at the beginning of 1992, the majority of

7 electric utilities were rated A (67 percent rated A, 32 percent rated BBB) but by the end

8 of 2008, most electric utilities were rated BBB (19 percent rated A, 71 percent rated

9 BBB).[8] Most electric utilities are only one notch away from falling below investment

10 grade.[9]

11 More recently, since the settlement of PSNH's previous rate case, investor concerns have

12 been deepening. The rating agencies and investors are well-aware of the financial and

13 regulatory pressures associated with the need to undertake significant capital investments

14 for electric utility infrastructure. In August 2007, Moody's observed:

15 [T]here are concerns arising from the sectors' sizable intrastate
16 investment plans in the face of an environment of steadily rising
17 operating costs.[10]

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[8] www.eei.org/whatwedo/DataAnalysis/IndusFinanAnalysis/Pages/FinancialReview.aspx; Go the Capital Markets section, page 83.

[9] 'AAA' and 'AA' (high credit quality) and 'A' and 'BBB' (medium credit quality) are considered investment grade. Credit ratings for bonds below these designations ('BB', 'B', 'CCC', etc.) are considered low credit quality, and are commonly referred to as non-investment grade or "junk bonds."

[10] Moody's Investor Service, "Storm Clouds Gathering on the Horizon for the American Electric Utility Sector", Special Comment, August 2007.

1   In October 2007, S&P noted that "onerous construction programs," along with rising

2   operating and maintenance costs and volatile fuel costs, are a significant challenge to the

3   utility industry.[11] Fitch recently concluded that the short- and long-term outlook for

4   investor-owned electric utilities is negative.[12] Similarly, Moody's observed, "Material

5   negative bias appears to be developing over the intermediate and longer term due to

6   rapidly rising business and operating risks."[13] The headline in S&P's April 2009, Rating

7   Roundup was "Ratings Trend Turns Negative During First Quarter Of 2009 For U.S.

8   Electric Utilities."

9   It is important to recognize that these events are occurring in the midst of the worst credit

10   crisis in many decades and at a time when the three major rating agencies have been

11   severely criticized for not sounding an adequate alarm about the risks to which the

12   financial markets were subject.[14] Faced with such aggressive critics, the rating agencies

13   will likely increase the intensity of their credit reviews to ensure that they will not again

14   be perceived as too lenient.

15   **Q.   Do these general industry concerns apply specifically to PSNH?**

16   A.   Yes. In 2007 and 2008 PSNH incurred a total of $407 million[15] for capital expenditures.

17   Its investment requirements for the period from 2009 though 2013 are forecast to be $2.7

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[11] Standard & Poor's Corporation, "U.S. Electric Utilities continue Their Long Shift to Stability" RatingDirect, October 23, 2007.

[12] Fitch Ratings, Ltd., "U.S. Utilities, Power and Gas 2009 Outlook," Global Power North America Special Report (Dec. 22, 2008).

[13] Moody's Investors Service, "U. S. Electric Utility Sector," Industry Outlook January 2008.

[14] See, for example, www.riskcenter.com/story.php?id=15308, Commentary – The History and Future of the Rating Agencies.

[15] Northeast Utilities Combined Annual Report & Form 10K, PSNH Statement of Cash Flows; Investments in Property and Plant (millions $): 2008 - 239, 2007 – 168.

1   billion.[16] While providing the infrastructure necessary to meet the energy needs of

2   customers is desirable, investors are aware that it imposes additional financial risks on the

3   Company. As discussed below, this has contributed to the deterioration of PSNH's credit

4   metrics.

5   Q.   **What credit ratings have been assigned to PSNH?**

6   A.   PSNH's current credit ratings are as follows:[17]

	S&P	Moody's	Finch
Corporate Credit Rating	BBB	Baa2	BBB
First Mortgage Bonds	BBB+	Baa1	BBB+
Outlook	Stable	Stable	Stable

8   Q.   **How does PSNH's relative credit standing compare with others in the utility**

9   **industry?**

10   A.   The following table shows that PSNH's BBB Corporate Credit rating is below average:

11   85 utilities are rated higher than PSNH while only 40 are rated lower than PSNH. This

12   indicates that PSNH's credit standing is relatively weak as compared to other utilities.

13   Investors are, of course, hopeful that this proceeding will improve PSNH's financial

14   condition.

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[16] PSNH's 2009 - 2013 construction program (millions $) Distribution – 560, Generation – 594, Transmission – 1,497.

[17] PSNH's last credit rating change was a downgrade by S&P from BBB+ to BBB on April 14, 2004.

| | Number of | |
Rating	Utilities	
AA-	1	0.53%
A+	5	2.67%
A	12	6.42%
A-	32	17.11%
BBB+	35	18.72%
BBB	63	33.69%
BBB-	28	14.97%
BB+	6	3.21%
BB	3	1.60%
BB-	3	1.60%
	187	

Source: S&P U.S. Regulated Electric
Utilities, Strongest to Weakest, May 7, 2009

1   Q.   **Please explain what you mean when you state that PSNH's credit standing is**

2   **relatively weak.**

3   A.   PSNH's ratings are at the lower end of the investment grade. That is one reason why

4   PSNH has reduced flexibility to respond to challenges such as a prolonged and/or

5   worsening credit crisis.[18] Further, the rating agencies have expressly noted in published

6   reports that PSNH's credit metrics have weakened over the past several years. For

7   example, S&P's April 17, 2009 Summary of Public Service Company of New Hampshire

8   stated that PSNH's "...financial profile [is] slightly weak for the rating level." In its

9   November 2008 Credit Opinion on PSNH, Moody's commented that PSNH's credit

10   metrics were "under its previous averages"; that its cash metrics had generally weakened

11   since 2006; and that, going forward, Moody's expects that "the increase level of external

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[18] Reduced flexibility takes the form of fewer financing options, higher financing costs and, at particularly
challenging times, difficulty in obtaining access to necessary funds

1   financings associated with the planned capital program will somewhat pressure credit

2   metrics." Similarly, Fitch, in its November 2008 <u>Credit Analysis of PSNH</u>, commented

3   that "Credit metrics have been trending downward."

4 **Q.**   **Please expound on your statement that PSNH's credit metrics have been**

5   **weakening.**

6 A.   The three ratios that S&P refers to as the principal ratios[19] are:

7   ▪ Funds from Operations ("FFO") Interest Coverage

8   ▪ FFO to Total Debt

9   ▪ Total Debt to Total Capital

10   The FFO/Interest and FFO/Debt ratios (known as cash flow ratios) are the most

11   important ratios used by the credit rating agencies to evaluate a company's cash

12   flows and the company's ability to meet its financial obligations. The table below

13   confirms the observations of the rating agencies that PSNH's key cash flow credit

14   metrics are declining not only in absolutely terms but also relative to the industry.

15   In fact, the FFO to Total Debt ratio, for year-end 2008 ratio has alarmingly fallen

16   all the way to the bottom limit of the BBB rating range.[20]

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[19] While the rating agencies consider many factors in determining a rating, they generally consider their methodology proprietary. For that reason, Fitch does not publicly disclose the factors that influence its ratings, and Moody's has only recently begun to do so. S&P has historically been the most open and transparent with respect to their criteria. Because of its long-standing and high degree of transparency and availability of comparative information, the NU system companies have generally relied on the S&P methodology to establish their capital structure targets.

[20] The Company has been told by the S&P that PSNH's will not be considered for a rating upgrade until the FFO to average debt ratio approaches 18 percent.

	2008		2007	
	PSNH	Industry	PSNH	Industry
FFO to Interest (x)	2.8	4.9	3.5	3.9
FFO to Total Debt (%)	10.09	18.00	13.52	19.70

S&P Guideline for BBB ratings
FFO to Interest   2.0x - 3.5x
FFO to total Debt   10% - 30%

Source: Rating Trends Turn Negative During the First Quarter Of 2009 For U.S. Electric Utilities, April 14, 2009.

1 Q. What can be done to improve PSNH's deteriorating credit metrics?

2 A. As shown in the table below, PSNH's low and declining distribution return on equity has

3 contributed to its weakening credit profile.

Actual Earned Return on Equity [a]

	Mar-09	Year-ending	
		2008	2007
Distribution [b]	5.54%	6.26%	8.70%
Total Company	8.78%	8.99%	8.41%
Rate Base:			
Distribution	739,675		
Total Company	1,218,244		
	60.7%		

a. From Form F-1 filed with the New Hampshire PUC May 19, 2009
b. In Docket No. DE 06-028, PSNH distribution was allowed a 9.67% return on equity. In the prior distribution docket a return on equity was not stated.

4 Because of the relative size of PSNH's distribution rate base to its total assets, its low

5 allowed and earned ROE is a driver of the Company's earnings and credit metrics. This

6 proceeding affords the Commission an opportunity to stop PSNH's deteriorating credit

7 situation by not only setting a more appropriate allowed ROE but, of equal importance,

1		by setting distribution rates at a level that will permit PSNH a realistic opportunity to
2		earn that allowed return going forward. In addition, as discussed in the next section, it is
3		important that PSNH's ratemaking capital structure be strengthened.

4 V. CAPITAL STRUCTURE

5	Q.	**What is the Company's proposed capital structure?**
6	A.	PSNH should continue to target a capital structure of 45 percent equity and 55 percent
7		debt using the rating agency (S&P) methodology. This rating agency target is consistent
8		with PSNH peers' actual rating agency capital structures. In Attachment GJE – 2 Capital
9		Structure, I provide the 2007 and 2008 actual S&P capital structures for each of the peer
10		companies.

11	Q.	**Why is it appropriate for PSNH to set a target using the rating agency**
12		**methodology?**
13	A.	The principal reason is that the rating agency capital structure is highly influential in the
14		financial markets. It exerts a strong influence over bond ratings, marketability of debt
15		securities, and ultimately PSNH's cost of capital.

16	Q.	**How does the rating agency capital structure differ from the ratemaking capital**
17		**structure?**
18	A.	The primary difference between the two capital structures is that the rating agencies
19		include all contractual obligation that have a claim to a company's current and future
20		cash flows, not just traditional debt (i.e., bonds). Leases are a classic example of that
21		type of contractual obligation, sometime referred to as off-balance sheet debt. The rating
22		agencies "impute" debt for such obligations. Consequently, the rating agency capital

13

1		structures will typically have a higher percentage of debt than ratemaking capital
2		structures. The differences between the two capital structures are discussed in more
3		detail in Attachment GJE - 2 Capital Structure. Significantly, rating agencies now impute
4		debt for Asset Retirement Obligations and for Unfunded Pension and Post Retirement
5		Obligations, which can have a significant effect on rating agency capital structure.
6	Q.	**Does PSNH manage its capital structure to meet the rating agency target?**
7	A.	No. PSNH must manage to its allowed ratemaking capital structure. As explained more
8		fully below, additional equity above the allowed level for ratemaking purposes would
9		lower PSNH's actual earned ROE because, in effect, it would be earning a zero return on
10		the incremental equity.
11	Q.	**How does PSNH manage to its ratemaking capital structure?**
12	A.	Although PSNH uses internal cash flow to finance a portion of its annual investment,[21] it
13		is typical for PSNH to need additional capital over and above its internal cash flow. This
14		"external" capital requirement is met with a combination of new debt issuances and new
15		equity contributions from PSNH's parent, Northeast Utilities ("NU"). The relative
16		amounts of new debt and new equity are designed to maintain the ratemaking capital
17		structure at the allowed level. The table below shows that, as a result of PSNH's
18		increasing capital expenditures and weak distribution earnings, NU has found it necessary
19		to contribute increasing amounts of equity capital to PSNH to maintain the ratemaking
20		structure.

	Year-to-Date		
	2009	2008	2007
NU Capital Contributions ($M)	67.3	75.6	44.2

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[21] PSNH budgets 60 percent of annual earnings as a dividend to its parent, with the remainder of funds from operations utilized to meet PSNH's capital requirements.

14

| 1 | | NU's equity contributions have been instrumental in allowing PSNH to maintain its |
| 2 | | credit rating in the face of weakening cash flow credit ratios. |

3	**Q.**	**You stated earlier that rating agencies now impute debt for Unfunded Pension and**
4		**Post Retirement Obligations and Asset Retirement Obligations. How has that**
5		**affected the Company's requested capital structure?**
6	A.	In the last rate case PSNH requested a ratemaking capital structure of 48.13 percent
7		equity and 51.87 percent long-term debt in order to meet its rating agency capital
8		structure target of 45 percent equity and 55 percent debt.[22] In order to maintain the same
9		rating agency capital structure target, PSNH's ratemaking capital structure will now need
10		to be set at 51.11 percent equity and 48.88 percent debt. The calculations are shown in
11		GJE - 2 Capital Structure.

12	**Q.**	**Why didn't NU provide more equity to PSNH in order to attain the target rating**
13		**agency capital structure?**
14	A.	As noted above, if NU had contributed equity capital to PSNH above the level allowed
15		for ratemaking purposes in order to attain its target rating agency capital structure, PSNH
16		would have earned a zero percent return on that incremental equity investment. As
17		discussed above, PSNH's earned ROE is already too low. Therefore, if NU had
18		contributed more equity to PSNH over the allowed capital structure, PSNH's earned ROE

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[22] The current allowed ratemaking capital structure, which was negotiated and included in the May 2007 settlement, assumes 1.18 percent of rate base is funded with short-term debt. This is inconsistent with industry practice and the Company disagrees with the inclusion. Short-term debt is discussed in more detail in Attachment GJE -2 Capital Structure.

1   would have been even lower. Further, NU has a fiduciary responsibility to its equity

2   investors and such an incremental equity investment with no return would be very

3   difficult to justify.

4 **Q.**   **How does NU obtain the equity capital that it periodically contributes to PSNH?**

5 **A.**   In order for NU to make equity contributions to PSNH and its other operating companies,

6   NU periodically raises its own equity capital with common stock issuances. For

7   example, in March 20, 2009, NU sold 18.975 million new shares of common stock to the

8   public at a price of $20.20. After expenses NU netted $370.8 million, which it has or will

9   invest in its operating companies.

10 **Q.**   **Are other utilities requesting an increase in the equity percent of their ratemaking**

11   **capital structure as a result of imputed debt for Unfunded Pension and Post**

12   **Retirement Obligations and Asset Retirement Obligations?**

13 **A.**   Yes. I asked our bankers at Citi Bank to research that precise question. John D. Clapp,

14   Managing Director, Global Power Sector, Citi Investment Banking provided the

15   following summary of utility equity market activity:

16   … there are a number of utilities that have requested and received higher
17   equity percentages in relation to their overall capital structure. Overall we
18   have seen a growing number of utilities issuing equity in the capital markets
19   over the past 6 months. These issuances have often been driven by the need
20   to rebalance the utility's capital structure to preserve the current rating and
21   alleviate concerns over potential downgrades typically due to a combination
22   of: 1) declining revenues and 2) significant near-term capex requirements. In
23   addition to showing prudence given market uncertainty, these actions also
24   recognize that companies with stronger balance sheets/liquidity have more
25   consistent access to all forms of capital.

1	... certain utilities are going beyond a rebalancing their cap structure and
2	deleveraging to varying degrees. A search of the supporting testimony
3	showed that in at least two cases (TECO and OGE, attached) utilities raised
4	concerns about the economy, and in particular the need to reduce debt interest
5	expenses in a time of revenue uncertainty as a major rationale behind their
6	request for a larger equity component in the cap structure.[23]

7   Citi Bank also provided a list of 13 electric utilities that have or are seeking regulatory

8   authority to increase the equity component of their ratemaking capital structure. I have

9   provided that list in GJE - 2 <u>Capital Structure</u>. The average ratemaking equity percentage

10   being requested is 51.96 percent.

11 **Q.**   **Do the challenging financial market conditions discussed above have any impact on**

12   **the appropriate capital structure for PSNH?**

13 **A.**   Yes. The current environment poses significant challenges with respect to a utility's

14   ability to raise capital on reasonable terms. For PSNH these concerns are magnified by

15   the fact that its credit metrics are weakening. Fitch recently observed that in current

16   credit markets, "'flight to quality is selective within the (utility) sector, favoring

17   companies at higher rating levels."[24] Ideally, this would be a good time to strengthen

18   PSNH's rating agency capital structure target. I have not made that recommendation,

19   however, because the ratemaking capital structure already needs to be strengthened in

20   this proceeding merely to maintain the current rating agency capital structure target. If

21   the challenging financial market conditions continue, the Company will likely propose to

22   strengthen its rating agency capital in a future proceeding.

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[23] Email from John Clapp at Citi Bank to G,J. Eckenroth dated May 22, 2009

[24] Fitch Ratings Ltd., "U.S. Utilities, Power and Gas 2009 Outlook," Global Power North America Special Report (Dec. 22, 2008).

1   **VI.**   <u>**COST OF CAPITAL**</u>

2   **a.** <u>**Cost of PSNH's Long-Term Debt**</u>

3   **Q.**   **Please summarize your Long-Term Debt recommendation.**

4   A.   The table below shows PSNH's outstanding long-term debt, which consists of five series

5   of pollution control revenue bonds and four series of first mortgage bonds, plus a new

6   first mortgage bond to be issued in 2009. The table shows the total principal amount of

7   each issue, gross financings costs and the net proceeds or cash available to fund rate base.

8   The table also shows the total amortized issuance costs and the net cash available to fund

9   rate base in 2009.

(million $)	At Offering Date			Total Amortized Financing Costs	Net Outstanding
	Principal	Financing Costs	Net Proceeds		
Pollution Control Revenue Bonds					
Series A	89,250	5,781	83,469	2,025	85,494
Series B	89,250	7,124	82,126	2,280	84,406
Series C	108,985	7,787	101,198	2,517	103,715
Series D	75000	4,149	70,851	3,091	73,942
Series E	<u>44,800</u>	<u>3,088</u>	<u>41,712</u>	<u>2,479</u>	<u>44,191</u>
	407,285	27,929	379,356	12,392	391,748
First Mortgage Bonds					
Series L	50,000	549	49,451	194	49,645
Series M	50,000	694	49,306	74	49,380
Series N	70,000	607	69,393	-166	69,227
Series O	<u>110,000</u>	<u>1,465</u>	<u>108,535</u>	<u>-1,013</u>	<u>107,522</u>
	280,000	3,315	276,685	-911	275,774
	<u>687,285</u>		<u>656,041</u>	<u>11,481</u>	<u>667,522</u>
New Bond	150,000	1,296	148,704	0	148,704
	<u>837,285</u>		<u>804,745</u>	<u>11,481</u>	<u>816,226</u>

1   The table below shows the calculation of the total annual carrying costs. The annual

2   carrying costs are the sum of the interest payment plus the amortization of financing

3   costs.

(million $)	Interest Rate	Principal	Annual Interest	Amortization of Financing Costs	Total Carrying Costs
Pollution Control Revenue Bonds					
Series A	0.40%	89,250	357	413	770
Series B	4.75%	89,250	4,239	502	4,741
Series C	5.45%	108,985	5,940	427	6,367
Series D	6.00%	75000	4,500	86	4,586
Series E	6.00%	44,800	2,688	49	2,737
		407,285	17,724	1,477	19,201
First Mortgage Bonds					
Series L	5.25%	50,000	2,625	63	2,688
Series M	5.60%	50,000	2,800	23	2,823
Series N	6.15%	70,000	4,305	89	4,394
Series O	6.00%	110,000	6,600	266	6,866
		280,000	16,330	441	16,771
		687,285	34,054	1,918	35,972
New Bond	6.44%	150,000	9,660	130	9,790
		837,285	43,714	2,048	45,762

4   The 5.61 percent weighted cost of debt is calculated by dividing the Total Carrying Costs

5   by the Net Outstanding.

Total Carrying Costs	Net Outstanding	Weighted Cost of Debt
45,762	816,226	5.607%

1   Q.   **Please discuss why PSNH must issue a new bond in 2009?**

2   A.   PSNH needs additional long-term capital to fund its construction program and for general

3   working capital needs. In between bond issuances PSNH borrows short-term from the

4   NU System Money Pool and its Revolving Credit Facility on a temporary basis. In the

5   longer term, sound financial management requires using long-term financing to finance

6   long-term assets. Therefore, it is necessary to replace the short-term financing with long-

7   term debt when the amount reaches a level that permits PSNH to issue a bond in an

8   economically efficient manner. PSNH's financing plan contemplates accessing the

9   capital markets to issue long-term debt whenever short-term debt consistently exceeds the

10        $125 to $140 million range. The Company filed an application dated February 20, 2009

11   with the Commission to issue long-term debt in Docket No. DE09-033. The Company's

12   2009 financing plan anticipated the issuance of a ten-year first mortgage bond as early as

13   the second quarter of this year.[25] The 2009 financing plan incorporated into the 2009

14   budget assumed an all-in interest rate of 6.44 percent for the issuance of a new ten-year

15   first mortgage bond.[26]

16   ## b. Return on PSNH's Common Equity

17   Q.   **What is the purpose of your ROE analysis?**

18   A.   The purpose of my analysis is to develop and support a recommendation that meets the

19   applicable legal and economic standards, which hold that a utility and its investors should

---

[25] After receipt of a financing order from the Commission, the Company will move expeditiously to issue.

[26] The 6.44 percent all-in rate was based on November 2008 market data that required a 10-yer credit spread of 369 basis points over the yield on a ten-year treasury bond.

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1   be afforded an opportunity to earn a return commensurate with returns they could expect

2   to achieve on investments of similar risks.[27]

3 Q. **Is there one methodology that can be used to precisely determine the proper ROE**

4   **for a utility such as PSNH?**

5 A. No. When measuring equity costs, which essentially deal with the measurement of

6   investor expectations, no one single methodology provides a sufficiently reliable result.

7   The Society of Utility and Regulatory Analysts supports using a multiplicity of methods

8   and, as a member, I have complied with their recommendation. I have used the three

9   most accepted valuation models: a Discounted Cash Flow Model ("DCF"), the Capital

10   Asset Pricing Model ("CAPM") and a Risk Premium Model ("RPM").

11 Q. **How did you develop your recommendation?**

12 A. Estimating the cost of equity capital involves theoretical and empirical components. The

13   theoretical component relies on the standard financial literature to develop cost of capital

14   models that are consistent with what we know and observe about the way the financial

15   markets work. Each of the accepted cost of capital models results from theoretical

16   investigations. The empirical component includes the collection of the data to be used

17   with the theoretical cost of capital methods. The most important empirical considerations

18   are to use data that are (1) consistent with the theoretical models employed,(2) timely and

19   (3) unbiased. It is also important that the calculations made with the empirical data be

20   reliable and stable and not sensitive to minor or judgmental changes.

---

[27] The reference is to the *Bluefield* and *Hope* U.S. Supreme Court cases that collectively reflect the economic criteria encompassed in the "opportunity cost" principle.

i. Discounted Cash Flow Method

1

2 **Q.   Please explain the DCF Model?**

3 A.   Discounted cash flow valuation calculates the value of an asset as the present value of the

4   expected future cash flows to be earned by the holder of the asset. Financial theory

5   clearly establishes that the DCF is the best way to establish the value of an asset if the

6   future cash flows can be determined accurately. There are significant challenges to

7   overcome when applying the DCF to common stocks, however, because the cash flows

8   on common stock are not known.

9   The simplest DCF model for valuing equity is the dividend discount model, which

10   determines the value of a stock by calculating the present value of all dividends expected

11   to be paid to holders of the stock. This approach is not very operational, as it requires an

12   estimation of an infinite stream of dividends.

13   A simplified version of the DCF model was published by Professor Myron

14   Gordon a half century ago and has been in use ever since. While Professor

15   Gordon's model is frequently referred to as "the" DCF model, it would be more

16   accurate to characterize it as "a form of" the DCF model that requires the

17   acceptance of several strict assumptions. The most extreme of these assumptions

18   is that the earnings and dividends of a company will grow at a constant rate over

19   the company's life. The theoretical underpinnings of the DCF model are

20   discussed in more detail in Attachment GJE – 3 Discounted Cash Flow Model.

1   The Gordon version of the DCF model sets the following formula:

2           $P_0 = D_0 \times (1+g) / (K_e - g)$ where:

3   P_0 = Current stock price
4   D_0 = Actual dividends in the last four quarters
5   K_e = Investors' required return or equity cost of capital
6   g = Estimated annual earnings growth rate

7   Solving the equation for K_e, the cost of equity, algebraically, the standard DCF

8   formulation widely used in regulatory proceeding is obtained.

9           $K_e = (D_0 \times (1+g) / P_0) + g$

10   This formula effectively states that the equity investors' required return can be estimated

11   as the sum of an expected dividend yield plus an expected growth rate.

12   Q.   **The DCF model requires data that is only available for publicly-traded companies.**

13   **Given that PSNH is a wholly-owned subsidiary of NU, not a publicly-traded stock,**

14   **how did you proceed?**

15   A.   When dealing with a company that is not publicly traded, it is customary when using this

16   DCF model to utilize a group of publicly-traded companies with similar financial and

17   operational characteristics as the firm being analyzed. That group of companies is known

18   as the proxy group. In keeping with my past practice, I developed a proxy group that

19   institutional investors view as similar to PSNH with the assistance of Morgan Stanley

20   (the "Institutional Investor" proxy group). In order to test the sensitivity of my results to

21   the composition of the proxy group, I also developed alternative proxy groups. In

22   Attachment GJE – 3 <u>Discounted Cash Flow Model,</u> I discuss my various proxy groups.

1   Q.   **The DCF model requires a stock price, dividend and a dividend yield. How did you**

2   **develop those inputs?**

3   A.   The dividend yield is simply the annual dividend divided by a stock price. For the

4   dividend, I used the sum of the actual last four quarterly dividends paid by each of the 57

5   companies in my data base. For the stock price, I averaged the high and low stock price

6   in each month and then calculated an average price for period for each of the companies

7   in the data base. Because of the steady decline in stock prices since September 2008, I

8   calculated the dividend yield using six, three and one-month average stock prices. The

9   calculation of dividends, average stock prices and yield is discussed in more detail in

10   Attachment GJE - 3 Discounted Cash Flow Model.

11   Q.   **The DCF model requires a long-term growth rate. How did you develop it?**

12   A.   The most challenging part of the DCF methodology is estimating the growth rate. In

13   their 2008 MBA text, Michaels C. Ehrhardt and Eugene F. Brigham's include a section

14   entitled "Evaluating the Methods for Estimating Growth." The authors conclude that

15   "studies have shown that analysts' forecast usually represent the best source of growth

16   rate data for the DCF cost of capital estimations."[28] That conclusion is consistent with

17   my view and my past practice. Therefore, I used the consensus or average of publicly

18   available growth rates. In particular, I utilized the growth rates, published by Value Line,

19   Yahoo Finance, Zacks Investment Services, SNL, and Institutional Brokers Estimate

20   System ("I/B/E/S"). My growth rate is the simple average of those five growth rates. In

21   Attachment GJE - 3 Discounted Cash Flow Model, I discuss the use of analyst growth

22   rates in more detail and present each of the growth rates that I utilized.

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[28] M.C. Ehrhardt, E. F. Brigham, Corporate Finance, A Focused Approached, South-Western Cengage
Leaning, 2008, page 302.

1 **Q.** **On which of your proxy groups have you based your recommendation?**

2 **A.** In keeping with my past practice, I base my recommendation on the Institutional Investor

3 proxy group. However, as shown in Attachment GJE - 3 <u>Discounted Cash Flow Model</u>,

4 using other proxy groups would tend to increase my ROE calculations.

5 The details for each company in the Institutional Investor proxy group are presented

6 below. The range of ROEs is from 11.96 percent to 12.32 percent, depending on the

7 time-period for calculating the stock price.

		Institutional Investor - PSNH Proxy Based on Average Stock Prices of:		
		6 month ROE Adj Yield plus Growth Rate	3 months ROE Adj Yield plus Growth Rate	1 month ROE Adj Yield plus Growth Rate
1	ALLETE	10.35%	10.91%	10.74%
2	Alliant Energy Corporation	11.75%	12.33%	12.28%
3	Amer. Elec. Power	10.11%	10.71%	10.75%
4	Avista Corp.	10.78%	11.35%	10.99%
5	CH Energy Group	7.88%	8.05%	8.08%
6	Cleco Corp.	16.70%	16.75%	16.88%
7	Consol. Edison	8.86%	9.05%	9.18%
8	DPL Inc.	13.24%	13.17%	13.18%
9	DTE Energy Company	11.31%	11.95%	11.43%
10	Empire Dist. Elec.	16.00%	16.66%	16.10%
11	IDACORP, Inc.	9.80%	10.32%	10.29%
12	Northeast Utilities	12.28%	12.54%	12.55%
13	Northwestern Corporation	16.13%	16.35%	16.18%
14	NSTAR	11.63%	11.89%	11.78%
15	PG&E Corp.	11.39%	11.39%	11.51%
16	Pinnacle West Capital	12.00%	12.70%	12.48%
17	Portland General	12.37%	12.56%	12.30%
18	Progress Energy	12.48%	12.85%	12.78%
19	Southern Co.	10.83%	11.33%	11.48%
20	TECO Holding Corp.	15.11%	15.39%	14.88%
21	UIL Holding Company	11.58%	12.44%	12.25%
22	Westar Energy	10.85%	11.25%	11.12%
23	Wisconsin Energy	11.87%	11.99%	12.06%
24	Xcel Energy Inc.	11.77%	11.82%	11.85%
	average	11.96%	12.32%	12.21%

1   Some of my misgivings with the DCF model are illustrated by the table above. For

2   example, the range of investor returns for a group of companies with similar financial and

3   operational companies is too large: CH Energy Group 7.9 percent to Cleco Corp 16.8

4   percent. Further, several low ROEs clearly do not make economic sense, as investors are

5   not being compensated for accepting the incremental risk of equity risk over debt with a

6   higher return. Conversely, several of the high numbers are too generous; investors would

7   quickly eliminate such outliers through arbitrage.[29]

8 **Q.   How did you correct for this shortcoming of the DCF model?**

9 A.   Consistent with my past practice, I apply an Acceptance Criterion to the ROE for each

10   company in the Institutional Investor proxy group. My Acceptance Criterion requires

11   that the company's calculated ROE must fall within a range of reasonableness. After

12   applying the Acceptance Criterion, the range of ROEs is reduced from 11.96 percent to

13   12.32 percent to 11.45 to 11.86 percent. My Acceptance Criterion and its impact on the

14   proxy group are discussed in GJE - 3 <u>Discounted Cash Flow Model</u>.[30]

Acceptance Criterion
Return on Equity Institutional Investor Proxy Group
Based on Average Stock Prices of:

	Six Month Price		Three Month Price		One Month Price	
	ROE	Accept	ROE	Accept	ROE	Accept
Per-acceptence average	11.96%		12.32%		12.21%	
Post-acceptence average		11.66%		11.86%		11.45%
ROE over Long-Term Debt	3.40%		3.57%		3.39%	

---

[29] Arbitrage is the simultaneous purchase and sale of an asset in order to profit from a difference in the price. It is a trade that profits by exploiting price or return differences of identical or similar financial instruments.

[30] For the cost of debt, I used the average monthly cost of a Baa bond yield as published by the Federal Reserve in publication H.15.

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1	Q.	Would you make any additional adjustment to the average DCF ROE?
2	A.	Yes. I would adjust for flotation costs. On March 20, 2009, NU sold new common
3		equity. The price paid by investors was $20.20 per share but NU received only $19.54
4		per share. The $.6622 per share (or 3.28 percent) difference was the cost to issue the new
5		shares of common stock. In order for NU to earn the ROE required by investors based on
6		NU's $20.20 share price, NU must earn a higher return on the $19.54 per share to that
7		NU actually receives. The flotation cost adjustment is discussed in more detail, along
8		with the supporting calculations, in Attachment GJE - 3 <u>Discounted Cash Flow Model</u>. A
9		20 basis point issuance cost adjustment to the ROEs is required to earn the investors'
10		required return on the net proceeds available to the company.

11	Q.	Please summarize your DCF analysis.
12	A.	Using my proxy group and Acceptance Criterion, and adjusting for flotation costs, my
13		DCF analysis supports an ROE in the 11.65 percent to 12.06 percent range.

ii. Capital Asset Pricing Models ("CAPM" and "ECAPM")

15	Q.	Please describe the CAPM.
16	A.	The CAPM is a widely-referenced method for estimating the cost of equity both among
17		academicians and professional practitioners. As with other risk premium-based models,
18		the CAPM recognizes that risk-averse investors demand higher returns for assuming
19		additional risk and that higher-risk securities are therefore priced to yield higher expected
20		returns than lower-risk securities. The CAPM goes one step further by providing a
21		formal risk-return relationship that quantifies the risk premium required for bearing
22		incremental risk in the context of a highly diversified portfolio. The CAPM is
23		mathematically expressed as:

| 1 | | $K_e = R_f + \text{Beta} (R_m - R_f)$ |

2   where:

3   K_e = investors required return or equity cost of capital

4   R_f = risk free rate of return

5   Beta = measure of risk

6   R_m = market rate of return

7               $R_m - R_f$ = market risk premium

8

9   As discussed below, the CAPM has been demonstrated to have a key bias and the

10   Empirical CAPM ("ECAPM") was developed to correct that bias.

11   **Q.**   **How did you choose a risk free rate of return?**

12   A.   The ideal estimate for the risk-free rate should have a term to maturity equal to the

13   security being analyzed and the maturity of the assets being financed. Because common

14   stock has a perpetual life, cash flows to equity investors last indefinitely, regardless of an

15   individual investor's holding period. Moreover, most utility assets have very long-term

16   useful lives. Therefore, the best available proxy for the risk-free rate in the CAPM is the

17   return on the longest term Treasury bond that is traded. At present, the longest possible

18   term on a government bond is the yield on 30-year Treasury bonds.[31] Therefore, I have

19   used the yield on 30-year Treasury bonds in implementing the CAPM. In Attachment

20   GJE - 4 <u>CAPM</u>, I have provided detail on the 30-year Treasury bond yield. The yield has

21   been slowly but steadily rising;[32] the average yield in December 2008 was 2.87 percent

22   and in May 2009 the average yield was 4.23 percent. I have used an extremely

23   conservative 4 percent as the risk-free rate.

---

[31] While the return on Treasury Bills is sometimes used as the risk-free rate, Treasury Bills are not an ideal choice. Investors in common stocks (which do not expire or mature) have an investment horizon far in excess of Treasury Bills. An appropriate risk-free rate for valuing common stocks must have a long term to maturity.

[32] See Yahoo Finance ^TYX 30-yr Treasury bond

1 **Q.**   **Please explain Beta.**

2 A.   The beta coefficient is the measure of risk used in the CAPM. Under the CAPM view,

3   total risk (the variability of returns) of an investment consists of two parts: systematic risk

4   and unsystematic risk. Systematic risk is unavoidable since it affects all assets in the

5   economy to some degree. In contrast, unsystematic risk is due to the unique

6   circumstances of a specific asset. The impact of unsystematic risk can be greatly reduced

7   through diversification.[33] The CAPM theorizes that since unsystematic risk can be

8   largely avoided through diversification; it is not rewarded with a risk premium.

9   Conversely, since systematic risk cannot be avoided, it is rewarded with a risk premium.

10   The beta coefficient measures the average change in a security's (stock) return relative to

11   the market.[34] By the design of the CAPM model, the overall market always has a beta of

12   1.0. A beta of greater than one indicates that a company is more risky than the market as

13   a whole; a beta of less than one means that the company is less risky than the market.

14   There is a well-known tendency of beta to gradually migrate toward the average beta of

15   1.0 over time, also known as regression toward the mean.[35] Therefore, in estimating

16   betas, it is necessary to adjust for this tendency. I have utilized the betas published by

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[33] Diversification is the (calculated) spreading of investments over a number of different asset classes, sectors, countries. This provides a cushion, since different asset classes, sectors, or countries seldom move in the same direction.

[34] Absolute estimates of beta vary when different computational methods are used. The return data, the time period used, its duration, the choice of a market index and whether annual, monthly or weekly return figures are used will influence the final result.

[35] See www.wikipedia.org/wiki/Regression_toward_the_mean

1	Value Line, which have been adjusted for this movement of betas toward 1.0.[36] I have
2	used a conservative beta of .70. A more detailed discussion of beta is provided in
3	Attachment GJE – 4 <u>CAPM</u>.
4	**Q.**	**How did you determine the Market Risk Premium?**
5	A.	The market risk premium ("MRP") is the compensation in excess of the return on a risk-
6		free asset that investors require for the additional market risk they bear. The MRP is of
7		critical importance in the CAPM given the direct relationship between it and the expected
8		ROE. The MRP is forward-looking, however, and not directly observable. I have
9		traditionally estimated the MRP using historical returns. However, historical equity risk
10		premiums are not indicative of equity investors' required returns to induce them to buy or
11		hold stocks at this time. As discussed above under Current Market Conditions, with the
12		risk premiums for corporate bonds at historic highs, the equity risk premium must also be
13		higher than normal in order to compensate investors for the higher risk of investing in
14		equity rather than debt.
15		To capture the current high level of uncertainty in investor future expectations, with the
16		assistance of Barclays Capital, I developed a DCF of the S&P 500 to calculate the
17		expected return on the market.
18		In Attachment GJE – 4 <u>CAPM</u>, I discuss and present the calculation of the S&P 500
19		expected return in more detail. Combining a forward S&P 500 dividend yield of 3.75
20		percent with an expected long-term S&P 500 growth rate of 9.74 percent results in a

---

[36] Per www.valueline.com, "[t]he 'Beta coefficient' is derived from a regression analysis of the relationship between weekly percentage changes in the price of a stock and weekly percentage changes in the NYSE Index over a period of five years. The Betas are adjusted for their long-term tendency to converge toward 1.00."

| 1 | 13.49 percent long-term expected S&P 500 market return. The market return less the |
| 2 | 4.00 percent 30-year treasury yield provides a market risk premium of 9.49 percent. |

3 **Q.** **What is the result of your CAPM before correcting for the biases to which you**

4 **referred above?**

5 A. Based on the inputs discussed above the Traditional CAPM formula results in a ROE of

6 10.64 percent.

$$
\begin{array}{cccccc}
 & & \text{Risk Free} & & & \\
\underline{ROE} & = & \underline{Rate} & + & (\underline{Beta} & \text{x} & \underline{MRP}) \\
 & & & & 0.70 & \text{x} & 9.49\% \\
10.64\% & = & 4.00\% & + & & 6.64\% &
\end{array}
$$

7 **Q.** **Please describe the biases in the CAPM to which you referred.**

8 A. A consistent finding of empirical studies of the CAPM show that there is a discrepancy

9 between the risk-return tradeoff predicted by the CAPM and the risk-return tradeoff

10 actually observed. Specifically, these empirical findings show that low beta stocks have

11 higher rates of return than predicted by the model. This finding has given rise to the

12 "Empirical CAPM" or ECAPM, which is designed to correct this bias. The ECAPM

13 corrects the ROE to 10.79 percent as follows.

$$
\begin{array}{lllllllll}
\text{ECAPM} & = & (30 \text{ yr Treasury} & + & \text{Alpha}) & + & [\text{Beta} & \text{x} & (\text{Risk Premium} & - & \text{Alpha})] \\
10.79\% & & 4.00\% & + & 0.50\% & & 0.70 & \text{x} & 9.49\% & - & 0.50\%
\end{array}
$$

14 I discuss the need for and computation of the ECAPM adjustment in more detail in

15 Attachment GJE – 4 <u>CAPM</u>.

1   Q.   **What other adjustments should be made to the CAPM/ ECAPM?**

2   A.   One of the discoveries of modern finance is that of a relationship between company size

3   and return. The relationship cuts across the entire spectrum of size but is most evident

4   among smaller companies, including electric utilities. The CAPM does not account for

5   size differentials across companies and therefore understates the cost of equity for small

6   companies. If PSNH were a stand-alone publicly trade company, investors would be

7   expected to earn at least an additional 74 basis points, which would increase the ECAPM

8   recommendation to 11.53 percent. I discuss the size premium in more detail in

9   Attachment GJE – 4 <u>CAPM</u>.

10   Q.   **Are you proposing an adjustment for issuance cost to the CAPM as you did to your**

11   **DCF model?**

12   A.   Yes. In GJE - 4 <u>CAPM</u>, I provide a numerical example of the need for an issuance cost

13   adjustment. My example is based on March 2009 sale of NU common stock. Investors

14   paid $20.20 for each share of NU stock. If an investor purchased the stock with an

15   expectation of earning annually 11 percent, then they expected to receive on average

16   annually $2.22 (20.20 x .11). However, after paying issuance expenses, NU received

17   only $19.54 per share to invest. Consequently, NU must earn approximately 11.37

18   percent on the invested equity to meet the investor's $2.22 expected returns. The

19   incremental 37 basis points should be added to the size-adjusted ECAPM of 11.53

20   percent to arrive at an 11.89 ROE.[37]

---

[37] The calculation of issuance costs using the CAPM method differs from the calculation using the DCF method.

		Adjustments	Cumulative
Traditional CAPM	10.64%		
Empirical		0.15%	10.79%
Size		0.74%	11.53%
Issuance costs		0.37%	11.90%

iii Risk Premium Model ("RPM")

Q. Please discuss the development of an ROE using the Traditional RPM.

A. The traditional RPM is based on the fact that the return on debt is far easier to measure than the required return on equity. The RPM takes the return on debt and adds an equity risk premium that is estimated from past market returns.[38] The RPM is conceptually similar to CAPM, but was in wide use even before the CAPM was developed. Risk premium analysis is commonly used by analysts, investors and expert witnesses and is widespread in investment community reports.

The equity risk premium measures the additional risk required by investors for investing in equities rather than less risky assets, such as bonds. The RPM equation is as follows:

$$K_e = D + R_p$$
where:
K_e = investor's required return or equity cost of capital
D = the cost (interest rate) of a company's debt
R_p = the investor's risk premium over a debt instrument

Q. How is the equity risk premium estimated?

A. The equity risk premium is measured by the difference between equity returns and debt returns over the very long term. Use of long-term data is essential. In the short term, equity returns are strongly influenced by positive and negative surprises that result in

---

[38] Some have argued that historical returns are affected by investors' adjustments to relative taxation rates, and therefore not reflective of future expectations without tax adjustments. The core determinate of expected return is not taxability, but rather risk. Investors will examine the risk-return trade-off offered by various securities first and as a secondary matter the taxability issue.

1	unexpected outcomes. Therefore, actual equity returns may differ substantially from the
2	returns required by equity investors. Over the long term, however, such surprises will
3	tend to average out so that investors' required return and expected returns will converge.
4	This will not be true for shorter time periods that do not provide an adequate sample size.
5	Accordingly, I have used data from 1945 to 2008.

6 **Q. How did you measure the cost of debt?**

7 A. In the CAPM portion of my testimony, I explained why the appropriate cost of debt to

8 use when calculating an equity risk premium is the longest-term debt security that is

9 traded. For that reason, I have used the Moody's long-term bond yields for public utility

10 bonds published in the Mergent Bond Record as the debt security from which to calculate

11 the equity risk premium. Moody's long-term corporate bond yields have been published

12 daily since 1929 in Mergent Bond Record. Mergent states in an explanatory footnote that

13 "(t) he bonds have maturities as close as possible to 30 years; they are dropped from the

14 list if their remaining life falls below 20 years." [39]

15 **Q. How did you measure actual equity returns?**

16 A. I used two data sources: the Moody's Electric Utility Index and the S&P Electric Utility

17 Index.

18 **Q. What were the results of your analysis?**

19 A. The results indicate a risk premium of 3.95 percent using the Moody's Electric Utility

20 Index and 4.39 percent using the S&P Electric Utility Index. The average of these two

21 estimates is an equity premium of 4.17 percent. As shown in the table below, the

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[39] Mergent Bond Record May 2009 page 10

1   estimated current interest rate that PSNH would be required to pay on a newly issued 30-

2   year bond is 8.28 percent. Adding a 4.17 percent risk premium to the 8.28 percent cost of

3   debt results in a cost of equity for PSNH of 12.45 percent. The detailed calculations are

4   presented and discussed in Attachment GJE - 5 RPM.

	PSNH Cost of Debt	Equity Premium	Cost of Equity
Treasury yield	4.00%		
BBB+ Credit Spread	4.28%		
	8.28%	4.17%	12.45%

5 **VII. CONCLUSION**

6 **Q.**   **Please summarize your testimony.**

7 **A.**   These are difficult economic times, both for businesses and their customers. The

8   recommendations in this testimony are designed to preserve PSNH's access to needed

9   funding on reasonable terms without unduly burdening customers at a time when PSNH's

10   credit metrics have been weakening to a degree that has provoked published comments

11   by the major rating agencies.

12   In attempting to find the appropriate balance, it is essential to keep in mind the clear

13   evidence that, at this time of economic stress, investors are extraordinarily risk averse.

14   This has resulted in historically high risk premiums on both debt and equity. These high

15   risk premiums have raised the cost of capital for all companies, including electric

16   utilities.

1   I have utilized three well-established methods to estimate the appropriate allowed ROE

2   for PSNH. As shown in the table below, each of these methods supports an ROE of

3   11.65 percent or higher.

Results of ROE Calculations			
DCF	11.65%	to	12.06%
CAPM			11.90%
RPM			12.45%

4   In deference to the economic challenges that many PSNH's customers are facing, and in

5   light of recent regulatory decisions around the country, I am recommending only a 10.5

6   percent allowed ROE. With a 10.5 percent ROE and my recommended capital structure,

7   PSNH's appropriate WACC is 8.11 percent.

Ratemaking Capital Struture
and the Weighted Cost of Capital

	Ratio	Cost	
		Embedded	Weighted
Long-Term Debt	48.88%	5.61%	2.74%
Common Equity	51.12%	10.50%	5.37%
			8.11%

8   Q.   **Does that conclude your testimony?**

9   A.   Yes.