

DE 04-177

PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE

Transition and Default Service Rates

Order Following Hearing Regarding Return on Equity

ORDER NO. 24,473

June 8, 2005

APPEARANCES: Robert A. Bersak, Esq. and Kenneth H. Eagle, Esq. for Public Service Company of New Hampshire; F. Anne Ross, Esq. of the Office of Consumer Advocate on behalf of residential ratepayers; Donald M. Kreis, Esq. of the Staff of the New Hampshire Public Utilities Commission.

I. PROCEDURAL HISTORY

The current phase of this proceeding arises out of two previous orders of the New Hampshire Public Utilities Commission (Commission). In Order No. 24,369 (September 2, 2004), the Commission approved new Delivery Service rates for Public Service Company of New Hampshire (PSNH) pursuant to a Settlement Agreement that explicitly left unresolved the question of what return on equity should apply to the generation assets owned by PSNH but not used to provide Delivery Service. In Order No. 24,427 (January 28, 2005), *reh'g denied*, Order No. 24,443 (March 24, 2005), the Commission approved new Transition and Default Service rates for PSNH and, rather than grant a request by the Office of Consumer Advocate (OCA) to fix those rates by applying a revised return on equity for PSNH's generation portfolio, the Commission decided to conduct a supplemental phase of the docket to consider the appropriate return on equity for this aspect of PSNH's plant-in-service.

To commence this phase of the proceeding, the parties and Staff conducted a technical session on February 8, 2005, for the purpose of exchanging information and agreeing

upon a procedural schedule to recommend to the Commission. By secretarial letter issued on February 14, 2005, the Commission approved the procedural schedule as proposed.

Pursuant to the procedural schedule, PSNH witness Roger A. Morin submitted prefiled direct testimony on March 25, 2005. Discovery ensued. OCA witness Stephen G. Hill and Staff witness Maureen L. Sirois each submitted prefiled direct testimony on April 20, 2005. Additional discovery took place. The parties and Staff met for a settlement conference on May 10, 2005, but did not reach agreement. The Commission conducted an evidentiary hearing on May 17 and 18, 2005, at which each of the witnesses testified.

II. POSITIONS OF THE PARTIES AND STAFF

A. Public Service Company of New Hampshire

PSNH requests that the Commission apply an 11.4 percent return on equity in connection with the Company's generation assets.

PSNH witness Roger A. Morin began his analysis by estimating the overall cost of common equity capital for PSNH, which he described as a "vertically integrated electric utility company." Prefiled Testimony of Roger A. Morin, PhD., Exh. 7, at 13. He employed five methodologies: the Capital Asset Pricing Model (CAPM), the Empirical CAPM, the Risk Premium method, the Allowed Risk Premium method and the single-stage Discounted Cash Flow (DCF) method. According to Dr. Morin, he used five different methodologies because no single method provides the necessary level of certainty.

Noting that the purpose of this proceeding is to establish a reasonable return on investment for the assets in light of their riskiness to investors, Dr. Morin testified that reliance on any single method is inappropriate in estimating investor expectations of a rate of return on equity because of "possible measurement errors and vagaries in individual companies' market

data.” Exh. 7 at 14. In particular, Dr. Morin referred to the fact that the nation’s electric industry has been in a state of rapid change. Noting that many regulatory agencies, including the Commission, have established allowed returns on equity using only the DCF methodology, Dr. Morin testified that “there is no proof that the DCF produces a more accurate estimate of the cost of equity than other methodologies.” *Id.* at 16. Potential shortcomings of the DCF model, in his view, include its failure to account for changes in relative market valuation and the practical difficulties in calculating the Company’s expected growth.

With respect to relative market valuation, Dr. Morin testified that the DCF model is not equipped to deal with surges in market-to-book (*i.e.*, the market value of a company’s stock vs. the book value of its assets) and price-earnings (*i.e.*, share price of stock vs. corporate earnings) ratios. Dr. Morin testified that the DCF model improvidently assumes both ratios to be unchanging from current ratios.

Dr. Morin noted that he had performed five “risk premium” studies. The first two consisted of CAPM and what he described as an empirical approximation of CAPM, referred to as ECAPM. He noted that CAPM is premised on the notion that risk-averse investors demand higher returns for assuming additional risk and, thus, CAPM quantifies the additional return – referred to as the risk premium – required for bearing incremental risk. Dr. Morin noted that the CAPM formula calculates a company’s expected return on equity by adding the risk-free rate to the beta-adjusted market risk premium. He testified that the beta-adjusted risk premium, in turn, is calculated by multiplying a company-specific measure of risk relative to the overall market known as “beta” by the difference between the risk-free rate and the overall market risk premium. To estimate the CAPM return for the vertically integrated electric utility industry, as

represented by the companies on Moody's *Electric Utility Index*, Dr. Morin used a beta of 0.81 (page 1 of RAM-2) and a market risk premium estimate of 7.8 percent (Exh. 7 at 23).

As a proxy for the risk-free rate, Dr. Morin used the actual yield on 30-year U.S. Treasury bonds. According to Dr. Morin, the use of such a long-term rate is appropriate because short-term rates are too volatile. He also said that short-term investments do not match the planning horizon of equity investors. Dr. Morin testified that the prevailing rate for the 30-year bonds in March was 4.8 percent. However, he also testified about an "implied forecast" of 4.8 to 5.4 percent for such yields – and used that range as his risk-free rate in his CAPM model. *Id.* at 26.

Dr. Morin used a market risk premium of 7.8 percent, based on data from Ibbotson Associates. He used the average of the historical estimate – 7.2 percent – and the prospective estimate – 8.5 percent. *Id.* at 28. According to Dr. Morin, in calculating the historical estimate he ignored risk premiums measured over short periods of time "to smooth out short-term aberrations." *Id.* at 29. With respect to the prospective estimate, Dr. Morin used Value Line's VLIA software to apply a DCF analysis to the dividend-paying stocks that make up the aggregate equity market.

Inserting the above-referenced values in the CAPM equation – *i.e.*, a risk-free rate of 4.8 percent, a beta of 0.81, and a market risk premium of 7.8 percent – led Dr. Morin to calculate the cost of common equity for a vertically integrated electric utility at 11.1 percent. He added so-called "flotation costs" to yield an estimate of 11.4 percent. *Id.* at 32. Using the 5.4 percent at the other end of his risk-free range, Dr. Morin calculated a return on equity of 11.7 percent and 12.0 percent with flotation costs. *Id.* at 32.

Dr. Morin further testified that “it is well-established in the academic finance literature that the CAPM produces a downward-biased estimate of equity costs for companies with a beta of less than 1.00.” *Id.* at 32. According to Dr. Morin, “[t]his literature is conveniently summarized in Chapter 13 of [his] book, *Regulatory Finance*, published by Public Utilities Report, Inc.” *Id.* In Dr. Morin’s view, the literature reveals that investors actually required higher returns than CAPM estimated for low-beta assets and lower returns for high-beta assets. He therefore applied an alternative CAPM methodology – Empirical CAPM (ECAPM) – designed to take this flaw into account. This, according to Dr. Morin, yielded 11.5 percent – 11.8 percent with flotation costs – if the risk-free rate is 4.8 percent and 12.1 percent – 12.4 percent with flotation costs – if the risk-free rate is 5.4 percent. *Id.* at 33. He noted that the average of all four CAPM estimates as adjusted for flotation costs is 11.9 percent. *Id.* at 34.

The next method employed by Dr. Morin involved calculating a historical risk premium for the electric industry. He did this by computing the actual return on equity for Moody’s Electric Industry Index for each year from 1931 to 2001, using actual stocks prices and dividends, and subtracting the long-term government bond rate for each year. According to Dr. Morin, this revealed that the average risk premium for the electric industry over the period was 5.4 percent. He then testified that, in light of the current yield of 4.8 percent for long-term Treasury bonds, the implied cost of equity using this methodology is 10.4 percent without flotation costs and 10.7 percent including them. *Id.* at 34.

Dr. Morin then calculated a historical risk premium for the natural gas distribution industry. According to Dr. Morin, the gas distribution industry is a “conservative proxy” for the vertically integrated electric utility industry because gas distribution is similar to electricity distribution yet lack the additional risk associated with electricity generation. *Id.* at 35. Using

data from Moody's from 1955 to 2001, Dr. Morin determined that the average risk premium for the gas distribution industry over the period was 5.7 percent. Applying the 4.8 percent yield for 30-year Treasury bonds led Dr. Morin to calculate a return on equity of 10.5 percent using this method – 10.8 percent with flotation costs. *Id.* at 35.

Dr. Morin's final risk premium calculation involved historical risk premiums implied in the returns on equity allowed by regulatory commissions over the last decade relative to the then-applicable yield on the 30-year Treasury bond. The average result, for the years 1995 through 2004, was 5.4 percent. However, Dr. Morin went on to testify about what he characterized as a "careful review" of these regulatory decisions relative to interest rate trends. According to Dr. Morin, there is a statistically significant narrowing of the risk premium in times of rising interest rates and a widening of the premium as interest rates fall. Therefore, Dr. Morin used an estimated risk premium for this method of 6.1 percent and a long-term bond yield of 4.8 percent, resulting in a cost of equity of 10.9 percent. According to Dr. Morin, substituting a long-term bond yield of 5.4 percent results in a 5.7 percent risk premium and a cost of equity of 11.1 percent. *Id.* at 38. He noted that the average of all six risk premium estimates is 11.0 percent. *Id.* at 38 and 39.

Dr. Morin next applied the single-stage Discounted Cash Flow (DCF) method, which posits that an investor's expected yield is the sum of expected dividend yield, the expected growth rate of future dividends and the expected growth rate of the stock price. As Dr. Morin noted, these expected yields are not directly observable but must be estimated from statistical market information. According to Dr. Morin, the DCF method is only useful "under certain assumptions." *Id.* at 40. In Dr. Morin's view, these assumptions are a constant average growth rate trend for both dividends and earnings, a stable dividend payout policy, a discount rate in

excess of the projected growth rate and a constant price-earnings multiple. According to Dr. Morin, the traditional DCF model also incorrectly assumes that dividends are paid at the end of each year rather than quarterly.

Dr. Morin testified that he applied the DCF model to three proxy groups for the vertically integrated electric utility industry: the electric utilities comprising Moody's electric utilities index; a group he selected of investment-grade vertically integrated electric utilities; and a group consisting of actively-traded dividend-paying natural gas distribution companies drawn from the Value Line Gas Distribution Group. *Id.* at 40. Dr. Morin used the dividend yields reported in the February 2005 edition of Value Line VLIA. He testified that basing dividend yields on a large group of companies reduces the concern that "idiosyncrasies" of individual company stock prices will skew the results. *Id.* at 41.

According to Dr. Morin, the principal difficulty in calculating return on equity by using the DCF method is in determining the growth rate expected by investors. Dr. Morin testified that he used growth estimates developed by analysts at large investment brokerage firms. He noted that such estimates are actually used by institutional investors and that the estimates are readily available to the investing public. Dr. Morin got his data from compilations of analysts' forecasts prepared by Zacks Investment Research, Inc. and also from Value Line's growth forecasts. *Id.* at 42.

Dr. Morin rejected the use of historical growth rates in the DCF calculation. He testified that such data is "downward-biased" as the result of sluggish earnings performance over the past five years, in turn caused by the structural transformation of the electric utility industry from a regulated monopoly to one more oriented toward competition. According to Dr. Morin,

the historical data reflects “anemic growth rates” that are simply not representative of the companies’ long-term earning power. *Id.* at 43.

Additionally, Dr. Morin testified that he did not consider the use of dividend growth proxies in applying the DCF model. According to Dr. Morin, this was the correct choice because “it is widely expected that electric utilities will continue to lower their dividend payout ratio over the next several years” as competition grows. *Id.* at 44. Therefore, Dr. Morin testified, “the assumptions of constant perpetual growth and constant payout ratio are clearly not met” when using dividend growth proxies. *Id.* In contrast, according to Dr. Morin, there is an “abundance of evidence” attesting to the importance of earnings, as opposed to dividends, in assessing investor expectations. *Id.* at 45. Dr. Morin also noted that he considered but rejected the use of the “sustainable growth” method of applying the DCF model. *Id.* He said this method has a “logical trap” because it requires an estimated return on equity as an input at the same time its ultimate output is such an estimate. *Id.* at 46.

The results of Dr. Morin’s DCF calculations are as follows. Using the Moody’s *Electric Utility Index* as a proxy group yielded a long-term growth forecast of 4.6 percent and an expected dividend yield of 4.4 percent, resulting in an expected return on equity of 9.1 percent, adjusted to 9.3 percent to account for flotation costs. *Id.* at 47 and page 1 of RAM-6. Using Value Line data instead of information from Zacks about long-term estimated growth, and eliminating certain companies with negative long-term growth projections, and further eliminating companies whose DCF cost of equity is less than their cost of debt, the result is a projected cost of equity of 10.8 percent. The figure became 10.3 percent when Dr. Morin removed a company with an anomalously high result (Duquesne Light). *Id.* at 47 and page 3 of RAM-7.

Conducting a DCF analysis using the vertically integrated electric utilities covered in the Value Line *Investment Survey* and in Moody's *Sourcebook: Power and Energy Company, October 2004*, as a proxy group resulted in a long-term growth forecast of 4.6 percent, an average expected dividend yield of 4.3 percent and a cost of equity of 9.0 percent (9.2 percent with flotation costs added). *Id.* at 48 and page 2 of RAM-8. Dr. Morin derived these figures using the Value Line *Investment Survey* data, eliminating companies that are not investment-grade, companies without Value Line coverage, three companies that do not pay dividends and three companies for which Zacks provides no analyst growth forecasts. According to Dr. Morin, applying the Value Line growth forecast rather than that of Zacks increases the cost of equity to 9.9 percent inclusive of flotation costs. *Id.* at 49 and page 3 of RAM-9.

In applying the DCF model to gas distribution companies as a proxy group, Dr. Morin stressed that he considers this a "conservative" approach in the context of the present case. *Id.* at 50. Therefore, according to Dr. Morin, he eliminated gas distribution companies that do not pay dividends and/or have a market value of \$500 million or less. This resulted in an average long-term growth forecast of 5.1 percent, an average expected dividend yield of 3.9 percent and a cost of equity of 9.0 percent, adjusted to 9.2 percent for flotation costs. *Id.* at 50 and page 1 of RAM-10. Dr. Morin repeated this same procedure using Value Line's long-run earnings growth forecast of 5.9 percent, resulting in a cost of equity for his gas distribution group of 10.0 percent, adjusted to 10.2 percent for flotation costs. *Id.* at 50 and page 1 of RAM-11. Dr. Morin testified that the average return on equity for his six DCF methods is 9.7 percent. *Id.* at 50 and 51.

In support of an upward adjustment to allowed return on equity for flotation costs, Dr. Morin testified that it would be unreasonable to do otherwise. According to Dr. Morin,

flotation costs associated with the issuance of stock is exactly like the flotation costs associated with bonds and preferred stock – not expensed at the time of issuance and therefore requiring recovery as part of the expected return on the security. Dr. Morin compared flotation costs to closing costs associated with a home mortgage. He said that flotation costs have two components – direct flotation costs, consisting of compensation to underwriters for issuance-related risks as well as costs of legal, printing and other issuance-related services, and indirect flotation costs associated with “downward pressure on the stock price as a result of the increased supply of stock from the new issue.” *Id.* at 52. Dr. Morin attached an appendix to his testimony explaining in detail why he believes that a flotation allowance of 5 percent of the expected dividend yield component of equity cost is necessary to obtain the fair return on equity capital, why the flotation adjustment is permanently required to avoid confiscation even if no further stock issues are contemplated and why flotation costs are only recovered if the rate of return is applied to total equity, including retained earnings, in all future years. *Id.* at 52.

Dr. Morin noted that, overall, his cost of equity estimates using the various methodologies range from a low of 9.2 percent to a high of 12.4 percent, with a midpoint of 10.8 percent. He calculated a mean result of 10.7 percent, a “truncated mean” (removing the highest and the lowest estimates and averaging the remaining results) of 10.7 percent and a median result of 10.9 percent. According to Dr. Morin, placing “slightly less weight” on the DCF results – justified, in his view, because the DCF method understates the cost of equity – the “central result” is 11.0 percent. *Id.* at 56. This is Dr. Morin’s overall recommendation for the expected rate of return for a vertically integrated electric utility without his generation risk premium.

Why does the DCF model understate a company’s actual cost of equity?

According to Dr. Morin, the model produces a correct estimate of investors’ expected returns

only when the stock price and the book value of the stock are reasonably similar. When, as with the utility industry generally, the market-to-book ratio exceeds 1:1, Dr. Morin's contention is that the DCF model underestimates expected returns. The reason for the distortion, according to Dr. Morin, is that regulators apply the DCF result to a rate base equal to the company's book value, whereas investors' expected returns are based on stock price.

Dr. Morin went on to testify that the 11.0 percent figure he calculated for a vertically integrated electric utility must be adjusted upward to reflect additional riskiness when the calculation covers only the PSNH generation assets. According to Dr. Morin, this is the result of the industry moving "in the direction of more intense competition on the power generation side of the business." *Id.* at 61. In the opinion of Dr. Morin, powerful buyers with many energy alternatives – *e.g.*, large industrial customers – have caused a "highly competitive market for electricity" to arise. *Id.* He cites four competitive forces driving competition: the threat of new entrants, the degree of rivalry among existing firms, the threat of substitute products and the bargaining power of customers. With respect to PSNH in particular, Dr. Morin pointed to open-access transmission requirements imposed by federal regulators, giving all generators equal access to the region's transmission system, the related prohibition of PSNH operating its transmission and generation assets in an integrated manner, and the "uncertain future" PSNH faces with respect to ownership and operation of its generation portfolio. Exh. 13.

The PSNH witness also pointed to certain risks he characterized as common to the industry and also affecting PSNH: increasingly stringent environmental and siting restrictions, volatile fuel supply and transportation costs, the possibility of cost disallowances as the result of imprudence and the potential for the creation of stranded costs. Dr. Morin also referred to the "intense New Hampshire legislative oversight of PSNH," testifying that "[t]he legislature has in

a short period of time changed the law concerning ownership of PSNH's generating assets 180 degrees, and in less than 10 years has enacted nearly 20 different bills impacting PSNH specifically or the utility industry in general." Exh. 7 at 66.

Dr. Morin testified that the investment community regards the power generation business as being riskier – and therefore requiring a higher return on equity – than an electric transmission and distribution company. According to Dr. Morin, this is the view of the major bond rating agencies.

According to Dr. Morin, the investment community does not believe that these risks faced by PSNH's generation business are mitigated by the existence of a cost reconciling mechanism. See RSA 369-B:3 ("actual, prudent and reasonable" costs). In Dr. Morin's opinion, the volatility of the legislative process in New Hampshire, and the environmental and imprudence risks, are of much greater significance to the investment community. With respect to environmental risk, Dr. Morin testified that "the potential exists for an asset to be rendered uneconomic and therefore stranded as a result of environmental laws or regulations." *Id.* at 67.

According to Dr. Morin, three methodologies are available to calculate the cost of equity for a particular segment of a company, such as the PSNH generation portfolio. These are the "pure play" approach (in which publicly traded companies that are most similar to the business segment are identified and their betas employed as proxies), the "residual beta" approach (in which a company's total beta is allocated among business segments with known betas, leaving the remaining residual beta as the beta of the business segment in question) and the "multiple regression" approach (which Dr. Morin stated cannot be applied to the electric industry). In both the "pure play" and "residual beta" approaches, the resulting beta is applied to the CAPM in order to determine the cost of the business segment's equity.

For the electric industry as a whole, Dr. Morin testified that the mean, median and truncated mean betas are all 0.81 with a standard deviation of 0.18. He estimated the beta of a transmission and distribution company as 0.75, the beta of a generation company as approximately 0.85 and, therefore, determined that the difference in beta between the two groups is 0.10. According to Dr. Morin, this hypothesis is confirmed by his application of the pure play approach. *Id.* at 74.

Dr. Morin's use of the pure play approach involved using two groups of proxy companies for PSNH's wires business. The first group was a large collection of electric, gas and water utilities designated as "distribution" companies by Standard & Poor's. He calculated a median beta for these companies of 0.75. *Id.* at 75 and page 3 of RAM-12. The second proxy group involved publicly traded natural gas distribution companies contained in the VLIA software Dr. Morin had available to him. Their average beta was 0.75. *Id.* at 76 and RAM-13.

For the power generation business, Dr. Morin likewise used two proxy groups in connection with the pure play approach. The first group consisted of operating utilities designated by Standard & Poor's as "diversified energy and non-energy" utilities. The median beta for these companies was 0.85. *Id.* at 77 and page 3 of RAM-14. The second proxy group consisted of certain oil and gas producers meeting high safety and financial strength criteria. The average beta for this group was 0.85. *Id.* at 77 and RAM-15.

The result from Dr. Morin's use of the residual beta approach was 0.87. He derived that figure by applying the 0.81 beta for the electric utility industry, the 0.75 beta from the natural gas distribution proxy group (using this as the proxy for the wires business) and applying what he described as "industry relative asset weights of approximately 50% and 50% for the generation and wires businesses." *Id.* at 78. Overall, Dr. Morin's final estimate for the

transmission/distribution and wires businesses was 0.75 and 0.86 respectively, the difference therefore being 0.11. *Id.* at 79.

Dr. Morin then used the CAPM model to translate the risk differential between the two lines of business into a risk premium. According to Dr. Morin, the return differential implied by a difference in beta of 0.11 is 0.11 times the market risk premium of 7.8 percent. This results in a return adjustment of 86 basis points. Using the empirical version of the CAPM model in the same fashion yielded a return adjustment of 64 basis points. *Id.* at 80.

According to Dr. Morin, given the risk differential of 86 basis points between the transmission/distribution and power generation businesses, and given that the two business segments represent approximately one half of the vertically integrated utility portfolio, it was appropriate to adjust his result of 11.0 percent for the vertically integrated electric utility upward by half the 84 basis-point risk differential. This resulted in Dr. Morin recommending, on behalf of PSNH, a return on equity of 11.4 percent for the company's generation business. *Id.* at 81.

Dr. Morin offered additional testimony in rebuttal. He questioned the proxy group chosen by the Staff witness in connection with her application of the DCF model, taking the position that three of the proxy group companies do not meet Staff's stated criteria. He also took exception to Staff's use of a proxy group of only eight companies at the outset. He said such a choice "probably violates the Central Limit Theorem of Statistics." Tr. II at 147. He also asserted that Staff did not attempt to develop a proxy group that mimicked PSNH's generation business.

Dr. Morin also dismissed Staff's historical growth rates as "home grown," as opposed to published growth rates he said are actually relied upon by the investment community. *Id.* He further testified that recent surveys of corporate practice suggest that companies are

placing more and more reliance on the CAPM and risk premium methodologies, as opposed to the DCF.

Dr. Morin also took exception to the 9.3 percent return on equity recommended by the OCA witness, calling it “out of line” and “outside . . . the reasonable limits of probability.” *Id.* at 157. He questioned Mr. Hill’s reliance on sustainable growth rates, taking the position that this data is unreliable because it requires a return on equity as an input and is therefore circular with respect to calculating an allowed return on equity. Dr. Morin also took the position that certain methodologies used by the OCA witness as checks on his DCF calculation – the modified earnings/price ratio and the market-to-book ratio – are actually just “subspecies” or “disguised versions” of the DCF model.

With respect to Mr. Hill’s use of the CAPM, Dr. Morin testified that he should have used the arithmetic rather than the geometric mean to summarize historical data. Dr. Morin further took the position that Mr. Hill’s use of the CAPM understates by approximately 50 basis points the cost of equity of firms with low betas. He suggested that Mr. Hill should have taken into account the prospect of current low interest rates rising in the future. The PSNH witness also criticized Mr. Hill’s use of a market risk premium range of 6.8 to 8.6 percent but then suggested in connection with Mr. Hill’s critique of Dr. Morin’s CAPM analysis that the correct range is in the realm of 3 or 4 percent.

Dr. Morin took exception to the importance Mr. Hill attached to market-to-book ratios in arguing that rates of return are currently too high in the electric industry. In Dr. Morin’s opinion, determination of a company’s stock price should be left to the market and the Commission should not concern itself in this proceeding with getting the ratio closer to 1.

B. Office of Consumer Advocate

Stephen G. Hill testified on behalf of the Office of Consumer Advocate. He estimated the cost of equity for vertically integrated electric utilities – a category in which he placed PSNH – to be in the range of 8.75 to 9.50 percent. According to Mr. Hill, this range is supported by what he characterized as “many objective factors in the capital marketplace today.” Prefiled Direct Testimony of Stephen G. Hill, Exh. 14, at 21. He referred to current interest rate levels as near a 40-year low and noted that, even though the Federal Funds Rate has increased, the gap between yields on short-term and long-term treasury bonds is decreasing. In his view, this indicates that investors may not be convinced that the overall level of economic growth will be sufficient to warrant an increase in long-term interest rates. Exh. 14 at 7. Moreover, advice from investor services and investment analysts state that clients should expect utility returns well below 10 percent. For example, a recent letter published by *Public Utilities Fortnightly* confirms that investors currently expect single-digit returns from their utility investments. Exh. 14 at 7. As signs that a return on equity below 10 percent is reasonable, Mr. Hill also referred to changes in tax law regarding dividends that he contends have made utilities more valuable to investors, as well as what he termed “long-standing and widely understood relationships between utility market price, book value and expected equity return.” *Id.* Mr. Hill also testified that the most recent research in the field of financial economics regarding risk premiums and investor-required returns support a determination that forward-looking investor expectations are in the range of 8 to 10 percent.

To derive his own recommended cost of equity, Mr. Hill began with the DCF method. According to Mr. Hill, when calculating a growth rate for purposes of applying the DCF model it is inappropriate to rely solely on expected growth in earnings or dividends.

Rather, the OCA witness used what he termed a “sustainable growth rate approach,” involving the calculation of a sustainable growth rate for a proxy group of electric utilities with a risk profile similar to that of PSNH. He also testified that he relied on published data regarding both historical and projected growth rates in earnings, dividends and book value for each company in a proxy group of electric companies. To the long-term growth rate thus estimated, Mr. Hill said he added any additional growth that is attributable to investors’ expectations regarding the ongoing sale of stock for each of the companies under review.

Mr. Hill testified that he did not examine market data for stand-alone generation companies that operate in a fully competitive environment, testifying that, unlike PSNH, these firms do not enjoy the benefit of rate-base regulation and are considerably more risky than PSNH overall. Noting his general agreement with Dr. Morin that generation assets are somewhat more risky than transmission and distribution assets, Mr. Hill nonetheless stressed his opinion that there are no pure play regulated generation companies for purposes of calculating PSNH’s cost of equity. Therefore, according to Mr. Hill, he first analyzed the cost of equity capital for publicly traded utilities that are predominantly electric and that have generation assets. In Mr. Hill’s opinion, “the cost of equity of the generation assets can then be determined to be in the upper portion of a reasonable range of equity costs for fully integrated electric utility operations.” *Id.* at 25.

To select his proxy group, Mr. Hill began with all electric utilities followed by Value Line. From that group, he selected companies that he said had a continuous financial history and had at least 70 percent of operating revenues generated by regulated electric operations. Then, Mr. Hill said he eliminated companies that were in the process of merging or being acquired – if those companies had realized an upward stock price shift as a result of these

activities – and he also eliminated companies that had recently cut or eliminated dividends. Given PSNH’s Standard and Poor’s bond rating of BBB+, Mr. Hill testified that he eliminated all remaining companies that were not within a bond rating range of BBB- to A-, did not own generation assets or did not have a stable book value. *Id.* at 26. This resulted in a list of 12 companies: Central Vermont Public Service, FirstEnergy Corp., Northeast Utilities, Progress Energy, Ameren Corp., Cinergy Corp., Cleco Corp., Empire District Electric, Entergy Corp., Hawaiian Electric, PNM Resources and Pinnacle West Capital Corp. Mr. Hill noted that although Northeast Utilities did not meet the 70 percent electric operating revenue requirement, he included it because Northeast Utilities is the parent company of PSNH. According to Mr. Hill, as a proxy group these companies produce a conservative – *i.e.*, more favorable to the company – estimate of equity costs because the proxy group is somewhat more risky than PSNH.

For each of the 12 firms, Mr. Hill calculated a five-year average sustainable growth rate, which he said was the product of earned return on equity and the ratio of earnings retained within the firm and external growth. According to Mr. Hill, an investor’s analysis of a company’s sustainable growth rate does not end upon the determination of the company’s internal growth rate. He contended that investor expectations regarding growth from external sources – *i.e.*, from the sale of stock – must also be considered. In this regard, Mr. Hill testified that companies with market-to-book ratios greater than one are firms that investors expect to earn returns that exceed their cost of capital. According to Mr. Hill, “if the external portion of the sustainable growth rate is estimated using a market-to-book ratio that is indicative of over-earnings, then the growth rate will be effectively based on an expectation of perpetual over-earnings and, thus, overstated.” *Id.* at 30. It is Mr. Hill’s contention that “if that expected DCF growth rate, predicated on the expectation of over-earning the cost of capital, is used to set the

allowed return the process becomes cyclical, leading to higher and higher allowed returns.” *Id.* Mr. Hill additionally testified that it is reasonable to assume that the market-to-book ratio will have a tendency toward unity in the long run in order to mitigate the impact of over-earning on the projected external growth rate, given that the goal of regulation is to duplicate how the competitive marketplace would treat the company if it were unregulated.

His average DCF growth rate is 4.77 percent. *Id.* at 31 and pages 1-2 of Schedule 4. He then used this figure as a benchmark against which to measure the company’s more recent growth rate, as measured by Value Line’s average projected earnings, dividend, and book value growth rate of 3.5 percent.

Mr. Hill estimated the next quarterly dividend payment of each firm in his proxy group and then annualized the figure, adjusting for expected increases in the ensuing quarter as necessary. He then divided the annualized dividends by the most recent six-week period average stock price for each company. The resulting dividend yield, on an averaged basis, was 4.34 percent. *Id.* at 32 and page 1 of Schedule 5.

As the result of these calculations, Mr. Hill determined that the cost of equity capital for the electric industry companies in his proxy group was 9.11 percent, using the DCF model. *Id.* at Schedule 6. As a check on this estimate, Mr. Hill calculated the cost of equity using the CAPM method (resulting in a range of 7.76 percent to 9.69 percent), the Modified Earnings Price Ratio method (resulting in a range of 7.83 percent to 8.31 percent) and a market-to-book ratio (resulting in a near-term figure of 8.97 percent and a long-term figure of 8.82 percent). *Id.* at 33. He noted that the average of the lowest and highest of these results produces an equity cost range of 8.19 percent to 8.94 percent, which he characterized as “entirely below” his DCF result. *Id.* at 34.

According to Mr. Hill, these results support a current range of equity capital costs with his DCF result marking the upper end of the range. However, he testified that overall capital costs may increase over the next year or two if the U.S. economy continues to advance. For this reason, in light of all of Mr. Hill's calculations, he recommended a cost of equity for PSNH in the range of 8.75 percent to 9.50 percent with the mid-point of 9.125 percent. *Id.* at 34.

Mr. Hill noted that he disagreed with Dr. Morin on the issue of flotation costs as an addition to the otherwise allowed return on equity. Mr. Hill took issue with Dr. Morin's suggestion that flotation costs associated with stocks are exactly like such costs when associated with bonds, particularly because bonds have a fixed cost and stock does not. Mr. Hill testified that electric utility stocks were selling at a market price that is 55 percent above book value. According to Mr. Hill, the difference between the market price and the book value "dwarfs any issuance expense the company might incur" and renders an upward adjustment for flotation costs unnecessary. *Id.* at 35. Mr. Hill also testified that most flotation costs associated with stock involve fees and discounts for underwriters – items that are not out-of-pocket expenses for the issuing company and, in Mr. Hill's view, costs that should not be recovered from utility customers. Mr. Hill further noted that underwriter fees are prominently displayed on the front page of every stock prospectus so that investors are well aware that a portion of the price they pay does not go to the company in which they are investing. The witness testified that his DCF growth analysis includes an upward adjustment that accounts for investor expectations regarding stock sales at market prices in excess of book values, rendering explicit adjustment for issuance costs unnecessary. Finally, Mr. Hill stated that research from the National Regulatory Research Institute shows that a specific adjustment for issuance expense is not needed.

In arriving at a specific return on equity recommendation for PSNH that falls within his previously determined range, Mr. Hill noted that Standard & Poor's had recently realigned its business risk rankings for the energy industry. According to Mr. Hill, Standard & Poor's assigned the lowest business risk to transmission/distribution assets, assigned the highest risk to merchant generators and independent power producers, and pegged vertically integrated electric utilities somewhere in the middle. According to Mr. Hill, the relevant inference is that PSNH is not as risky as merchant generation. This, in turn, led Mr. Hill to decide that a reasonable range for the cost of equity attributable to the generation business of a vertically integrated utility would be the upper half of his estimate for the utility as a whole – *i.e.*, 9.125 percent to 9.50 percent. *Id.* at 37.

According to Mr. Hill, to pinpoint a figure within that range it is appropriate to consider the type of generation involved because some types are riskier than others. Stating an understanding that PSNH's generation portfolio consists of coal-fired plants and hydroelectric facilities, Mr. Hill indicated that these types of generation are less risky than the nuclear assets owned by eight of the 12 companies in his proxy group. This is the reason Mr. Hill did not place PSNH at the top of his range for generation assets. *Id.* at 37.

Mr. Hill also pointed to other factors that mitigate the investor risk associated with PSNH's generation portfolio. He noted that PSNH is required to use its generation portfolio to serve its Transition and Default Service customers pursuant to RSA 369-B:3-a and that, pursuant to RSA 369-B:3, PSNH's actual, prudent and reasonable costs of providing Transition and Default Service via the generation portfolio are reconciled with the Company's stranded cost charge. He also noted that, should PSNH sell its generation portfolio, the Company's restructuring agreement would allow it to recover from customers any difference between book

value and sale price. Mr. Hill noted that PSNH remains vulnerable to disallowances for imprudence but he testified that such disallowances have been minor in the past. According to Mr. Hill, this risk mitigation justifies placing the PSNH generation portfolio at the midpoint of the upper half of his reasonable range – 9.3 percent which includes a generation risk premium of 17.5 basis points. *Id.* at 38. He concluded that this would result in an overall return of 6.83 percent for PSNH, given its current capitalization and cost of debt. According to Mr. Hill, this would result in a pre-tax interest coverage level of 4.09, a level sufficient to attain an “A” level bond rating. *Id.* at 42 and 43.

Mr. Hill also critiqued Dr. Morin’s analysis at length. According to Mr. Hill, Dr. Morin’s use of an average of numerous analyses causes his recommendation to be skewed upward. According to Mr. Hill, this is inconsistent with the approach Dr. Morin has previously used in prior testimony, where he placed greater emphasis on the DCF method. *Id.* at 44. Mr. Hill also testified that in Dr. Morin’s published work, he acknowledges the ubiquity of the DCF model, focusing more on this model and less on risk premium analyses.

According to Mr. Hill, the PSNH witness “cannot credibly claim the DCF is flawed because it was developed during another economic era, while simultaneously placing more weight on an economic model developed at the same time.” *Id.* at 45. Mr. Hill also testified that, in contrast to Dr. Morin’s suggestion of current uncertainty in the electric industry, this sector of the economy has been in a state of consistent turmoil for 30 years, beginning with the oil embargo of the 1970s. Mr. Hill took the position that the trend toward deregulation in the electric industry has effectively ground to a halt with some jurisdictions having adopted the new paradigm and others remaining with the old one.

Mr. Hill testified that Dr. Morin's previous writings suggest that Dr. Morin is wrong when he suggested that the DCF model understates the cost of equity at times when market prices are above book value. According to Mr. Hill, Dr. Morin issued the 1984 edition of his cost of capital textbook when market prices were generally below book value and interest rates were high. At that time, according to Mr. Hill, Dr. Morin offered "not one word in that text regarding the ability of the DCF to accurately estimate the cost of equity depending on the market-to-book ratio of utilities." *Id.* at 47. Mr. Hill also asserted that Dr. Morin discusses the flaws in the assumptions underlying the DCF model but provides no similar discussion of the flaws underlying the other models he employed. According to Mr. Hill, "[i]t should be clear, even to the most casual observer, that many of the assumptions on which the CAPM is predicated are violated in applying the CAPM to the determination of the cost of capital of a particular type of security." *Id.* at 52. Specifically, according to Mr. Hill, all investors are not single-period investors, all investors cannot borrow and lend unlimited amounts of money at the risk-free rate and all investors do not have identical expectations of rate of return. Additionally, according to Mr. Hill, the CAPM is flawed because all assets are not perfectly divisible, taxes have an effect, transaction costs exist and many large institutional investors are aware that transactions in large amounts of any particular stock may affect the price of the stock.

Mr. Hill also pointed to what he characterized as broader questions regarding the CAPM. An example he gave concerns the use of market indices such as the Standard & Poor's 500 to represent "the market" within the meaning of the CAPM, whereas the model is actually designed to equate all capital investments with the market. Mr. Hill also described theoretical problems with the calculation of beta, citing a previous work of Dr. Morin. These theoretical problems include (1) the fact that beta can vary depending on the duration, source (*i.e.* market

index) and period of the underlying data, (2) the market instability of beta over time, (3) the fact that the true beta of a security can never be observed and (4) the controversial nature of beta as a relevant measure of risk. It is for these reasons, according to Mr. Hill, that he used the CAPM as simply one method without placing primary emphasis on it.

According to Mr. Hill, there are technical aspects of Dr. Morin's analyses that cause all of the methods he uses to yield overstated results. He referred to the dividend yield adjustment and the flotation cost adjustment. The Value Line dividend yield used by Morin is the sum of expected dividends over the next four quarters. Consequently, according to Mr. Hill, Dr. Morin's adjustment serves to overstate the result.

With respect to Dr. Morin's application of the CAPM, Mr. Hill contended that each of the inputs tends to overstate the cost of capital. According to Mr. Hill, it is inappropriate to use Treasury bonds with such a long term to calculate the risk-free rate. *Id.* at 57. In addition, Mr. Hill noted what he sees as an "inter-jurisdictional inconsistency" with respect to Dr. Morin's calculation of beta, citing testimony Dr. Morin recently gave in Georgia in which, on behalf of Atlanta Gas Light, he argued that gas distribution companies have a similar investment risk level to electric companies, even though gas distribution utilities had a beta of 0.75 and electric utilities had a beta of 0.80. In contrast, in this case, Dr. Morin relied on the relative difference in betas and concludes that gas distribution utilities are less risky than electric utilities. Although Mr. Hill agreed with this conclusion, he takes issue with the "flexibility" with which Dr. Morin interprets that data.

Mr. Hill contended that in calculating the market risk premium for purposes of the CAPM, Dr. Morin improvidently relied only on the difference between the earned return of stocks and the yield of bonds. Mr. Hill also saw a logical inconsistency when Dr. Morin

cautioned the Commission about the use of the DCF model while calculating a forward-based market risk premium based on a DCF analysis. *Id.* at 60.

Concerning Dr. Morin's use of the Empirical CAPM, Mr. Hill asserted this overstates the actual cost of capital because the analysis involves the use of adjusted betas. The adjustments are designed to reflect the beta coefficient's tendency to migrate to the market average of 1.0. Such an adjustment, according to Mr. Hill, double-counts the effect for which the empirical model is designed to correct.

Mr. Hill expressed two overall concerns with Dr. Morin's use of the risk premium method. According to Mr. Hill, this method is flawed because (1) it assumes that investors' future expectations mirror past results actually achieved, and (2) it assumes that risk premium is constant over time. With respect to the specific use of the model by Dr. Morin to calculate a historic risk premium, Mr. Hill's testimony was that, since 1960, stocks have become less volatile and bonds have become more volatile, thus calling into question the relevance of pre-1960 data and suggesting that risk premiums are shrinking. Mr. Hill further testified that, with regard to Dr. Morin's calculation of an "allowed return" risk premium, comparing historical allowed equity returns to annual average bond yields, the annual cost rate differences between these two figures are not necessarily reliable indicators of investor-required risk premiums. Mr. Hill also noted that the relative risk of the utility for which the equity return was determined was not a factor in Dr. Morin's analysis.

With respect to Dr. Morin's DCF analysis, Mr. Hill expressed concerns about the growth rate used by the PSNH witness. Mr. Hill describes this analysis as "mechanistic" because it involves no underlying analysis of either the historical or projected growth rate fundamentals. *Id.* at 69. The OCA witness also expressed concerns about relying exclusively on

earnings growth projections to calculate the growth rate. Mr. Hill also contended that Dr. Morin should have used an average of the three projected growth rates published by Value Line, rather than simply the Value Line earnings projection. Finally, Mr. Hill contended that Dr. Morin tends to exclude low results and retain high results to produce his averages which, according to Mr. Hill, leads to overstated estimates of the cost of equity.

C. Staff

Maureen L. Sirois, testifying on behalf of Commission Staff, recommended the Commission authorize an allowed return on equity of 9.08 percent on PSNH's generation assets based on a three-stage DCF methodology. Although Ms. Sirois did not apply results from other methods in her recommendation, she applied a risk premium method to calculate a rate of return of 9.82 percent which she testified is a reasonable double check on her recommendation.

Ms. Sirois testified that the company's currently allowed return on equity for generation assets of 11 percent exceeds investors' required return for investments in PSNH's generation assets. PSNH's currently authorized rate of return on equity was approved by the Commission in PSNH's temporary rate case, DR 97-059, and subsequently, incorporated in the DE 99-099 Settlement Agreement, both of which were set in a very different economic climate and are not appropriate today. Since 1997, interest rates have decreased to record lows. Ms. Sirois also testified that, due to PSNH's unique regulatory circumstances of receiving all but a guaranteed return through its transition service rate recovery mechanism and stranded cost recovery, PSNH's generation assets face a lower level of risk associated with generation than other electric utilities that still own generation assets and, as a result, a risk premium for generation is not necessary.

Ms. Sirois began her analysis by choosing a proxy group of electric utilities that have comparable risk to PSNH's generation assets. To be included in her proxy group, electric utilities must be covered by Value Line's *Investment Survey*, have a Standard and Poor's credit rating greater than BBB-, have at least 60 percent of revenues from regulated electric operations, have positive five-year historical and forecasted earnings and dividend growth, not be involved in a merger and not be the subject of a Securities and Exchange Commission investigation. The companies in her proxy group include the following: Central Vermont Public Service, Florida Power and Light Group, Green Mountain Power, PPL Corp., Southern Co., Entergy Corp., MGE Energy and Hawaiian Electric Company. Of the 8 utilities in Ms. Sirois' proxy group, the majority are vertically integrated electric utilities with the exception of Pennsylvania Power and Light, which receives provider of last resort service from an affiliate.

Ms. Sirois used a three-stage version of the DCF model, which has been previously accepted by the Commission. Ms. Sirois employed a three-stage DCF model to allow the growth rates of dividends and earnings to change over time. According to Ms. Sirois, the single-stage DCF model assumes that the value of a common stock can be expressed as the present value of a stream of dividends that grows at the same rate into infinity. Oftentimes, however, investors expect the short-run growth rate of a company to differ from its long-run growth rate. In addition, Ms. Sirois testified that the expected growth rates of earnings and dividends quoted by financial publishing companies typically reflect expectations in the short run (3 to 5 years) and are not intended to reflect expectations in the long run. Consequently, her three-stage DCF model accounts for this inherent limitation in the data by assuming that dividends grow at a different rate in the long run.

In her DCF analysis, Ms. Sirois used a dividend yield based on the annual dividends per share divided by the 30-day average of the daily high and low stock price during March 2005 to reflect current market conditions. Ms. Sirois testified that the most recent monthly average price of a stock should be used because it represents current valuation in equity markets while mitigating any irregularities in stock prices on a single day. Exh. 17 at 13.

Ms. Sirois' first-stage growth rate included dividends as well as earnings forecasts in the growth component. Ms. Sirois calculated the average dividend and earnings growth rates, by first applying equal weight for 5-year, 10-year and forecasted trends and then applying a weighting of 75 percent dividend growth and 25 percent earnings growth to determine the overall growth rate. According to Ms. Sirois, growth rates should not be based entirely on earnings forecasts because such forecasts tend to be biased upwards and their underlying calculations are generally proprietary. Ms. Sirois testified further that relying solely on earnings forecasts, as Dr. Morin did, implies that investors are not concerned about dividends, which is an incorrect assumption about investors' behavior. Ms. Sirois further stated that, in his 1994 book *Regulatory Finance: Utilities' Cost of Capital*, Dr. Morin justifies the use of dividends when calculating the growth rate because "DCF theory states that it is expected future cash flows in the form of dividends that constitute investment value."¹

As a proxy for long-run growth, Ms. Sirois used a combination of Real Gross Domestic Product and inflation producing a third-stage growth rate of 5.5 percent. Ms. Sirois' second-stage growth rate was the average of a utility's first-stage growth rate and the proxy for long-run economic growth. Ms. Sirois assumed the first-stage growth rate (3.65 percent) is in effect for years one through five; the second-stage growth rate (4.57 percent) is in effect for

¹ Morin, Roger, (1994) *Regulatory Finance*, page 141.

years six through ten; the third-stage growth rate (5.50 percent) continues for year 11 into perpetuity and solves iteratively to determine the cost of equity. Exh. 17 at 13.

Although Ms. Sirois used her three-stage DCF result to recommend a rate of return on equity of 9.08 percent, she applied a risk premium method as a double check of her result. The risk premium method recognizes that common equity capital is more risky than debt from an investor's standpoint, and that investors require higher returns on stocks than on bonds to be compensated for the additional risk. The cost of common equity is represented by the sum of the yield on risk-free equities and the industry adjusted equity risk premium demanded by shareholders to accept equity relative to debt. Ms. Sirois' risk premium model was similar to Dr. Morin's Capital Asset Pricing Model (CAPM) with the exception that she used the Value Line betas of her proxy group to account for industry specific risk.

As a proxy for the risk-free rate, Ms. Sirois used the yield on the 10-Year Treasury bond that, as of April 6, 2005, was 4.44 percent. To calculate the expected equity risk premium of 7.97 percent, Ms. Sirois subtracted the risk-free rate from the Standard and Poor's 500 market total return of 12.41 percent. Then, Ms. Sirois adjusted this equity risk premium to account for specific company risk by multiplying it by each company's Value Line beta, resulting in an average equity risk premium of 5.38 percent. By adding the risk-free rate of 4.44 percent to this beta-adjusted equity risk premium, she arrived at an estimated rate of return on equity of 9.82 percent. Ms. Sirois testified that this result is within the realm of reasonableness as a double check to her DCF result of 9.08 percent.

In her prefiled testimony, Ms. Sirois critiqued Dr. Morin's testimony asserting that, in his analysis, he took several actions that have the effect of inflating his recommended rate of return on equity. For instance, Dr. Morin stated that the yield on the 30-year Treasury bond

was the best measure of the risk-free rate for use in the market premium method, even though he used the 60 basis point difference between the current yield on the 10-year Treasury bond and a forecasted yield on the 10-year Treasury bond to arrive at his forecasted yield on the 30-year Treasury bond. Ms. Sirois also disagreed with Dr. Morin's use of the yield on the 30-year Treasury bond because the Federal Reserve Bank no longer issues that type of security and, as a result, secondary market data and forecasts are not always available. According to Ms. Sirois, Dr. Morin demonstrated this shortcoming by relying on the actual yield and forecasted yield on the 10-year Treasury bonds when he calculated his forecast for the yield on the 30-year Treasury bond. Ms. Sirois noted that Dr. Morin acknowledged this shortcoming in his response to an OCA data request. Exh.17, attachment MLS-4.

Ms. Sirois also disagreed with Dr. Morin's method of calculating his recommended rate of return on equity. Ms. Sirois testified that Dr. Morin conducted 16 different analyses and, as a result, produced 30 different estimated rates of return on equity, ranging from 9 percent to 12.1 percent (9.2 percent to 12.4 percent when adjusting for flotation costs). Although Dr. Morin asserted that he picked the "midpoint" result of an 11 percent rate of return on equity, Ms. Sirois argued that Dr. Morin never disclosed the specific weights he used to derive the 11 percent result. Exh.17, Attachment MLS-3.

Ms. Sirois testified that Dr. Morin's adjustments for flotation costs double count the costs associated with issuing new equity because such costs are already accounted for in a company's stock price. According to Ms. Sirois, investors, who are usually brokers, are aware that a portion of a stock's price goes towards underwriters' fees and, as a result account for those issuance costs in their risk return analysis when paying the offering price. Ms. Sirois acknowledged that when a company issues new stock, the market value of the company's

existing stock tends to decrease. However, investors know that such a price fluctuation is temporary if the company is financially strong. Ms. Sirois noted that if the equity's value does not revert to its existing level then it is a signal that the company is not doing well and its stock value would have decreased eventually without the new equity offerings.

Ms. Sirois testified that the risk premium that is associated with PSNH's generation assets is already incorporated in the parent's stock price and, as a result, Dr. Morin double counted the risks specific to PSNH's generation plants when he added an additional generation risk premium of 40 basis points. According to Ms. Sirois, assuming that the efficient market hypothesis holds, the stock market would have incorporated any information about the perceived risks associated with PSNH's generation and valued the parent's stock accordingly.

Moreover, Ms. Sirois rejected Dr. Morin's justification for adding the 40 basis points asserting that increasing customer bargaining power and the threat of substitutes have been part of the electric utility business long before restructuring. Moreover, PSNH customers have had the opportunity to switch to competitive energy supply since Competition Day on May 1, 2001, but very few customers have switched. Ms. Sirois testified that PSNH is mandated to keep its generation assets in order to meet transition and default service load at a price that covers its power production and procurement costs and that these rates have been less than market rates. As a result, few customers have migrated to competitive supply. Given that few PSNH customers have switched to competitive supply, PSNH does not face the competition that Dr. Morin identified as the source of additional risk. Ms. Sirois also stated that PSNH recovers fuel and transportation cost through transition and default service rates that are adjusted at least annually, thus Dr. Morin's assertion that increasing fuel costs and transportation costs merit an

additional risk premium is flawed. Moreover, PSNH has the opportunity to initiate a transition and default service rate case in mid-year, if it finds that revenues and costs are falling out of line.

Ms. Sirois contended that Dr. Morin's statement that the recovery mechanism developed as part of the Northern Wood Project creates risk is incorrect because the "recovery mechanism" is actually an incentive mechanism in which PSNH has the opportunity to recover all of the costs associated with the project. Ms. Sirois further testified that the Northern Wood Project has public support and draws in revenue from the sale of renewable energy certificates and pollution abatement allowances in addition to revenue from the sale of power.

Ms. Sirois testified that her recommended rate of return on equity of 9.08 percent accurately reflects investors' expected opportunity cost of investing in PSNH's generation assets. In fact, according to Ms. Sirois, her recommendation is based on a proxy group of companies with generation assets riskier than PSNH, given its unique regulatory environment, such as its transition and default energy service and stranded cost recovery mechanisms. In addition, Ms. Sirois shared Mr. Hill's observations regarding record low interest rates

Ms. Sirois provided other evidence that supports a significant reduction in PSNH's current return on equity. She noted recent announcements and publications by Northeast Utilities, intended for the business and investment communities that, in her view, refuted PSNH's own contention that it faces significant regulatory uncertainty. She testified that Northeast Utilities' website contained the webcast entitled "Competitive Business Review: Quarterly Financial Report" dated April 29, 2005, in which Northeast Utilities' management reported that it expected PSNH's distribution and generation assets to earn a rate of return on equity of between 9 and 10 percent. Tr. II, pages 57-9. Moreover, she testified that Northeast Utilities' management announced after its annual shareholder's meeting at PSNH headquarters in

Manchester, New Hampshire on May 10, 2005 that it will increase its annual dividends by five cents to \$0.70 per share (a 7.5 percent dividend increase) beginning September 30, 2005. This dividend increase, according to the Northeast Utilities press release, is the fifth dividend increase by Northeast Utilities in as many years. Exh. 18.

III. COMMISSION ANALYSIS

While PSNH retains its generation portfolio and uses it to provide Transition and Default Service pursuant to RSA 369-B:3 and 3-a, the Company is entitled to recover via rates its “actual, prudent and reasonable” costs with respect to these assets. *See* RSA 369-B:3, IV(b)(1)(D). One such cost is a reasonable return on investment in these assets, which compensates the utility’s owners for the risks they perceive when they purchase a company’s stock or bonds. *See Appeal of Public Service Co. of N.H.*, 130 N.H. 748, 751 (1988) (citing *Federal Power Comm. v. Hope Gas Co.*, 320 U.S. 591(1944) (other citations omitted). “[T]he return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks . . . [and] sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital.” *Hope*, 320 U.S. at 603. The purpose of establishing such an allowed return is not to guarantee that the Company will actually earn it, but to provide the utility with a reasonable opportunity to do so and thereby to establish rates that do not effect an unconstitutional taking of the utility’s property without just compensation. *Id.* (noting that “regulation does not insure that the business shall produce net revenues”).

We begin our analysis by identifying PSNH’s business. It is an investor-owned, vertically integrated electric utility providing transmission and distribution services. It also owns a fleet of fossil and hydropower generation assets in New Hampshire which are used to provide

transition and default service to PSNH's customers. All of its output is bid into the regional competitive wholesale market. PSNH then purchases back, again through the wholesale market, the power it needs to serve PSNH's customers. The net gains from that bidding process are credited towards PSNH's transition and default service customers. Pursuant to RSA 369-B:3, IV, PSNH's "actual, prudent and reasonable costs" in providing transition and default service are recoverable through an annual reconciliation mechanism. For further details, *see* Order Nos. 23,443 (April 19, 2000) and 23,549 (September 8, 2000) (orders approving PSNH restructuring settlement in DE 99-099) and Order No. 24,125 (February 14, 2003) (order approving mechanism in PSNH's first stranded cost reconciliation charge in DE 02-127). New Hampshire's other retail electric utilities are structured differently. As part of their respective restructuring settlement agreements, Unitil Energy Systems and Granite State Electric Company purchase transition and default service through a competitive bid process and no longer from affiliated wholesale power companies. PSNH, by contrast, was mandated to hold its fossil and hydropower generation assets at least until April of 2006. For further detail, see RSA 369-B:3-a. The long-term ownership status of PSNH's generation assets is unknown, as the state legislature is now evaluating whether PSNH should continue to own generation after April of 2006.

To determine a rate of return on equity we must select a methodology. The primary method used by this Commission to estimate the expected return on equity has been the DCF model. See Order No. 24,265 (January 16, 2004). There are other valid methods as well, and this Commission has recognized that such methods may be used as a test of reasonableness to compare to the DCF result.

In this case, PSNH and the OCA, explicitly and implicitly, urge that other methods be used as more than a test of reasonableness. Dr. Morin argued that the DCF is

increasingly less reliable, because it fails to account for changes in relative market valuation (surges in market-to-book and price-earnings ratios) and because of the practical difficulties in calculating the Company's expected growth rates. He proposed instead that a substantial number of other methods be somehow combined with the DCF results, Exh. 17, Attachment MLS-3 p.1, though his methodology was not transparent, and he gave the DCF less weight in order to produce a final return on equity, after adjustment for generation risk and flotation costs, of 11.4 percent. Mr. Hill disputed Dr. Morin's critique of the DCF and used it to calculate a return on equity. Mr. Hill then worked with other methods to establish a range around his DCF results from which he drew a mid-point for his final return on equity of 9.3 percent. Ms. Sirois included the result of another methodology as a comparison but relied on the DCF for her final return on equity of 9.08 percent.

Although Dr. Morin recommended a mix of methodologies that puts less emphasis on the DCF, in response to a question during the hearing, he testified that the DCF does not produce either a more or less accurate estimate of the cost of equity than other methodologies. Tr. Day 1 at 88. Inasmuch as we often look to other methodologies as a test of reasonableness of the DCF, we do not find a sufficient basis to depart from precedent in our approach in this proceeding. Therefore, we begin by examining the DCF and its application.

The first element in the DCF analysis to be considered is the selection of the appropriate proxy group. Dr. Morin established a return on equity for a vertically integrated electric utility, *i.e.*, one that owns transmission and distribution assets as well as generation assets. To do so, he looked to a large number of electric and gas utilities as a basis for calculating his return. He then disaggregated transmission and distribution assets from generation assets to determine a premium to attach to the generation assets, which is the subject

of this proceeding.² Ms. Sirois, on the other hand, winnowed down a large group of electric utilities to a smaller number with characteristics similar to PSNH to calculate her return. Ms. Sirois testified that she did not add a generation risk premium because the risk associated with generation is already incorporated in her DCF result and PSNH enjoys some unique statutory protections against standard generation risks. Mr. Hill's approach emulated aspects of both approaches in that he winnowed down the group of utilities on which to calculate his return and then added a premium for risks posed by generation.

Inherent in these differing conceptual approaches is the fundamental question as to whether the generation component of a vertically integrated electric utility is more risky than its transmission and distribution components. This conceptual issue is logically intertwined with consideration of the appropriate proxy group to use in calculating the DCF rate of return on equity. The challenge when selecting a proxy group is to narrow it sufficiently to reflect the risks faced by the company in question and at the same time find a large enough proxy group to bring confidence to the ultimate result by mitigating any distortion introduced by possible measurement error or vagaries in individual companies' market data. As Dr. Morin testified, there are difficult trade-offs that are involved, and they are highlighted in this instance given the unique regulatory situation of PSNH.

Dr. Morin used three different groups; 21 companies that make up Moody's electric utility index, 35 investment-grade vertically integrated electric utilities covered in the Value Line *Investment Survey* and Moody's *Sourcebook*, and 14 natural gas distribution utilities listed in the Value Line *Investment Survey*. We find that Dr. Morin's gas distribution utilities present such different risks and circumstances as to be inapplicable. We also find that many of

² A return on equity for PSNH's transmission and distribution assets was incorporated in a settlement agreement approved by the Commission in Order No. 24,369 (September 2, 2004) in docket DE 03-200.

the companies in his Moody's electric group are too dissimilar for use as a proxy for PSNH, in that the group contains some utilities with extremely low percentages of revenues derived from regulated electricity sales or have bond ratings that are either well in excess or well below that of PSNH to adequately reflect PSNH's circumstances. Accordingly, we do not find that any of his proxy groups present sufficient commonality with PSNH's circumstances to be acceptable.

As noted above, Ms. Sirois and Mr. Hill, based on various screening criteria, selected smaller proxy groups, 8 and 12 electric utilities respectively, which they contend represent risk comparable to that faced by PSNH. Both of them excluded utilities that do not obtain a significant percent of revenue from regulated electric operations.³ Mr. Hill's and Ms. Sirois' proxy groups screened out those entities that had credit ratings considerably lower than that of PSNH, which Standard & Poor's designates as BBB+. Mr. Hill also excluded entities that had credit ratings considerably higher than PSNH's.

Between the proxy groups presented to us by Mr. Hill and Ms. Sirois, we find the larger proxy group prepared by Mr. Hill to be more representative.⁴ While not every one of his companies matches PSNH's circumstances, together they form the more logical basis for determining a return that may then be disaggregated in a way to recognize the risk and return associated with generation assets, which then can be examined in order to determine the propriety of applying a PSNH-specific risk premium.

The next step in the DCF method involves calculation of the expected dividend yield. To develop an expected dividend yield, we identify the actual dividend yield and then adjust it to reflect growth. Dr. Morin drew the actual dividend yield for his group of vertically

³ Ms. Sirois excluded any company that had less than 60 percent of its revenue from regulated electric operations; Mr. Hill excluded those that had less than 70 percent.

⁴ We note that Mr. Hill included Northeast Utilities, the parent company of PSNH, in his proxy group. While inclusion of Northeast Utilities arguably presents a problem of circular analysis, we will employ Mr. Hill's proxy group as submitted, but do not endorse including a parent or affiliate as a practice.

integrated electric utilities from the Value Line *Investment Survey*. Mr. Hill based his actual dividend yield on a recent six-week period of stock prices and Ms. Sirois based hers on a recent 30-day average of the daily high and low stock prices recorded during that period.

We must then determine the growth rate to apply to the actual dividend yield in order to derive the expected dividend yield. With respect to the growth rate, the three witnesses again took very different approaches. Dr. Morin relied on earnings forecasts. Mr. Hill employed a sustainable growth approach that is the product of earnings retention and return on equity but also includes investor expectations from external sources measured by the product of the funds raised from the sale of stock and the fraction of new common equity stock sold that accrues to the current shareholders. Ms. Sirois employed a three-stage growth rate where the first-stage growth rate reflected dividend and earnings forecasts as well as historical growth. Her other stages reflected a proxy for the long-run growth rate of the economy and an average of the proxy and the first stage. Using their respective approaches, Dr. Morin derived an expected dividend yield of 4.30 percent; Mr. Hill, an expected dividend yield of 4.34 percent; and Ms. Sirois, an expected dividend yield in her first stage of 3.97 percent.

Dr. Morin's reliance exclusively on earnings growth provides an incomplete picture of investor expectations as it tends to be less stable than dividends and implies that investors are not concerned about dividend growth. Thus, we cannot rely on his expected dividend yield here. Nor can we adopt Mr. Hill's sustainable growth approach, as the sustainable growth rate uses the return on equity as an input, introducing circularity in the analysis. As a result, it does not in our view reflect true market conditions.

We address next the growth rate approach used by Ms. Sirois and her selection of the three-stage DCF methodology. While three-stage DCF may not be appropriate in every case,

it nevertheless is sound in this instance and was not challenged by the parties. Consequently, we will employ her approach here.

Our calculations, then, use Mr. Hill's proxy group, incorporate the dividend yield derived from the 30 day average of the daily high and low stock prices for the period ending May 17, 2005 and apply Ms. Sirois' three-stage methodology. As a result, the applicable DCF return on equity to use in this case is 9.42 percent.

We turn next to consideration of what, if any, additional premium for generation risk is to be allowed. The three witnesses again take very different approaches as to whether to allow such a premium. Ms. Sirois asserted that any risk related to generation is captured in the stock price that forms the basis for her DCF calculation and therefore allowing a premium would amount to double recovery for risk. Dr. Morin and Mr. Hill, as noted previously, provide for a generation risk premium to recognize that generation is more risky than transmission and distribution.

We conclude, based on the testimony of Dr. Morin and Mr. Hill, that the operating risk of utility generation is higher than the operating risk of transmission and distribution, given the potential for costly generation related expenses, such as from outages, accidents, and new investment for environmental controls. As we will discuss below, however, the risk to PSNH, given its unique regulatory status, is relatively low. We find that it is appropriate to establish a return based on vertically integrated electric utilities and then to disaggregate in a way that will allow consideration of a modest generation-only premium to produce the final equity return for generation assets. We must quantify that differential.

Mr. Hill recommended a small adjustment for generation risk of 17.5 basis points, but did not present evidence of how he derived that amount, other than to state it was based on

his experience. Exh. 14 at 38 and Tr. II at 27. The more detailed evidence offered by Dr. Morin supports a differential in the range of 64 to 86 basis points for generation risk.⁵ He argued that the higher end of the range should be adopted because the historical information used in his analysis does not reflect “the present fluid circumstances of the power industry.” Exh. 7 at 80. We disagree, finding that the lower end of the range, 64 basis points, is more appropriate to the circumstances of PSNH. PSNH has no nuclear assets; its exposure to disallowances under RSA 378:30-a, the anti-CWIP statute, is not unique to New Hampshire; and it is afforded additional statutory protection for modification to its generation assets, *e.g.* environmental upgrades. *See* RSA 369-B:3-a. Further, as noted previously, PSNH operates under unique provisions regarding the recovery of costs related to generation used in the provision of transition and default service pursuant to RSA 369-B:3. In addition, though PSNH argued it is risky because it is subject to disallowance for imprudence, the record showed that imprudence findings have been no more than \$6,000 related to PSNH’s fossil or hydropower generation assets since May 1, 2001. Exh. 15. PSNH, therefore, faces less risk than is normally the case for generation investments of vertically integrated electric utilities.

Dr. Morin further contended that roughly one-half of his 86 basis point generation risk differential, or 40 basis points, should be applied as a premium because “power generation and T&D segments represent approximately one half of the vertically integrated utility portfolio” he used to derive his risk differential. Exh. 7 at 82. Dr. Morin’s proposal applied a general finding of generation risk to PSNH, without recognition of PSNH’s actual operations. We find Dr. Morin overstates the impact of PSNH’s generation risks inasmuch as generation assets

⁵ Dr. Morin calculated the risk differential range employing both ECAPM for the low end of the range and CAPM for the high end of the range. Though ECAPM is not generally used by this Commission, there was little other evidence on quantification of the risk premium developed in the record. We will therefore accept his range of an appropriate generation risk premium, from 64 to 86 basis points.

represent only one-third of PSNH's assets. Accordingly, we will allow a generation risk premium that equals one-third of the 64 basis point risk differential, *i.e.*, 21 basis points.

Dr. Morin proposed another adjustment to the return on equity, a flotation allowance of 5 percent of the expected dividend yield component of equity cost to recover flotation costs associated with the issuance of stock. Both Mr. Hill and Ms. Sirois argued against such an adjustment, asserting that such issuance costs are not actual expenses of the Company. Instead, these costs are borne by the underwriter who recovers them by paying the issuing utility a price per share that is less than the offering price. The Commission has historically denied the inclusion of such an adjustment to the return on equity and we find no basis in this record to depart from established practice. We reject, therefore, Dr. Morin's requested adjustment for flotation costs.

Our rate of return on equity, thus, is derived using the proxy group developed by Mr. Hill, the expected dividend yield and growth rate derived from the three-stage DCF methodology, as explained above, resulting in a rate of return on equity of 9.42 percent. We adjust this result for generation risk by adding 21 basis points, for a final return on equity of 9.63 percent for generation assets.

Next we consider what other methodologies should be utilized as a test of reasonableness. Dr. Morin used two variations of the Capital Asset Pricing Model (CAPM) with two different risk-free rates, as well as six other risk premium variations. Mr. Hill used the CAPM as well, also with two risk-free rates, and includes Modified Earnings-Price Ratio and Market-to-Book Ratio analyses. Ms. Sirois also used the CAPM, with a single risk-free rate. We will not include Dr. Morin's empirical version of the CAPM, nor any of his other risk premium variations, in the test of reasonableness, as our purpose here is to provide a comparison based on

consistent methodologies. The CAPM analyses, while not completely consistent from witness to witness and while not the primary methodology used to calculate return on equity by this Commission, nevertheless provide a comparison, on the record, for our determination. We will, therefore, employ the CAPM approach because of its established theoretical applicability and because each of the witnesses employs it, so as to provide a thorough and consistent basis on which to test reasonableness.

Based on the discussion above, using the proxy groups, growth calculations, generation risk and all other assumptions contained in each witness' analysis, produced CAPM results as follows: 11.4 and 12 percent from Dr. Morin, which include an additional flotation adjustment, and assume risk-free rates of 4.8 percent and 5.4 percent respectively; 7.76 and 9.69 percent from Mr. Hill, which assume risk-free rates of 2.6 percent and 4.61 percent respectively⁶; and 9.82 percent from Ms. Sirois, assuming a risk-free rate of 4.44 percent. Mr. Hill's 7.76 percent is derived from what we find to be an unrealistically low risk-free rate of 2.6 percent, and we will reject it as not being representative. Conversely, Dr. Morin's 12 percent is the result of what we find to be an unrealistically high risk-free rate of 5.4 percent, and it too will be rejected.

Further, having found that flotation should not be included in the return on equity, we will adjust Dr. Morin's CAPM result by the 5 percent of dividend adder he included, or approximately 30 basis points, which brings his 11.4 percent to 11.1 percent. Our rate of return on equity of 9.63 percent for generation assets is consistent with the resulting 9.69 percent to 11.1 percent range of relevant CAPM estimates.

⁶ Mr. Hill used both geometric and arithmetic means for his equity risk premium. The geometric mean is based on compound returns over time; the arithmetic mean is based on the average of single-period returns. Given that our goal is to calculate the equity risk premium that is expected to be incurred in future time periods, the arithmetic mean captures these expectations in that it best reflects returns that investors expect from continually investing in the stock market.

We note other evidence in the record brought out by Mr. Hill and Ms. Sirois which supports our finding that a rate of return on equity of 9.63 percent for PSNH generation assets is reasonable. For example, current interest rates are near 40-year lows, suggesting that PSNH's current allowed return on equity of 11 percent, set nearly eight years ago, is no longer appropriate and does not reflect investors' expected rate of return on equity for investments in PSNH's generation. We also find additional support in Mr. Hill's assessment that the gap between yields on short-term and long-term Treasury bonds is decreasing, despite recent increases in the Federal Funds Rate. We note as well the *Public Utilities Fortnightly* letter testified to by Mr. Hill that indicates investors now expect single-digit returns from their utility investments.

Ms. Sirois' information regarding Northeast Utilities' own recent announcements also supports our finding. The Northeast Utilities webcast "Competitive Business Review: Quarterly Financial Report" in which PSNH's parent company states it expects a rate of return on equity between 9 and 10 percent for PSNH's distribution and generation assets is telling. Ms. Sirois observed that Northeast Utilities' May 10, 2005 decision to raise its dividend again by 7.5 percent indicates that Northeast Utilities' management believes it is financially strong, even with its earlier prediction that distribution and generation assets will likely earn between 9 and 10 percent. These pronouncements reveal various forms of financial and investor perceptions that further bolster the reasonableness of our DCF rate of return on equity of 9.63 percent on PSNH's generation assets.

Based on the foregoing, it is hereby

ORDERED, that effective on and after July 1, 2005, Public Service Company of New Hampshire shall use an authorized return on equity of 9.63 percent for calculating its overall rate of return on its generating assets.

By order of the Public Utilities Commission of New Hampshire this eighth day of June, 2005.

Thomas B. Getz
Chairman

Graham J. Morrison
Commissioner

Michael D. Harrington
Commissioner

Attested by:

Debra A. Howland
Executive Director & Secretary