September 08, 2009

Ontario Energy Board
2300 Yonge Street
Suite 2700
Toronto, Ontario
M4P 1E4

Attention: Ms. Kirsten Walli, Board Secretary

Re: EB-2009-0084 Consultation on Cost of Capital
Union's Issues List Submission

Dear Ms. Walli:

Please find attached Union's written comments on the Cost of Capital Issues List dated July 30, 2009 (EB-2009-0084).

It is Union's understanding that the Board will hold a stakeholder conference during the week of September 21, 2009. It is also Union's understanding that the Board intends to put forward a financial market expert panel during the morning of September 21 followed by participant presentations for the remainder of the week.

Union's consultant, James H. Vander Weide, has to testify in a proceeding in Florida during the week of September 21. It is Union's understanding that Mr. Vander Weide's presentation will be scheduled during the afternoon of September 21 to allow Mr. Vander Weide the time necessary to meet his commitments in Florida later that week. Both Union and Mr. Vander Weide appreciate the Board's consideration in this regard.

If you have any questions, please contact me at 519-436-5275.

Yours truly,

[Original Signed by]

Mark Kitchen
Director, Regulatory Affairs

cc: EB-2009-0084 Participants
Michael Penny (Torys)

Response to Questions Raised as
Issues for Discussion at Stakeholder Conference

Preamble:

The National Energy Board (NEB) in its RH-2-2004 Phase II Decision stated the following with regard to the application of the Fair Return Standard ("FRS"):

"The Board [NEB] is of the view that the fair return standard can be articulated by having reference to three particular requirements. Specifically, a fair or reasonable return on capital should:

- Be comparable to the return available from the application of invested capital to other enterprises of like risk (the comparable investment standard);
- Enable the financial integrity of the regulated enterprise to be maintained (the financial integrity standard): and
- Permit incremental capital to be attracted to the enterprise on reasonable terms and conditions (the capital attraction standard)."

The NEB's articulation of the FRS is consistent with the principled approach described on page 2 of the Board's March 1997 Compendium to Draft Guidelines on a Formula-Based Return on Common Equity for Regulated Utilities (the "1997 Compendium"). Further, the Board also determined in its Report of the Board on Cost of Capital and 2nd Generation Incentive Regulation for Ontario's Electricity Distributors dated December 20, 2006 that "the current approach [as set out in the 1997 Compendium] for setting ROE would be maintained."

The NEB reaffirmed this articulation of the FRS in its RH-1-2008 Reasons for Decision. Further, in that same Decision, the NEB also stated: "In the Board's view, the Federal Court of Appeal was clear that the overall return on equity must be determined solely on the basis of a company's cost of equity capital, and that the impact of any resulting toll increase is an irrelevant consideration in that determination".

Questions:

1. What method(s)/test(s) might the Board formally consider to determine whether the return on capital meets: (i) the comparable investment standard; (ii) the financial integrity standard; and (iii) the capital attraction standard?

Response to Question 1.

The Board's ROE formula is given by the equation,

$$ROE_t = 9.35\% + 0.75 \times (LCBF_t - 5.50\%).$$

Using the forecast yield on long Canada bonds equal to 4.23 percent from Consensus Economics, August 10, 2009, the Board's formula produces an allowed ROE of 8.40 percent and an implied equity risk premium of 4.17 percent. I have conducted six tests of whether the return provided by the current formula is a fair return. The results of my tests are summarized below and described in Appendix A attached to my responses.

A. Evidence on Experienced Equity Risk Premiums on Investments in Canadian Utility Stocks

I have examined evidence on the experienced returns achieved by equity investors in two groups of Canadian utilities compared to interest rates on long-term Canada bonds. My studies indicate that the average experienced equity risk premium on an investment in Canadian utility stocks is approximately 5.5 percent. Since the risk premium implied by the ROE formula is only 4.17 percent, this evidence supports the conclusion that the OEB's ROE formula is not producing a fair return.

B. Evidence on Recent Allowed Rates of Return on Equity for U.S. Utilities

I have examined evidence on the allowed rates of return on equity and allowed common equity ratios for U.S. electric and natural gas utilities. My studies indicate that allowed rates of return on equity and allowed equity ratios for U.S. utilities average approximately 10.4 percent and 49 percent, respectively. Since the OEB's ROE formula currently produces a 8.40 percent ROE on an allowed equity ratio in the range 35 percent to 40 percent, this evidence supports the conclusion that the Board's ROE formula fails to provide returns that are commensurate with returns on other investments of comparable risk.

C. Evidence on the Sensitivity of the Forward-looking Required Equity Risk Premium on Utility Stocks to Changes in Interest Rates

I have examined evidence on the sensitivity of the forward-looking, or ex ante, required equity risk premium on utility stocks to changes in interest rates. Specifically, while the ROE adjustment formula implies that the cost of equity for Canadian utilities declines by 75 basis points for every 100-basis-point decline in the yield to maturity on long Canada bonds, my evidence supports the conclusion that the cost of equity declines by less than 50 basis points for every 100-basis-point decline in the yield to maturity on long Canada bonds. From my ex ante risk premium studies, I find that the forward-looking required equity risk premium on utility stocks is in the range 7.5 percent to 8.0 percent (see Appendix A, which includes data through February 2009). (Using more recent data, the forward-looking required risk premium is in the range 7.0 percent to 7.5 percent.) Since the risk premium implied by the OEB ROE Formula is currently 4.23 percent, this evidence supports the conclusion that the Board's ROE formula fails to provide a fair rate of return on equity.

D. Evidence on the Sensitivity of the Allowed Equity Risk Premium for U.S. Utilities to Changes in Interest Rates

I have examined evidence on the sensitivity of the equity risk premium implied by U.S. utility allowed rates of return on equity to changes in the interest rate on long-term government bonds. My studies indicate that U.S. utility allowed equity risk premiums are significantly less sensitive to changes in interest rates on long-term government bonds than the allowed equity risk premium implied by the OEB ROE Formula. Specifically, while the ROE adjustment formula reduces the allowed ROE by 75 basis points when the yield to maturity on long-term government bonds declines by 100 basis points, U.S. regulators typically reduce the allowed ROE by less than 50 basis points when the yield to maturity on long-term government bonds declines by 100 basis points. This evidence also supports the conclusion that the OEB ROE Formula fails to meet the fair return standard.

E. Evidence on the Relative Risk of Returns on Canadian Utility Stocks Compared to the Canadian Market Index

I have examined evidence on the volatility of returns on Canadian utility stocks compared to the volatility of returns on the Canadian market index. My studies indicate that the volatility of returns on Canadian utility stocks exceeds or approximates the volatility of returns on the Canadian market index. Because investors demand a higher return for bearing more risk, this evidence also supports the conclusion that the equity risk premium on Canadian utility stocks is higher than the equity risk premium implied by the OEB ROE Formula.

F. Evidence that the Board's ROE Formula Produces Lower Results in a Period of Increased Risk and Uncertainty in the Economic and Capital Markets

I have examined whether the Board's ROE formula produces a higher ROE in periods of higher risk such as the period of global financial crisis from early 2008 through mid-2009. I conclude that, contrary to a reasonable expectation, the OEB ROE Formula produced a lower ROE estimate at a time when highly uncertain economic and capital market conditions were causing capital costs to increase dramatically.

G. Conclusion

The fair return standard requires that Ontario utilities be given an opportunity to earn a return on their investment in utility plant and equipment that is approximately equal to returns investors expect to receive on other investments of similar risk. From my studies of investor-required returns on similar risk investments, I conclude that Ontario utilities should be allowed ROEs in the range 10 percent to 11 percent on deemed equity ratios in the range 40 percent to 50 percent. I further conclude that Ontario utilities should be allowed to earn a return on rate base of approximately 8 percent.

2. Is the current deemed capital structure appropriate? If not, what alternative(s) might the Board consider?

Response to 2.

No. As discussed in response to Question 1, the deemed equity ratios for Ontario utilities is too low relative to comparable U.S. utilities. As discussed in response to Question 1, the average allowed equity ratio for U.S. utilities, both electric and natural gas, is 49 percent. This evidence is consistent with the evidence provided in the June 14, 2007 Concentric Report, which found that equity ratios in Ontario and Canada are significantly lower than that of utilities in the U.S., even though there are no fundamental differences in business and operating risks.

In addition, the current approved equity ratios for Union and Enbridge are 64 percent debt/36 percent equity and 65 percent debt/35 percent equity, respectively. In its final *Report of the Board on the Cost of Capital and 2nd Generation Incentive Regulation for Ontario's Electricity Distributors* dated December 12, 2006, the Board committed to transition all electricity distributors to a single deemed capital structure of 60 percent debt/40 percent equity by 2010.

The appropriate range of utility equity ratios in Ontario is 40 percent to 50 percent.

3. Should the approach to setting cost of capital parameter values differ depending on whether a distributor finances its business through the capital markets or through government lending such as Infrastructure Ontario or through bank lending? If so, what would be the implications, if any, of doing so?

Response to 3.

No. If the Board adheres to the FRS, referenced above, there is no need to differentiate approaches when setting cost of capital parameters based on how the distributor finances its business.

Preamble:

Concentric Energy Advisors in its report entitled "A Comparative Analysis of Return inequity of Natural Gas Utilities" (dated June 14, 2007) found that "there are no evident fundamental differences in the business and operating risks facing Ontario utilities as compared to those facing U.S. companies or other provinces that would explain the difference in ROEs".

Questions:

4. Does the analysis in the Concentric Report provide a reasonable foundation for satisfying the comparable investment standard?

Response to 4.

The June 14, 2007, Concentric report compares the allowed ROEs and equity ratios for a comparable group of U. S. natural gas distribution companies to the allowed ROEs and equity ratios for Canadian natural gas utilities. They find that comparable risk U. S. utilities have significantly higher allowed ROEs and equity ratios than Canadian utilities. This finding is certainly an important test of whether the OEB ROE formula satisfies the comparable investment standard. Other tests of whether the OEB ROE formula satisfies the comparable investment standard are briefly discussed in response to Question 1.

5. If not, what might the Board use as a comparator group?

Response to 5.

For the purpose of estimating a utility's cost of equity, the comparator group must: (1) be comparable in risk, on average, to the utility whose rates are being determined; (2) have publicly-traded stock; (3) have sufficient data available to reliably estimate the cost of equity; and (4) include a relatively large group of companies. The Concentric Report finds that a group of U. S. local natural gas distribution companies meets these standards when the regulated company is a Canadian natural gas distribution company. The report also finds that, as a practical matter, the average allowed rate of return for the U.S. utility group is not particularly sensitive to refinements in the factors that determine "comparable risk." Since average allowed rates of return on equity and deemed equity ratios for U.S. electric utilities are nearly identical to average allowed rates of return on equity and deemed equity ratios for U.S. gas utilities, the Board could examine evidence on both U.S. electric and natural gas utilities to determine whether the OEB's ROE formula satisfies the fair rate of return standard. The advantage of using U.S. utilities as a comparator group is that the U.S. utilities are more involved in traditional utility operations than publicly-traded Canadian utilities; the sample of publicly-traded U.S. regulated utilities is significantly larger than the sample of Canadian regulated utilities; and the data required to estimate the cost of equity is more readily available for the U.S. utilities than for the Canadian utilities. The problem with using Canadian utilities is that there are very few publicly-traded pure Canadian utilities. However, when looking at experienced returns of comparable risk utilities, the Board might use companies in the S&P/TSX Utilities Index and/or a basket of Canadian utility stocks created by BMO Capital Markets.

6. Were the Board to only consider the use of Canadian utilities as a comparator group, is there an issue with circularity, given that the ROEs of

these utilities are, and have been established by a mechanism similar to that currently used by the Board?

Response to 6.

When comparing allowed rates of return, the use of Canadian utilities is circular because the allowed rates of return for Canadian utilities tend to be based on very similar ROE formulas. The application of market methods such as the CAPM, risk premium, or discounted cash flow, to Canadian utilities generally is not circular. Furthermore, the required market data necessary to apply market methods to Canadian utilities is not generally available or is less reliable. However, circularity and data availability are not issues if U. S. utilities are used for the comparator group. In particular, circularity is not a problem if U.S. utilities are used as comparators because U.S. allowed returns are determined on a case-by-case basis using various cost of equity models and market data at the times of the proceedings. Thus, unlike Canadian allowed ROEs, U.S. allowed ROEs are not determined by similar ROE formulas.

Preamble:

The Board in the 1997 Compendium indicated its intention to move to a formula-based approach using the Equity Risk Premium ("ERP") method for determining the fair rate of return on common equity ("ROE") for Ontario natural gas utilities. The Board adopted the same approach in 1999 for electricity distributors. A two phase process was established to calculate the ROE: an initial ROE setup will establish a just and reasonable ROE based on the ERP, and an ongoing adjustment mechanism will automatically adjust the initial ROE to account for changes in long-term Canada yield expectations.

The Board noted the following on the use of an ERP test and on the concept of a formula-based ROE:

- "a disadvantage of using the ERP approach is that…historical-average risk premium calculations are time sensitive and subject to considerable volatility from period to period" (1997 Compendium, page 6); and

- "Over time these parameters and adjustment factors will have a cumulative or compounding effect on the results of the formulaic ROE mechanism The use of an inappropriate initial ROE will either inflate or understate subsequent rate determinations" (1997 Compendium, page 7).

Questions:

7. Should the ERP approach be reset given that when the formula was first established the reference bond rate was 8.75%?

Response to 7.

The Board should reexamine whether the ERP approach is the best approach for setting a fair rate of return for Canadian utilities. The evidence presented in response to Question 1 indicates that the ERP approach and the Board's associated adjustment mechanism do not provide fair rates of return for Canadian utilities at this time. Given the inherent uncertainties in estimating the fair rate of return and the previously described problems with the ERP approach and adjustment mechanism, it would be advantageous for the Board to consider the results of several cost of capital methodologies in determining the fair rate of return for Canadian utilities. However, if the Board decides to continue with the ERP approach, the ROE should be reset to reflect current evidence on the fair rate of return.

8. Should the ERP approach be reset on a regular basis (e.g., every 4 or 5 years) to mitigate the issues described in the 1997 Compendium?

Response to 8.

If the Board decides to continue the ERP approach, it should reset the initial ROE on a regular basis. The ideal approach would be to reset the initial ROE whenever the formula ROE no longer provides a fair rate of return. Given the inherent uncertainties in capital market conditions, it is not possible or desirable to establish with certainty a fixed period for resetting the initial ROE in the ERP. The Board might mitigate the problem of determining an appropriate review period by setting a relatively short review period, for example, three to five years, and by also permitting a utility to present evidence at any time that the allowed formula ROE is not producing a fair return.

9. How might the Board address the potential issues arising from the application of the current methodology as a single, point-in-time calculation?

Response to 9.

Please see response to Question 8.

10. How should the Board establish the initial ROE for the purposes of resetting the methodology?

Response to 10.

The Board should establish the initial ROE by looking at the best available evidence on the utilities' required return. This evidence should include results of various cost of capital methodologies, including the discounted cash flow, the risk premium, and comparable earnings. It has been some time since the Board last

reviewed the advantages and disadvantages of these methodologies, and research on these methodologies has continued. The Board would be remiss to predetermine a single methodology for establishing the initial allowed ROE without reviewing alternative methods for determining the cost of equity.

Preamble:

The Board in the 1997 Compendium stated that the equity risk premium methodology" relies on the assumption that common equity is riskier than debt and that investors will demand a higher return on shares, relative to the return required on bonds, to compensate for that risk. The premium required by an investor to assume the additional risk associated with an equity investment is taken to be the difference between the relevant debt rate, usually the yield on long-term government bonds and some estimate of the stocks cost of equity" (1997 Compendium, page 6).

Questions:

11. Is the government (of Canada) bond yield the appropriate base upon which to begin the return on equity calculation?

Response to 11.

The issues involved in the choice of a bond yield are complex. The advantage of a government bond yield is that government bonds are considered to be risk free, and data on government bond yields is readily available. Among the disadvantages of using government bond yields is that they are heavily influenced by central bank monetary policies and international capital flows. I prefer using the yield on A-rated utility bonds rather than the yield on government bonds in my risk premium studies because I believe that utility bond yields are more highly correlated with utilities' cost of equity than government bond yields. To the extent that there are economic developments that are specific to the utility industry, such as changes in environmental regulations and energy policy, such factors will be reflected both in utility bond yields and the utility cost of equity, but not in government bond yields. Thus, that utility bond yields reflect utility-specific risks is an argument for the use of utility bond yields to indicate changes in the utility cost of equity.

12. What is the relationship between corporate bond yields and the corporate cost of equity? Is this relationship sustainable?

Response to 12.

Intuitively, there would appear to be a stronger relationship between utility bond yields and the utility cost of equity than between government bond yields and the utility cost of equity. For example, during the period of financial crisis that began in late 2007 and more or less continues to today, most observers would

recognize that the utility required ROE has been more highly correlated with rising utility debt costs than with falling government debt costs. However, the exact relationship between utility bond yields and the utility required ROE is complex; and the issue would require further study before definitive conclusions could be drawn about the specific nature of the relationship and its sustainability.

Preamble:

In the comments submitted in response to the Board's March 16, 2009 letter, many participants suggested interim approaches to adjust the Cost of Capital parameter values. A summary of these submissions is provided as Appendix A. Suggested interim approaches or adjustments included:

- Adjusting the ROE to reflect historical spread between long-term debt rate and ROE (i.e. 250 basis points);

- Adjusting the ROE to include the ROE differential between Canada and the U.S. noted in the Concentric report;

- Including an incremental risk premium factor to reflect the return required to compensate investors for risks posed by increased stock market volatility;

- Including a "market adjustment" factor to directionally maintain the relationship between the cost of debt and the ROE;

- Substituting the deemed utility debt rate for the long-term Government of Canada bond yield in the adjustment formula; and

- Including an adjustment factor to capture the spread between government and corporate bond rates since the inception of the ERP formula.

Questions:

13. Does the current approach used by the Board to calculate the ERP remain appropriate? If not, how should the ERP be calculated?

Response to 13.

This question assumes that the Board should continue to use the ERP approach to determine the utilities' fair rate of return. As discussed in response to Question 1, the ERP approach and associated adjustment mechanism do not provide fair rates of return on equity for utilities at this time. For example, the utilities' required and allowed ROEs are less sensitive to changes in the risk-free rate than is implied by the OEB's ROE formula. In addition, the current ROE formula produces unreasonable results in times when the government is reducing government interest rates in an effort to stimulate the economy.

Although it is clear that the current OEB ROE formula does not produce a fair rate of return, the issue of how an ERP should be calculated in the future, or whether the Board should employ other methods to estimate the utilities' fair rate of return, should be thoroughly studied and debated before the Board reaches a decision.

Preamble:

Some jurisdictions have a "dead band" within which no adjustments are made and/or trigger mechanism that balances reviewing the methodology for setting the cost of capital too often with not reviewing the mechanism often enough.

Questions:

14. Should the Board adopt a dead band? If so, what should the range of the dead band be?

Response to 14.

Dead bands are sometimes used to reduce the administrative costs associated with frequent determinations of the allowed ROE. However, dead bands also limit a company's ability to seek review of its allowed ROE if the bounds of the dead band are not exceeded. Thus, the issue of using a dead band requires a difficult trade-off between the administrative costs of frequent ROE reviews and the ability of the utility to earn a fair ROE. These issues are significant, and the Board should carefully review the arguments before reaching a decision.

15. Should the Board adopt trigger mechanism(s)? If so, how often should the Board review the methodology?

Response to 15.

The arguments for and against trigger mechanisms are similar to those for and against dead bands. Please see response to Question 14.

Preamble:

The Board in the 1997 Compendium (page 32) indicated that "from time to time the Board may request the presentation of other tests or require some weighting for other tests in the formula should the Board want to assure itself that the ERP formula approach does not lead to perverse results and is directionally in line with other market indicators."

Questions:

16. What is the appropriate test(s) to ensure the FRS is met (e.g. corroborating results for reasonableness relative to other benchmarks or through other methods)?

Response to 16.

Appropriate tests to assure that the FRS is met are described in response to Question 1. These tests demonstrate that the current OEB formula does not satisfy the fair rate of return standard.

17. What information might the Board need to definitively determine that market conditions are having an effect on the variables used by the Board's cost of capital methodology?

Response to 17.

The Board would need information of the kind discussed in response to Question 1 to determine whether market conditions are having an effect on the Board's cost of capital methodology. As described in that response, the Board's cost of capital methodology currently leads to "perverse results that are directionally out of line with other market indicators."

Preamble:

As part of the comments in this consultation, some participants cited the following as indicators that conditions in the capital market have changed:

- Declining equity valuations reduced the attractiveness of raising equity capital.
- Liquidity squeeze and higher spreads have increased cost of issuing short-term and long-term debt.
- Capital expenditure projects may be delayed as the ability to find capital on reasonable terms and conditions is reduced.

Questions:

18. Should the Board consider monitoring indicators like these on an on-going basis to test the reasonableness of the results of its cost of capital methodology?

Response to 18.

Although the conditions described in the preamble have been somewhat mitigated since June, the Board should consider monitoring indicators such as these to test the reasonableness of the results of its cost of capital methodology.

As an alternative, the Board should consider whether other cost of equity methodologies are more likely to satisfy the fair rate of return standard than the Board's current ERP approach.

19. What other key metrics used by financial market participants to determine whether financial markets conditions are or are not "normal" might the Board consider?

Response to 19.

Whether financial market conditions are "normal" cannot be determined simply by looking at a set of metrics. The important question is whether the current formula provides the utilities an opportunity to earn a fair rate of return. Whether the utilities have an opportunity to earn a fair rate of return can only be determined by examining capital market evidence relating to the utilities' cost of capital. Direct evidence on the utilities' cost of capital is required because the cost of capital is generally too complex to be determined by a simple formula. However, several indicators of whether a utility is able to earn a fair rate of return are provided in response to Question 1.

ONTARIO ENERGY BOARD

EB-2009-0084

APPENDIX A TO RESPONSES TO QUESTIONS RAISED AS ISSUES FOR DISCUSSION AT STAKEHOLDER CONFERENCE JAMES H. VANDER WEIDE, PH.D.

FOR

UNION GAS INC.

SEPTEMBER 8, 2009

APPENDIX A TO REPONSES OF
JAMES H. VANDER WEIDE
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APPENDIX A TO RESPONSES

JAMES H. VANDER WEIDE

I. Introduction

Q 1 What is your name, occupation, and business address?

A 1 My name is James H. Vander Weide. I am Research Professor of Finance and Economics at Duke University, Fuqua School of Business. I am also President of Financial Strategy Associates, a firm that provides strategic and financial consulting services to corporate clients. My business address is 3606 Stoneybrook Drive, Durham, North Carolina 27705.

Q 2 Please summarize your qualifications.

A 2 I received a Bachelor's Degree in Economics from Cornell University and a Ph.D. in Finance from Northwestern University. After joining the faculty of the School of Business at Duke University, I was named Assistant Professor, Associate Professor, and then Professor. I have published research in the areas of finance and economics and taught courses in these fields at Duke for more than 35 years.

Q 3 Have you previously testified on financial and economic issues?

A 3 Yes. As an expert on financial and economic theory and practice, I have participated in more than 400 regulatory and legal proceedings before the U.S. Congress, the Canadian Radio-Television and Telecommunications Commission, the National Energy Board, the Alberta Utilities Commission, the Federal Communications Commission, the National Telecommunications and Information Administration, the Federal Energy Regulatory Commission, the public service commissions of 42 states, the insurance commissions of five states, the Iowa State Board of Tax Review, the National Association of Securities Dealers, and the North Carolina Property Tax Commission. In addition, I have provided expert testimony in proceedings before the U.S. District Court for the District of Nebraska; the U.S. District Court for the District of New Hampshire; the U.S. District Court for the Eastern District of North Carolina; the U.S. District Court for the Northern District of California; Montana Second

Judicial District Court, Silver Bow County; the Superior Court, North Carolina; the U.S. Bankruptcy Court for the Southern District of West Virginia; and the U. S. District Court for the Eastern District of Michigan. My resume is shown in Appendix 1.

II. The Fair Return Standard

Q 4 What is a fair return?

A 4 A fair return is a return that is: (i) equal to the returns investors expect to earn on other investments of comparable risk; (ii) sufficient to allow the regulated firm to attract capital on reasonable terms; and (iii) sufficient to allow the regulated firm to maintain its financial integrity.

Q 5 What is the economic definition of the required rate of return, or cost of capital, associated with particular investment decisions, such as the decision to invest in natural gas distribution facilities?

A 5 The economic definition of the cost of capital is identical to the definition of the fair return, namely, the cost of capital is the return investors expect to receive on alternative investments of comparable risk.

Q 6 How does the cost of capital affect a firm's investment decisions?

A 6 A central goal of a firm is to maximize the value of the firm. This goal can be accomplished by accepting all investments in plant and equipment with an expected rate of return greater than the cost of capital. Thus, from an economic perspective, a firm should continue to invest in plant and equipment only so long as the return on its investment is greater than or equal to its cost of capital.

Q 7 How does the cost of capital affect investors' willingness to invest in a company?

A 7 The cost of capital measures the return investors can expect on investments of comparable risk. The cost of capital also measures the investor's required rate of return on investment because rational investors will not invest in a particular investment opportunity if the expected return on that opportunity is less than the cost of capital. Thus, the cost of capital is a hurdle rate for both investors and the firm.

Q 8 Do all investors have the same position in the firm?

A 8 No. Bond investors have a fixed claim on a firm's assets and income that must be paid prior to any payment to the firm's equity investors. Since the firm's equity investors have a residual claim on the firm's assets and income, equity investments are riskier than bond investments. Thus, the cost of equity exceeds the cost of debt.

Q 9 What is the overall or average cost of capital?

A 9 The overall or average cost of capital is a weighted average of the cost of debt and cost of equity, where the weights are the percentages of debt and equity in a firm's capital structure.

Q 10 Can you illustrate the calculation of the overall or weighted average cost of capital?

A 10 Yes. Assume that the cost of debt is 6 percent, the cost of equity is 11 percent, and the percentages of debt and equity in the firm's capital structure are 50 percent and 50 percent, respectively. Then the weighted average cost of capital is expressed by .50 times 6 percent plus .50 times 11 percent, or 8.5 percent.**[1]**

Q 11 What is the economic definition of the cost of equity?

A 11 The cost of equity is the return investors expect to receive on alternative equity investments of comparable risk. Since the return on an equity investment of comparable risk is not a contractual return, the cost of equity is more difficult to measure than the cost of debt. However, as I have already noted, the cost of equity is greater than the cost of debt. The cost of equity, like the cost of debt, is both forward looking and market based.

Q 12 How do economists measure the percentages of debt and equity in a firm's capital structure?

A 12 Economists measure the percentages of debt and equity in a firm's capital structure by first calculating the market value of the firm's debt and

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[1] The weighted average cost of capital may be calculated on either an after-tax or a before-tax basis. The difference between these calculations is that the after-tax cost of debt is used to calculate the weighted average cost of capital in an after-tax calculation. For simplicity, I present a before-tax calculation of the weighted average cost of capital in this example.

the market value of its equity. The percentage of debt is then calculated by the ratio of the market value of debt to the combined market value of debt and equity, and the percentage of equity by the ratio of the market value of equity to the combined market values of debt and equity. For example, if a firm's debt has a market value of $25 million and its equity has a market value of $75 million, then its total market capitalization is $100 million, and its capital structure contains 25 percent debt and 75 percent equity.

Q 13 Why do economists measure a firm's capital structure in terms of the market values of its debt and equity?

A 13 Economists measure a firm's capital structure in terms of the market values of its debt and equity because: (1) the weighted average cost of capital is defined as the return investors expect to earn on a portfolio of the company's debt and equity securities; (2) investors measure the expected return and risk on their portfolios using market value weights, not book value weights; and (3) market values are the best measures of the amounts of debt and equity investors have invested in the company on a going forward basis.

Q 14 Why do investors measure the return on their investment portfolios using market value weights rather than book value weights?

A 14 Investors measure the return on their investment portfolios using market value weights because market value weights are the best measure of the amounts the investors currently have invested in each security in the portfolio. From the point of view of investors, the historical cost or book value of their investment is entirely irrelevant to the current risk and return on their portfolios because if they were to sell their investments, they would receive market value, not historical cost. Thus, the return can only be measured in terms of market values.

Q 15 Does the required rate of return on an investment vary with the risk of that investment?

A 15 Yes. Since investors are averse to risk, they require a higher rate of return on investments with greater risk.

Q 16 Do investors consider future industry changes when they estimate the risk of a particular investment?

A 16 Yes. Investors consider all the risks that a firm might incur over the future life of the company.

Q 17 Are these economic principles regarding the fair return for capital recognized in any Supreme Court cases?

A 17 Yes. These economic principles, relating to the supply of and demand for capital, are recognized in at least one Canadian and two United States Supreme Court cases: (1) *Northwestern Utilities Ltd. v. Edmonton*, [1929]; (2) *Bluefield Water Works and Improvement Co. v. Public Service Commission*; and (3) *Federal Power Commission v. Hope Natural Gas Co*. In *Northwestern Utilities Ltd. v. Edmonton*, Mr. Justice Lamont states:

> The duty of the Board was to fix fair and reasonable rates; rates which, under the circumstances, would be fair to the consumer on the one hand, and which, on the other hand, would secure to the company a fair return for the capital invested. By a fair return is meant that the company will be allowed as large a return on the capital invested in its enterprise (which will be net to the company) as it would receive if it were investing the same amount in other securities possessing an attractiveness, stability and certainty equal to that of the company's enterprise. [*Northwestern Utilities Ltd. v. Edmonton*, [1929] S.C.R. 186.]

The Court clearly recognizes here that a regulated utility must be allowed to earn a return on the value of its property that is at least equal to its cost of capital.

III. The Board's ROE formula Is Not Valid.

A. The Board's ROE formula

Q 18 Are you familiar with the OEB's ROE formula for the regulated electric and natural gas companies under its jurisdiction?

A 18 Yes. The Board's ROE formula is given by the equation:

ROE_t = 9.35% + [0.75 x ($LCBF_t$ - 5.5%)]

where:

$LCBF_t$ = the forecast long-term Canada bond yield for year *t*.

Q 19 What is the current forecast yield on long-term Canada bonds?

A 19 As of August 2009, the Consensus Economics forecast yield on long-term Canada bonds is equal to 4.23 percent.

Q 20 Using a 4.23 percent forecast yield on long-term Canada bonds, what ROE is obtained using the Board's ROE formula?

A 20 The Board's ROE formula produces an ROE equal to 8.40 percent. This result is calculated as follows: 8.40 = 9.25 + [0.75 x (4.23 - 5.5].

Q 21 What equity risk premium is implied by the Board's ROE formula?

A 21 The Board's ROE formula implies an equity risk premium equal to 4.17 percent (8.40 – 4.23 = 4.17).

B. Six Tests of the Validity of the Board's ROE formula

Q 22 Have you performed any tests of the validity of the Board's ROE formula?

A 22 Yes. I have performed six tests of the validity of the Board's ROE formula. First, I have examined evidence on the experienced returns achieved by equity investors in two groups of Canadian utilities compared to interest rates on long-term Canada bonds. My studies indicate that the average experienced equity risk premium on an investment in Canadian utility stocks is approximately 5.5 percent.

Second, I have examined evidence on the allowed rates of return on equity and allowed common equity ratios for U.S. electric and natural gas utilities. My studies indicate that allowed rates of return on equity and allowed equity ratios for U.S. utilities average approximately 10.4 percent and 49 percent, respectively. Since the Board's ROE formula currently produces a 8.40 percent ROE on an allowed equity ratio in the 35 percent to 40 percent, this evidence supports the conclusion that the Board's ROE formula fails to provide returns that are commensurate with returns on other investments of comparable risk.

Third, I have examined evidence on the sensitivity of the forward-looking, or ex ante, required equity risk premium on utility stocks to changes in interest rates. Specifically, while the ROE adjustment formula implies that the cost of equity for Ontario utilities declines by 75 basis points for every 100-basis-point decline in the yield to maturity on long Canada bonds, my evidence supports the conclusion that the cost of equity declines by less than 50 basis points for every 100-basis-point decline in the yield to maturity on long Canada bonds. From my ex ante risk premium studies, I find that the forward-looking required equity risk premium on utility stocks is in the range 7.0 percent to 7.5 percent. Since the risk premium implied by the Board's ROE formula is currently 4.17 percent, this evidence supports the conclusion that the Board's ROE formula is not working.

Fourth, I have examined evidence on the sensitivity of the equity risk premium implied by U.S. utility allowed rates of return on equity to changes in the interest rate on long-term government bonds. My studies indicate that U.S. utility allowed equity risk premiums are significantly less sensitive to changes in interest rates on long-term government bonds than the allowed equity risk premium implied by the Board's ROE formula. Specifically, while the ROE adjustment formula reduces the allowed ROE by 75 basis points when the yield to maturity on long-term government bonds declines by 100 basis points, U.S. regulators typically reduce the allowed ROE by less than 50 basis points when the yield to maturity on long-term government bonds declines by 100 basis points. This evidence also supports the conclusion that the Board's ROE formula is not working.

Fifth, I have examined evidence on the volatility of returns on Canadian utility stocks compared to the volatility of returns on the Canadian market index. My studies indicate that the volatility of returns on Canadian utility stocks exceeds or approximates the volatility of returns on the Canadian market index. Because investors demand a higher return for bearing more risk, this evidence also supports the

conclusion that the equity risk premium on Canadian utility stocks is higher than the equity risk premium implied by the Board's ROE formula.

Sixth, I have examined whether the Board's ROE formula produces an ROE result that is consistent with the increased risk associated with today's highly uncertain economic and capital market conditions. I conclude that, contrary to a reasonable expectation, the Board's ROE formula produces a lower ROE estimate at a time when the increased risks of highly uncertain economic and capital market conditions are causing capital costs to increase dramatically.

1. Evidence on Experienced Equity Risk Premiums on Investments in Canadian Utility Stocks

Q 23 How do you measure the experienced equity risk premium on an investment in Canadian utility stocks?

A 23 I measure the experienced equity risk premium on an investment in Canadian utility stocks from data on returns earned by investors in Canadian utility stocks compared to interest rates on long-term Canada bonds.

Q 24 How do you measure the return experienced by investors in Canadian utility stocks?

A 24 I measure the return experienced by investors in Canadian utility stocks from historical data on returns earned by investors in: (1) the S&P/TSX utilities stock index**[2]**; and (2) a basket of Canadian utility stocks created by BMO Capital Markets ("BMO CM").

Q 25 What companies are currently included in these indices of Canadian utility stock performance?

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[2] The legacy S&P/TSX utilities index was discontinued by Standard & Poor's in Spring 2002 when Standard & Poor's introduced a new S&P/TSX Composite utilities index that included the GICs 5500 utilities. Standard & Poor's provided total return index value data going back to 1999. The historical data on returns earned by investors in the S&P/TSX utilities index therefore includes total returns on the S&P/TSX legacy utilities index through 1998 and total returns on the new S&P/TSX composite utilities index from 1999 through 2008.

A 25 The companies included in the S&P/TSX utilities stock index are Algonquin Power Income Fund, ATCO Ltd., Canadian Utilities Ltd., Emera Inc., Energy Savings Income Fund, EPCOR Power L.P., Fortis Inc., Northland Power Income Fund, and TransAlta Corporation. The index also included Calpine Power Units until February 2007 and TransAlta Power, L.P., until December 2007. In addition, Canadian Hydro Developers, Inc. was added to the index in March 2008.

The BMO CM basket of utility and pipeline companies includes Canadian Utilities Ltd., Emera Inc., Enbridge Inc., Fortis Inc., Pacific Northern Gas, and TransCanada Corporation. The BMO CM basket also includes return data for Westcoast Energy Inc. until December 2001 and Terasen Inc. through July 2005.

Q 26 What time periods do your experienced Canadian utility stock return data cover?

A 26 The S&P/TSX utilities stock return data covers the period 1956 through 2008, and the BMO CM stock return data covers the period 1983 through 2008.

Q 27 Why do you analyze investors' experienced returns over such long time periods?

A 27 I analyze investors' experienced returns over long time periods because experienced returns over short periods can deviate significantly from expectations. However, I also recognize that experienced returns over long periods may also deviate from expected returns if the data in some portion of the long time period are unreliable.

Q 28 Would your study provide different risk premium results if you had included different time periods?

A 28 Yes. The risk premium results do vary somewhat depending on the historical time period chosen. My policy was to go back as far in history as I could get reliable data. With regard to the S&P/TSX utilities index, the data began in 1956, and for the BMO CM utility stock basket, the data began in 1983.

Q 29 Why do you choose two sets of Canadian utilities stock return performance data rather than simply relying on the S&P/TSX utilities stock index data?

A 29 I choose two sets of Canadian utility stock return performance data because each data set provides different information on Canadian utility stock returns. The S&P/TSX utilities index is valuable because it provides information on the returns experienced by investors in a portfolio of Canadian utility stocks over a relatively long period of time. However, six of the nine companies included in the S&P/TSX utility index operate mainly in non-traditional utility markets. The BMO CM utility stock return database is valuable because it provides information on the experienced returns for a sample of Canadian companies that receive a significantly higher percentage of revenues from traditional utility operations than the companies in the S&P/TSX index. However, the time period covered is not as long as the period covered by the S&P/TSX utility index.

Q 30 How are the experienced returns on an investment in each utility data set calculated?

A 30 The experienced returns on an investment in each utility data set are calculated from the historical record of stock prices and dividends for the companies in the data set. From the historical record of stock prices and dividends, the index sponsors construct an index of investors' wealth at the end of each period, assuming a $100 investment in the index at the time the index was constructed. An annual rate of return is calculated from the wealth index by dividing the wealth index at the end of each period by the wealth index at the beginning of the period and subtracting one [$r_t = (W_t \div W_{t-1}) - 1$].

Q 31 How do you measure the interest rate earned on long-term Canada bonds in your experienced, or ex post, risk premium studies?

A 31 I use the interest rate data on long-term Canada bonds reported by the Canadian Institute of Actuaries.

Q 32 What average risk premium results do you obtain from your analysis of returns experienced by investors in Canadian utility stocks?

A 32 As shown in Table 1 below, I obtain an average experienced risk premium equal to 5.5 percent (the annual data that produce these results are shown in Exhibit 1 and Exhibit 2).

TABLE 1
EX POST RISK PREMIUM RESULTS

COMPARABLE GROUP	PERIOD OF STUDY	AVERAGE STOCK RETURN	AVERAGE BOND YIELD	RISK PREMIUM
S&P/TSX Utilities	1956 – 2008	11.84	7.54	4.3
BMO CM Utilities Stock Data Set	1983 – 2008	14.31	7.66	6.6
Average				**5.5**

Q 33 What conclusions do you draw from your experienced, or ex post, risk premium studies about the required risk premium on an investment in Canadian utility stocks?

A 33 My ex post risk premium studies provide evidence that investors require an equity return that is at least 5.5 percentage points above the interest rate on long-term Canada bonds.

Q 34 Do you have any evidence that the required equity risk premium may actually be greater than 5.5 percentage points?

A 34 Yes. I provide evidence below that the required equity risk premium increases when interest rates decline and decreases when interest rates rise. Since the expected 4.23 percent yield on long Canada bonds is significantly less than the 7.6 percent average yield on long Canada bonds over the period of my ex post risk premium studies, the current required equity risk premium should be significantly higher than the average 5.5 percent equity risk premium I obtain from my ex post risk premium studies.

Q 35 What equity risk premium is implied by the Board's ROE formula?

A 35 The Board's ROE formula produces an ROE equal to 8.40 percent based on a 4.23 percent forecast yield to maturity on long Canada bonds. Thus,

the Board's ROE formula implies an equity risk premium of 417 basis points.

Q 36 How does your evidence on the experienced equity risk premium support your conclusion that the Board's ROE formula is not working?

A 36 My analysis supports the conclusion that investors require an equity risk premium on Canadian utility stocks equal to at least 5.5 percent. Thus, my evidence supports the conclusion that the Board's ROE formula understates the required equity risk premium on Canadian utility stocks.

2. Evidence on Recent Allowed Rates of Return on Equity for U.S. Utilities

Q 37 Do you have evidence on recent allowed rates of return on equity for U.S. Utilities?

A 37 Yes. I have evidence on recent allowed rates of return on equity for U.S. electric and natural gas utilities from January 2006 through December 2008. Since January 2006, the average allowed ROE for electric utilities is 10.4 percent, and for natural gas utilities, 10.3 percent. In 2008, the average allowed ROE for electric utilities is 10.5 percent, and for natural gas utilities, 10.4 percent (see Exhibit 3).

Q 38 Why do you examine data on allowed rates of return on equity for U.S. utilities rather than Canadian utilities?

A 38 I examine data on allowed rates of return on equity for U.S. utilities rather than Canadian utilities because allowed rates of return on equity for U.S. utilities are based on cost of equity studies for utilities at the time of each case rather than on an ROE formula such as the Board's ROE formula. Thus, recent allowed rates of return on equity for U.S. utilities are an independent test of whether the Board's ROE formula is valid.

Q 39 Are allowed rates of return on equity the best measure of the cost of equity at each point in time?

A 39 No. Since the cost of equity is determined by investors in the marketplace, not by regulators, the cost of equity is best measured using market models such as the equity risk premium and the discounted cash flow model. However, as noted above, because allowed rates of return in

non-formula jurisdictions are based on regulators' judgments regarding the cost of equity and fair rate of return, they provide additional information on the validity of the Board's ROE formula.

Q 40 How do the average allowed ROEs for U.S. electric and natural gas utilities compare to the ROE implied by the Board's ROE formula?

A 40 The average allowed rates of return on equity for U.S. utilities are approximately 10.4 percent. As noted above, the Board's ROE formula currently implies an ROE equal to 8.40 percent. Thus, the average allowed returns for the U.S. utilities exceed the generic ROE by 200 basis points [10.4 – 8.4 = 200].

Q 41 Can the difference between allowed ROEs for U.S. utilities and the ROE implied by the Board's ROE formula be explained by differences in business risk?

A 41 No. The business risk of electric and natural gas utilities is approximately the same in the U.S. as it is in Canada.

Q 42 Why is the business risk of electric and natural gas utilities approximately the same in the U.S. as it is in Canada?

A 42 The business risk of electric and natural gas utilities is similar in the U.S. and Canada because: (1) U.S. electric and natural gas utilities rely on essentially the same electric and natural gas technologies to deliver their services to the public as electric and gas utilities in Canada; (2) the economics of electric and natural gas transmission and distribution is similar in the U.S. and Canada; and (3) U.S. electric and gas utilities are regulated under similar cost-based regulatory structures and fair rate of return principles as Canadian utilities.

Q 43 Some observers have argued that Canadian utilities have lower regulatory risk than U.S. utilities because Canadian regulators generally make greater use of deferral accounts than U.S. regulators. Do you agree with this argument?

A 43 No. Regulatory risk is associated with the possibility that a utility will be unable to earn its required rate of return as a result of regulation. Although deferral accounts generally reduce the gap between a utility's

actual and allowed returns, they do not necessarily reduce the gap between a utility's actual and required returns. Canadian utilities face greater regulatory risk than U.S. utilities because Canadian utilities are generally regulated through formula ROEs such as the Board's ROE formula, and formula ROEs are more likely to differ from the market cost of equity than ROEs based on market evidence in each rate proceeding.

Q 44 How does the financial risk of Canadian utilities compare to the financial risk of U.S. utilities?

A 44 Canadian utilities have greater financial risk than U.S. utilities because U.S. utilities generally have allowed equity ratios in the range 45 percent to 50 percent (see Exhibit 4), whereas Canadian utilities generally have allowed equity ratios in the range 30 percent to 40 percent.

Q 45 What conclusions do you draw from your evidence that allowed ROEs for comparable U.S. utilities are significantly higher than the ROE implied by the Board's ROE formula?

A 45 My evidence on allowed ROEs for U.S. utilities provides further support for the conclusion that the Board's ROE formula is not working.

3. Evidence on the Sensitivity of the Forward-looking Required Equity Risk Premium on Utility Stocks to Changes in Interest Rates

Q 46 How do you study the sensitivity of the forward-looking required equity risk premium on utility stocks to changes in interest rates?

A 46 I study the sensitivity of the forward-looking required equity risk premium on utility stocks to changes in interest rates in two steps. First, I estimate the forward-looking required equity risk premium on utility stocks in each month of my study period. Second, I perform a statistical regression analysis of the relationship between changes in the required equity risk premium and changes in interest rates.

Q 47 Please describe how you measure the forward-looking required equity risk premium on an equity investment in utility stocks in each month of your study period.

A 47 My estimate of the required equity risk premium is based on studies of the discounted cash flow ("DCF") expected return on comparable groups of utilities in each month of my study period compared to the interest rate on long-term government bonds. Specifically, for each month in my study period, I calculate the risk premium using the equation,

$$RP_{COMP} = DCF_{COMP} - I_B$$

where:

RP_{COMP} = the required risk premium on an equity investment in the comparable companies,

DCF_{COMP} = average DCF expected rate of return on a portfolio of comparable companies; and

I_B = the yield to maturity on an investment in long-term U.S. Treasury bonds.

Q 48 Please describe the DCF model you used to estimate the forward-looking, or ex ante, required risk premium on an equity investment in utility stocks.

A 48 The DCF model is based on the assumption that investors value an asset on the basis of the future cash flows they expect to receive from owning the asset. Under the assumption that future cash flows grow at a constant rate, *g*, the resulting cost of equity equation is $k = D_1/P_s + g$, where *k* is the cost of equity, D_1 is the equivalent future value of the next four quarterly dividends at the end of the year, P_s is the current price of the stock, and *g* is the constant annual growth rate in earnings, dividends, and book value per share. A complete description of my approach to calculating the DCF-estimated cost of equity for my comparable group of utilities is contained in Appendix 2.

Q 49 What comparable companies do you use in your forward-looking equity risk premium studies?

A 49 I use two sets of comparable U.S. utilities, an electric utilities company group and a natural gas utilities company group. For my electric group, I use the Moody's group of 24 electric companies because they are a widely-followed group of utilities, and the use of this constant group greatly simplified the data collection task required to estimate the ex ante

risk premium over the months of my study. Simplifying the data collection task is desirable because my forward-looking equity risk premium studies require that the DCF model be estimated for every company in every month of the study period. For my natural gas company group, I select all the utilities in Value Line's natural gas company groups that: (1) paid dividends during every quarter and did not decrease dividends during any quarter of the past two years; (2) have at least three analysts included in the I/B/E/S mean growth forecast; (3) are not in the process of being acquired; (4) have a Value Line Safety Rank of 1, 2, or 3; and (5) have investment grade S&P bond ratings.

Q 50 Why do you use U.S. utilities rather than Canadian utilities in your forward-looking, or ex ante, risk premium studies?

A 50 My ex ante risk premium studies rely on the DCF model to determine the expected risk premium on utility stocks. As noted above, the DCF model requires estimates of investors' growth expectations, which are best measured from the average of analysts' growth forecasts for each company. The difficulty with using Canadian utilities is that there are very few, if any, analysts' growth forecasts available for each Canadian utility over the 10-year time period of my study.

Q 51 How do you test whether your forward-looking required equity risk premium estimates are sensitive to changes in interest rates?

A 51 To test whether my estimated monthly equity risk premiums are sensitive to changes in interest rates, I perform a regression analysis of the relationship between the forward-looking equity risk premium and the yield to maturity on 20-year U.S. Treasury bonds using the equation:

$$RP_{COMP} = a + (b \times I_B) + e$$

where:

RP_{COMP} = risk premium on comparable company group;

I_B = yield to maturity on long-term U.S. Treasury bonds;

e = a random residual; and

a, b = coefficients estimated by the regression procedure.

Q 52 What does your regression analysis reveal regarding the sensitivity of the forward-looking required equity risk premium to changes in interest rates?

A 52 My regression analysis reveals that the forward-looking required equity risk premium increases by more than 50 basis points when the yield to maturity on long-term government bonds declines by 100 basis points. These results suggest that, contrary to the Board's ROE formula, the cost of equity for utilities declines by less than 50 basis points when the yield on long-term government bonds declines by 100 basis points, rather than the 75-basis point decline in the cost of equity that is implied by the Board's ROE formula. A more detailed description of my regression analysis is contained in Appendix 3. The risk premium data used in the regression analysis is shown in Exhibit 5 and Exhibit 6.

Q 53 What risk premium estimates do you obtain from your forward-looking risk premium studies?

A 53 For my electric utility comparable group, I obtain a forward-looking risk premium equal to approximately 8.0 percent; and for my natural gas comparable group, I obtain a forward-looking risk premium equal to 7.5 percent.

Q 54 What do your forward-looking equity risk premium studies imply about the validity of the Board's ROE formula?

A 54 Like my studies of experienced risk premiums on Canadian utility stocks, my forward-looking equity risk premium studies imply that the Board's ROE formula is not valid.

4. Evidence on the Sensitivity of the Allowed Equity Risk Premium for U.S. Utilities to Changes in Interest Rates

Q 55 How do you define the allowed equity risk premium for U.S. utilities?

A 55 I define the allowed equity risk premium as the difference between the average allowed return on equity for U.S. utilities and the yield to maturity on long-term U.S. Treasury bonds.

Q 56 How do you test whether the allowed equity risk premium is sensitive to changes in interest rates?

A 56 I test whether the allowed equity risk premium is sensitive to changes in interest rates by performing a regression analysis of the relationship between the allowed equity risk premium and the yield to maturity on 20-year U.S. Treasury bonds over the period 1988 through 2008.

Q 57 What are the results of your regression analysis?

A 57 My allowed equity risk premium analysis confirms the results of my ex ante risk premium analysis; namely, my results confirm that there is an inverse relationship between equity risk premiums and the yield to maturity on long-term government bonds. Specifically, I find that when the yield to maturity on long-term government bonds increases by 100 basis points, the allowed equity risk premium tends to decrease by approximately 55 basis points; and when the yield to maturity on long-term government bonds decreases by 100 basis points, the allowed equity risk premium tends to increase by approximately 55 basis points. These results imply that the allowed return on equity for U.S. utilities declines by less than 50 basis points when the yield to maturity on long-term government bonds declines by 100 basis points. The allowed equity risk premium data in my study and my regression results are shown in Exhibit 7.

Q 58 What forecast allowed equity risk premium results do you obtain from your allowed equity risk premium studies?

A 58 I obtain a forecast allowed equity risk premium equal to 5.6 percent. This forecast allowed equity risk premium for U.S. utilities is 143 basis points

higher than the 4.17 percent basis point equity risk premium implied by the Board's ROE formula.

Q 59 What conclusions do you reach from your analysis of the sensitivity of allowed U.S. equity risk premiums to changes in interest rates?

A 59 I conclude that the Board's ROE formula is not working.

5. Evidence on the Relative Risk of Returns on Canadian Utility Stocks Compared to the Canadian Market Index

Q 60 What data do you examine on the relative risk of Canadian utility stocks compared to the risk of the Canadian stock market as a whole?

A 60 I examine the standard deviation, or volatility, of utility stock returns compared to the standard deviation, or volatility, of the returns on the TSX market index. In addition, I examine the realized returns on Canadian utility stocks compared to the realized returns on the Canadian stock market index.

Q 61 What has been the standard deviation, or volatility, of returns on Canadian utility stocks compared to the standard deviation of returns on the Canadian market index?

A 61 As shown below, over comparable annual time periods, the standard deviation of returns for Canadian utility stocks has exceeded or approximated the standard deviation of returns for the Canadian market index.

TABLE 2
STANDARD DEVIATION OF ANNUAL RETURNS
BMO CM UTILITIES STOCK DATA SET,
S&P/TSX UTILITIES, AND TSX MARKET INDEX

PERIOD	BMO CM UTILITIES STOCK DATA SET	S&P/TSX UTILITIES INDEX	TSX CANADIAN MARKET
1983 – 2008	17.29	18.64	16.67
1956 – 2008		15.76	16.72

Q 62 What have been the realized returns on Canadian utility stocks compared to realized returns on the Canadian market index?

A 62 As shown below, the realized returns on Canadian utility stocks have exceeded realized returns on the Canadian market index over the periods 1956–2008 and 1983–2008.

TABLE 3
AVERAGE ANNUAL RETURNS
BMO CM UTILITIES STOCK DATA SET,
S&P/TSX UTILITIES, AND TSX MARKET INDEX

PERIOD	BMO CM UTILITIES STOCK DATA SET	S&P/TSX UTILITIES INDEX	TSX CANADIAN MARKET
1983 – 2008	14.31	15.18	10.13
1956 – 2008		11.84	10.30

Q 63 What conclusions do you draw from your evidence that the standard deviation of annual returns on Canadian utility stocks has exceeded or approximated the standard deviation of returns on the Canadian market as a whole?

A 63 I conclude that the risk of Canadian utility stocks compared to the risk of the Canadian stock market as a whole is greater than is implied by the Board's ROE formula. Specifically, while the Board's ROE formula implies that Canadian utility stocks are only half as risky as the Canadian stock market as a whole, my evidence indicates that Canadian utility stocks have approximately the same risk as the Canadian stock market as a whole.

Q 64 What conclusions do you draw from your evidence that the realized returns on Canadian utility stocks have exceeded realized returns on the Canadian stock market index over the periods 1956 – 2008 and 1983 – 2008?

A 64 This evidence corroborates my conclusion that Canadian utility stocks are more risky relative to the Canadian stock market as a whole than is implied by the Board's ROE formula.

6. Evidence that the Board's ROE formula Produces Lower Results in a Period of Increased Risk and Uncertainty in the Economic and Capital Markets

Q 65 Does an investor's required rate of return on investment depend on investment risk?

A 65 Yes. Since investors are risk averse, their required rate of return on an investment increases with the risk of the investment. That is, the greater the risk, the higher the required rate of return.

Q 66 Does greater uncertainty in economic and capital market conditions produce greater risk for investors?

A 66 Yes. It is widely recognized that investment risk is related to uncertainty, with higher uncertainty indicating higher investment risk.

Q 67 Do you have any evidence that investors' required rates of return on utility stock investments have increased in response to the greater uncertainty in current economic and capital market conditions?

A 67 Yes. During periods of greater uncertainty in economic and capital market conditions, the required rate of return on utility stock investments generally moves in the same direction as the required rate of return on utility bond investments. The required rate of return on utility bond investments is measured by the yield on utility bonds. Since the yield on utility bonds has increased in response to greater uncertainty in economic and capital market conditions, it is highly likely that the required rate of return on utility stock investments has increased as well. (I provide a direct estimate of the required return on utility stock investments in Section IV.)

Q 68 What evidence do you have that interest rates on utility bond investments have increased in response to greater uncertainty in economic and capital market conditions?

A 68 In the United States, for example, interest rates on A-rated utility bonds have increased from 6.0 percent in January 2008 to 6.4 percent in March 2009. The increase in interest rates on Baa-rated utility bonds has been even greater, increasing from 6.4 percent in January 2008, to 7.9 percent

in March 2009. In Canada, I note that TransCanada has recently issued long-term debt securities with a nominal yield to maturity equal to 7.625 percent.

Q 69 Have interest rates on long-term government bonds increased in line with interest rates on long-term utility bonds?

A 69 No. Interest rates on medium-term and long-term government bonds have declined. In the United States, for example, the interest rate on 10-year U.S. Treasury bonds declined from 4.5 percent in October 2007 to 2.8 percent in March 2009; and interest rates on 30-year U.S. Treasury bonds declined from 4.8 percent in October 2007 to 3.6 percent in March 2009. Similarly, the yield on 10-year Canada bonds declined from 4.4 percent in October 2007 to 3.0 percent in March 2009, and the yield on long Canada bonds declined from 4.4 percent to 3.7 percent.

Q 70 Has the Board's ROE formula estimated ROE increased in line with greater uncertainty in economic and capital market conditions?

A 70 No. Because the Board's ROE formula estimated ROE depends on the yield on long Canada bonds rather than the yield on corporate bonds, and the yield on long Canada bonds has declined, the formula-estimated ROE has declined at the same time that there is greater uncertainty in economic and capital market conditions.

Q 71 What conclusions do you draw from the evidence that the Board's ROE formula estimated ROE has declined during this period of greater uncertainty and risk in economic and capital markets?

A 71 I conclude that a Board's ROE formula based on government bonds produces unreasonable results. While the costs of utility capital have increased in line with increased risk and uncertainty in economic and capital markets, the Board's ROE formula based on long Canada bonds indicates that the required return on an equity investment in Canadian utilities has declined.

IV. The Cost of Equity for Ontario Utilities Is Significantly Higher than the Cost of Equity Implied by the Board's ROE Formula.

A. Comparable Companies

Q 72 What methods did you use to estimate the cost of equity for your comparable companies?

A 72 I estimated the cost of equity for these companies by first identifying companies of similar risk to Ontario utilities and then applying several standard cost of equity methodologies to data for these companies.

Q 73 What criteria did you use to select companies whose risk is similar to that of Ontario utilities?

A 73 I used the following criteria to select groups of similar risk companies: (1) must have stock that is publicly traded; (2) must have sufficient available data to reasonably apply standard cost of equity estimation techniques; (3) must be comparable in risk; and (4) taken together, must constitute a relatively large sample of companies.

Q 74 Why must comparable companies be publicly traded?

A 74 Comparable companies must be publicly traded because information on a company's stock price is a key input in standard cost of equity estimation methods. If the company is not publicly traded, the information required to estimate the cost of equity will not be available.

Q 75 Why is data availability a concern in estimating the cost of equity for Ontario utilities?

A 75 Data availability is a concern because standard cost of equity estimation methods like the equity risk premium and the DCF require estimates of inputs, such as the required risk premium and the expected growth rate, that are inherently uncertain. If there is insufficient data available to estimate these inputs, there is little basis for arriving at a reasonable estimate of the cost of equity for the comparable risk companies.

Q 76 Is there any way to assure that the companies used to estimate the cost of equity have exactly the same risk as Ontario utilities?

A 76 No. First, there are few regulated pure utilities that have publicly-traded stock. Second, it is not possible to measure the risk of Ontario utilities

precisely because most generally accepted risk measures require that a company have publicly-traded stock. Third, there is no single generally agreed upon measure of risk.

Q 77 Recognizing the difficulty in identifying companies with exactly the same risk as Ontario utilities, what companies did you consider as potential comparables for the purpose of estimating the cost of equity for Ontario utilities?

A 77 I considered two groups of Canadian utilities and two groups of US utilities.

Q 78 What two groups of Canadian utilities did you consider?

A 78 I considered the small group of Canadian utilities included in the BMO CM's basket of utility and pipeline companies and a larger group consisting of the companies in the S&P/TSX utilities index.

Q 79 What are the advantages of using the BMO CM basket of Canadian utilities as comparables for the purpose of estimating the cost of equity for Ontario utilities?

A 79 The primary advantage of the BMO CM basket of Canadian utilities is that it only includes companies that receive a significant portion of their revenues from traditional utility operations.

Q 80 What are the advantages of using the S&P/TSX utilities index as comparables in this proceeding?

A 80 The primary advantage of using the S&P/TSX utilities index is that there are more companies in the index and return data for this index is available for a longer period of time than for the BMO CM basket of utility stocks.

Q 81 What are the advantages of using your two U.S. utilities groups as comparables for the purpose of estimating the cost of equity for Ontario utilities?

A 81 The primary advantages of my U.S. utilities groups are that: (1) they include a significantly larger sample of companies with traditional utility operations than my Canadian groups; (2) reasonable estimates of expected growth rates are available for these companies, whereas the

same data are not available for the Canadian utilities; and (3) historical data for the U.S. utilities are available for a much greater length of time than for the Canadian utilities.

Q 82 What conclusions do you draw from your investigation of alternative groups of comparable companies?

A 82 I conclude that the OEB should give significantly greater weight to the cost of equity results for the U.S. utilities groups than it has previously. The U.S. utilities are more involved in traditional utility operations than the companies included in the Canadian utilities indices. In addition, the sample of U.S. regulated utilities is significantly larger than the sample of Canadian regulated utilities, and the data required to estimate the cost of equity is more readily available for the U.S. utilities than for the Canadian utilities. Furthermore, Canadian investors have greater access to international stock market investments, including investments in the U.S., than they did prior to the elimination of the foreign property rule in 2005. For these reasons, the U.S. data provide important information on the cost of equity for Ontario utilities.

Q 83 Did the National Energy Board ("NEB") recently determine that cost of equity evidence for U.S. utilities is useful in determining the cost of equity for Trans Québec & Maritimes Pipeline Inc. ("TQM")?

A 83 Yes. In Decision RH-1-2008 the Board finds:

> In light of the Board's views expressed above on the integration of U.S. and Canadian financial markets, the problems with comparisons to either Canadian negotiated or litigated returns, and the Board's view that risk differences between Canada and the U.S. can be understood and accounted for, the Board is of the view that U.S. comparisons are very informative for determining a fair return for TQM for 2007 and 2008. [RH-1-2008 at 71.]

B. Estimating the Cost of Equity

Q 84 What methods did you use to estimate the cost of equity for Ontario utilities?

A 84 I used two generally accepted methods: the equity risk premium and the discounted cash flow ("DCF"). The equity risk premium method assumes

that the investor's required rate of return on an equity investment is equal to the interest rate on a long-term bond plus an additional equity risk premium to compensate the investor for the risks of investing in equities compared to bonds. The DCF method assumes that the current market price of a firm's stock is equal to the discounted value of all expected future cash flows.

1. Equity Risk Premium Method

Q 85 Please describe the equity risk premium method.

A 85 The equity risk premium method is based on the principle that investors expect to earn a return on an equity investment that reflects a "premium" over and above the return they expect to earn on an investment in a portfolio of bonds. This equity risk premium compensates equity investors for the additional risk they bear in making equity investments versus bond investments.

Q 86 How did you measure the required risk premium on an equity investment in your comparable risk companies?

A 86 I used two methods to estimate the required risk premium on an equity investment in my comparable risk companies. The first is called the ex post risk premium method and the second is called the ex ante risk premium method.

a) Ex Post Risk Premium

Q 87 Please describe your ex post risk premium method for measuring the required risk premium on an equity investment.

A 87 My ex post risk premium method measures the required risk premium on an equity investment in Ontario utilities from historical data on the returns experienced by investors in Canadian utility stocks compared to investors in long-term Canada bonds.

Q 88 How do you measure the return experienced by investors in Canadian utility stocks?

A 88 I measure the return experienced by investors in Canadian utility stocks from historical data on returns earned by investors in: (1) the S&P/TSX

utilities stock index; and (2) a basket of Canadian utility stocks created by the BMO CM.

Q 89 Does your ex post risk premium cost of equity study use the same investor experienced return data that you discussed above when you described your tests of the validity of the Board's ROE formula?

A 89 Yes, it does.

Q 90 How do you measure the forecast bond yield for your ex post risk premium studies?

A 90 I measure the forecast bond yield from information on the forecast yield on long-term Canada bonds as reported by Consensus Economics.

Q 91 What risk premium results do you obtain from your ex post risk premium method?

A 91 As shown below, for the S&P/TSX utilities index, I obtain an experienced risk premium of 4.3 percent; and for the BMO CM utility stock data set, an experienced risk premium of 6.6 percent, with an average experienced risk premium of 5.5 percent (as noted above, the annual data that produce these results are shown in Exhibit 1 and Exhibit 2).

TABLE 4
EX POST RISK PREMIUM RESULTS

COMPARABLE GROUP	PERIOD OF STUDY	AVERAGE STOCK RETURN	AVERAGE BOND YIELD	RISK PREMIUM
S&P/TSX Utilities	1956 – 2008	11.84	7.54	4.3
BMO CM Utilities Stock Data Set	1983 – 2008	14.31	7.66	6.6
Average				5.5

Q 92 What conclusions do you draw from your ex post risk premium analyses about your comparable companies' cost of equity?

A 92 My studies provide evidence that investors in these companies require an equity return equal to at least 5.5 percentage points above the interest rate on long-term Canada bonds. The Consensus Economics forecast interest rate on long-term Canada bonds for 2010 as of April 2009 is 4.23 percent. Adding a 5.5 percentage point risk premium to an expected yield of 4.23 percent on long-term Canada bonds and including a 50-basis allowance for flotation costs and financial flexibility produces an

expected return on equity equal to 9.7 percent from my ex post risk premium studies.

Q 93 Do you have any evidence that 9.7 percent is a conservative estimate of the required return on utility stocks based on experienced risk premiums?

A 93 Yes. During periods of greater uncertainty in economic and capital market conditions such as we have experienced in recent months, the return on utility stocks moves more in line with utility bond yields than with government bond yields. My studies indicate that the required risk premium on utility stocks compared to utility bonds based on experienced risk premium studies is in the range 4.2 percent to 4.5 percent. Adding a 4.2 percent to 4.5 percent risk premium to an approximate yield of 6.0 percent on Canadian utility bonds, and including 50 basis point allowance for flotation costs and financial flexibility produces a required return on equity in the range 10.7 percent to 11.0 percent.

In addition, my ex ante risk premium studies indicate that the required equity risk premium increases when interest rates on long-term government bonds decline. Since the interest rate on long Canada bonds is significantly below the average interest rate on long Canada bonds over my ex post risk premium study period, the required equity risk premium can reasonably be expected to be greater than the 5.5 percent equity risk premium I obtain from my ex post risk premium studies.

b) Ex Ante Risk Premium Method

Q 94 Please describe your ex ante risk premium approach for measuring the required risk premium on an equity investment in Ontario utilities.

A 94 My ex ante risk premium method is based on studies of the expected return on comparable groups of utilities in each month of my study period compared to the interest rate on long-term government bonds.

Q 95 Does your ex ante risk premium cost of equity study use the same forward looking, or ex ante, risk premium data that you discussed above when you described your analysis of the sensitivity of the forward looking required equity risk premium on utility stocks to changes in interest rates?

A 95 Yes, it does.

Q 96 What risk premium estimates do you obtain from your ex ante risk premium studies?

A 96 For my electric utility comparable group, I obtain an ex ante risk premium equal to 8.0 percent, and for my natural gas comparable group, I obtain an ex ante risk premium equal to 7.5 percent.

Q 97 What cost of equity results do you obtain from your ex ante risk premium studies?

A 97 As described above, in the ex ante risk premium approach, one must add the expected interest rate on long-term government bonds to the estimated risk premium to calculate the cost of equity. Since the Ontario utilities are Canadian, I estimate the expected yield on long-term government bonds using the forecast interest rate on long-term Canada bonds at the time of my studies, 3.62 percent. Adding this 3.62 percent interest rate to my 8.0 percent and 7.5 percent ex ante risk premium estimates, I obtain cost of equity estimates of 11.6 percent and 11.1 percent (3.6 + 8.0 = 11.6 and 3.6 + 7.5 = 11.1), with an average estimate of 11.3 percent. A more detailed description of my ex ante risk premium approach and results is described in Exhibit 5, Exhibit 6, and Exhibit 14, Appendix 3.

2. Discounted Cash Flow Model

Q 98 How do you use the DCF model to estimate the cost of equity on an investment in your comparable risk companies?

A 98 I apply the DCF model to the Value Line electric and natural gas utilities shown in Exhibit 8 and Exhibit 9.

Q 99 How do you select your comparable groups of Value Line utilities?

A 99 I select all the utilities in Value Line's electric and natural gas industry groups that: (1) paid dividends during every quarter and did not decrease dividends during any quarter of the past two years; (2) have at least three analysts included in the I/B/E/S mean growth forecast; (3) are not in the process of being acquired; (4) have a Value Line Safety Rank of 1, 2, or 3; and (5) have investment grade S&P bond ratings.

Q 100 Why do you eliminate companies that have either decreased or eliminated their dividend during the past two years?

A 100 The DCF model requires the assumption that dividends will grow at a constant positive rate into the indefinite future. If a company has decreased its dividend in recent years, an assumption that the company's dividend will grow at the same positive rate into the indefinite future is questionable.

Q 101 Why do you eliminate companies that have fewer than three analysts' estimates included in the I/B/E/S mean forecast?

A 101 The DCF model also requires a reliable estimate of a company's expected future growth. For most companies, the I/B/E/S mean growth forecast is the best available estimate of the growth term in the DCF Model. However, the I/B/E/S estimate may be less reliable if the mean estimate is based on the inputs of very few analysts. On the basis of my professional judgment, I believe that at least three analysts' estimates are a reasonable minimum number.

Q 102 Why do you eliminate companies that are in the process of being acquired?

A 102 I eliminate companies that are in the process of being acquired because announcement of an acquisition frequently has a significant impact on a company's stock price as a result of anticipated merger-related cost savings and new market opportunities. Analysts' growth forecasts, on the other hand, are necessarily related to companies as they currently exist, and do not reflect investors' views of the potential cost savings and new market opportunities associated with mergers. The use of a stock price that includes the value of potential mergers in conjunction with growth forecasts that do not include the growth enhancing prospects of potential mergers produces DCF results that tend to distort a company's cost of equity.

Q 103 Please summarize the results of your application of the DCF model to your comparable groups of companies.

A 103 My application of the DCF model to my comparable group of natural gas companies produces a result of 11.5 percent, and to my comparable group of electric companies, 12.4 percent (see Exhibit 8 and Exhibit 9). The average DCF result for my two comparable groups is 11.9 percent.

Q 104 Based on your application of the equity risk premium and DCF methods to your comparable risk companies, what is your conclusion regarding your comparable risk companies' cost of equity?

A 104 I conservatively conclude that my comparable companies' cost of equity is 11.0 percent. As shown below, 11.0 percent is the simple average of the cost of equity results I obtain from my cost of equity models. However, my comparable companies' cost of equity is likely to be above 11.0 percent because, as noted above, the results of my ex post risk premium method very likely understate the cost of equity for my comparable companies.

TABLE 5
SUMMARY OF COST OF EQUITY RESULTS

METHOD	COST OF EQUITY
Ex Post Risk Premium	9.7
Ex Ante Risk Premium	11.3
Discounted Cash Flow	11.9
Average	11.0

V. Comparable Risk Utilities Have Significantly Higher Allowed Equity Ratios than Ontario Utilities.

Q 105 What common equity ratios are commonly approved for the Ontario utilities?

A 105 The OEB commonly approves equity ratios in the range 35 percent to 40 percent.

Q 106 How do the approved equity ratios for Ontario utilities compare to approved equity ratios for U.S. utilities?

A 106 As noted above and as shown in Exhibit 4, the average approved equity ratio for U.S. electric utilities during the period 2006 through 2008 is 48 percent and for U.S. natural gas utilities, 49 percent. Thus, the

average approved equity ratio for U.S. utilities is significantly higher than the approved equity ratios for Ontario utilities.

Q 107 How does the approved equity ratios for Ontario utilities compare to market value equity ratios for U.S. utilities at March 2009?

A 107 The average market value equity ratio for U.S. electric utilities at March 2009 is 55 percent, and 63 percent for natural gas utilities (See Exhibit 10).

Q 108 Why do you present evidence on market value equity ratios for U.S. utilities as well as book value equity ratios?

A 108 I present evidence on market value equity ratios as well as book value equity ratios because financial risk depends on the market value percentages of debt and equity in a company's capital structure rather than on the book value percentages of debt and equity in the company's capital structure.

Q 109 How does the business risk of Ontario utilities compare to the average business risk of U.S. electric and natural gas utilities?

A 109 As discussed above, the business risk of Ontario utilities is approximately equal to the average business risk of U.S. electric and natural gas utilities.

Q 110 How does the financial risk of Ontario utilities compare to the average financial risk of U.S. electric and natural gas utilities?

A 110 Since the Ontario utilities have allowed equity ratios in the range 35 percent to 40 percent, and the U.S. electric and natural gas utilities have average allowed equity ratios of 48 percent and 49 percent, the financial risk of U.S. electric and natural gas utilities is significantly less than the financial risk of Ontario utilities. This conclusion is further supported by the observation that the average market value equity ratio for U.S. electric utilities is 55 percent, and for natural gas utilities, 63 percent. This observation is important because financial risk is best measured using market value equity ratios rather than book value equity ratios.

VI. Summary and Recommendations

Q 111 Please summarize your written evidence in this proceeding.

A 111 My written evidence may be summarized as follows:

1. Experienced equity risk premiums on investments in Canadian utility stocks average 5.5 percent, whereas the Board's ROE formula implies an equity risk premium of only 4.17 percent.
2. Recent average allowed returns for U.S. utilities are in the range 10.3 percent to 10.4 percent, whereas the Board's ROE formula implies an ROE equal to 8.40 percent (based on capital market data at August 2009).
3. The forward-looking required equity risk premium on utility stocks is less sensitive to changes in government bond yields than is implied by the Board's ROE formula.
4. The allowed equity risk premium for U.S. utilities is less sensitive to changes in government bond yields than is implied by the Board's ROE formula.
5. The risk of investing in Canadian utility stocks is higher relative to the Canadian stock market as a whole than is implied by the Board's ROE formula.
6. The cost of equity for investments in comparable risk utilities is 11.0 percent based on ex post risk premium, ex ante risk premium, and discounted cash flow studies.
7. Allowed equity ratios for U.S. utilities are in the range 48 percent to 49 percent, whereas the allowed equity ratios for Ontario utilities are in the range 35 percent to 40 percent.
8. The business risk of Ontario utilities is approximately equal to the average business risk of U.S. utilities, whereas the average financial risk of Ontario utilities is significantly greater than the average financial risk of U.S. utilities.

Q 112 What conclusion do you reach from this evidence?

A 112 I conclude that the allowed rate of return on rate base, or overall rate of return, obtained by applying the Board's ROE formula to Ontario utilities'

common deemed equity ratios, is significantly less than the overall return that investors could earn on other investments of similar risk.

Q 113 Based on your evidence regarding average allowed ROEs and equity ratios for U.S. utilities, what is your estimate of the average allowed rate of return on rate base for comparable risk U.S. utilities?

A 113 I estimate that the average allowed rate of return on rate base for U.S. utilities is approximately 8 percent (see Table 6). These calculations are based on the conservative assumption that the cost of debt does not change for reasonable changes in the debt/equity ratio.

TABLE 6
ESTIMATE OF AVERAGE ALLOWED RETURN ON RATE BASE
FOR U.S. UTILITIES

CAPITAL COMPONENT	% TOTAL	COST RATE	WEIGHTED COST
Debt	52.00%	6.00%	3.12%
Equity	48.00%	10.30%	4.94%
Total	100.00%		8.06%

Q 114 Do Ontario utilities need to be allowed an ROE of 10.30 percent on an equity base of 48.0 percent in order to have the same allowed rate of return on rate base as comparable risk U.S. utilities?

A 114 No. Ontario utilities could be allowed any reasonable combination of ROE and deemed equity ratio that produces an overall rate of return of at least 8 percent. As noted above, one such combination is an ROE of 10.3 percent and a deemed equity ratio of 48 percent. An allowed ROE of 11 percent and a deemed equity ratio of 40 percent also produces an overall return of 8 percent (see Table 7).

TABLE 7
ALTERNATIVE COST OF EQUITY AND EQUITY RATIO
THAT PRODUCES AN 8.0 PERCENT
ALLOWED RETURN ON RATE BASE

CAPITAL COMPONENT	% TOTAL	COST RATE	WEIGHTED COST
Debt	60.00%	6.00%	3.60%
Equity	40.00%	11.00%	4.40%
Total	100.00%		8.00%

Q 115 What is your specific recommendation regarding the rate of return on equity and equity percentage for Ontario utilities?

A 115 I conservatively recommend that Ontario utilities be awarded a combination of ROE and equity ratio that produces an 8 percent allowed return on rate base.

Q 116 Does this conclude your written evidence?

A 116 Yes, it does.

EXHIBIT 1
EXPERIENCED RISK PREMIUMS ON
S&P/TSX CANADIAN UTILITIES STOCK INDEX
1956—2008

LINE NO.	YEAR	S&P/TSX CANADIAN UTILITIES STOCK INDEX TOTAL RETURN	YIELD LONG-TERM CANADA BOND	RISK PREMIUM
1	1956	0.17	3.63	-3.45
2	1957	-3.43	4.11	-7.54
3	1958	9.81	4.15	5.66
4	1959	0.21	5.08	-4.86
5	1960	26.81	5.19	21.62
6	1961	19.17	5.05	14.12
7	1962	-0.72	5.11	-5.83
8	1963	6.19	5.09	1.10
9	1964	21.59	5.18	16.41
10	1965	4.23	5.21	-0.98
11	1966	-13.17	5.69	-18.86
12	1967	5.07	5.94	-0.87
13	1968	7.41	6.75	0.66
14	1969	-8.62	7.58	-16.20
15	1970	23.34	7.91	15.43
16	1971	4.29	6.95	-2.66
17	1972	-0.44	7.23	-7.68
18	1973	-4.14	7.56	-11.70
19	1974	14.38	8.90	5.48
20	1975	5.75	9.04	-3.28
21	1976	15.02	9.18	5.84
22	1977	19.00	8.70	10.30
23	1978	27.28	9.27	18.01
24	1979	12.61	10.21	2.40
25	1980	5.74	12.48	-6.74
26	1981	-0.55	15.22	-15.77
27	1982	35.90	14.26	21.65
28	1983	40.97	11.79	29.17
29	1984	24.31	12.75	11.56
30	1985	10.04	11.04	-1.00
31	1986	11.48	9.52	1.96
32	1987	1.07	9.95	-8.88
33	1988	5.63	10.22	-4.59
34	1989	22.07	9.92	12.15
35	1990	0.58	10.85	-10.28

LINE NO.	YEAR	S&P/TSX CANADIAN UTILITIES STOCK INDEX TOTAL RETURN	YIELD LONG-TERM CANADA BOND	RISK PREMIUM
36	1991	27.02	9.76	17.25
37	1992	-2.24	8.77	-11.00
38	1993	23.52	7.85	15.67
39	1994	-6.04	8.63	-14.68
40	1995	18.44	8.28	10.16
41	1996	32.68	7.50	25.18
42	1997	37.33	6.42	30.91
43	1998	36.55	5.47	31.09
44	1999	-27.14	5.69	-32.83
45	2000	50.06	5.89	44.17
46	2001	10.83	5.78	5.05
47	2002	6.33	5.66	0.67
48	2003	24.94	5.28	19.66
49	2004	9.42	5.08	4.34
50	2005	38.29	4.39	33.90
51	2006	7.01	4.30	2.71
52	2007	11.89	4.34	7.55
53	2008	-20.46	4.05	-24.50
54	Average	11.84	7.54	4.29

EXHIBIT 2
EXPERIENCED RISK PREMIUMS ON BMO CAPITAL MARKETS
UTILITIES STOCK DATA SET
1983—2008

LINE NO.	YEAR	BMO CAPITAL MARKETS UTILITIES TOTAL RETURN	YIELD LONG-TERM CANADA BOND	RISK PREMIUM
1	1983	25.63	11.79	13.84
2	1984	5.46	12.75	-7.29
3	1985	18.95	11.04	7.90
4	1986	-3.48	9.52	-13.00
5	1987	9.97	9.95	0.02
6	1988	7.84	10.22	-2.38
7	1989	18.36	9.92	8.44
8	1990	6.31	10.85	-4.54
9	1991	4.01	9.76	-5.75
10	1992	-0.36	8.77	-9.12
11	1993	31.52	7.85	23.68
12	1994	-2.64	8.63	-11.27
13	1995	14.73	8.28	6.45
14	1996	30.56	7.50	23.05
15	1997	48.52	6.42	42.10
16	1998	4.06	5.47	-1.40
17	1999	-24.03	5.69	-29.72
18	2000	57.77	5.89	51.89
19	2001	14.72	5.78	8.93
20	2002	13.93	5.66	8.27
21	2003	27.75	5.28	22.47
22	2004	15.00	5.08	9.92
23	2005	32.02	4.39	27.64
24	2006	16.61	4.30	12.31
25	2007	3.88	4.34	-0.45
26	2008	-5.17	4.05	-9.22
27	Average	14.31	7.66	6.64

EXHIBIT 3
ALLOWED RETURNS ON EQUITY FOR
U.S. ELECTRIC AND NATURAL GAS UTILITIES
2006 – 2008[3]

ELECTRIC UTILITIES

LINE NO.	DATE	COMPANY	STATE	ROE
1	5-Jan-06	Northern States Power (WI)	WI	11.00
2	27-Jan-06	United Illuminating (CT)	CT	9.75
3	3-Mar-06	Interstate Power & Light (MN)	MN	10.39
4	17-Apr-06	PacifiCorp (WA)	WA	10.20
5	18-Apr-06	MidAmerican Energy	IA	11.90
6	26-Apr-06	Sierra Pacific Power	NV	10.60
7	12-May-06	Idaho Power	ID	10.60
8	6-Jun-06	Delmarva Power & Light	DE	10.00
9	27-Jun-06	Upper Penninsula Power	MI	10.75
10	6-Jul-06	Maine Public Service	ME	10.20
11	24-Jul-06	Central Hudson Gas & Electric	NY	9.60
12	26-Jul-06	Appalachian Power	WV	10.50
13	28-Jul-06	Commonwealth Edison	IL	10.05
14	23-Aug-06	NY State Electric & Gas	NY	9.55
15	1-Sep-06	Northern States Power	MN	10.54
16	14-Sep-06	PacifiCorp	OR	10.00
17	6-Oct-06	Unitil Energy Systems	NH	9.67
18	21-Nov-06	Central Illinois Public Service	IL	10.08
19	21-Nov-06	Central Illinois Light	IL	10.08
20	21-Nov-06	Illinois Power	IL	10.12
21	1-Dec-06	PacifiCorp	UT	10.25
22	1-Dec-06	Public Service Colorado	CO	10.50
23	7-Dec-06	Central Vermont Public Service	VT	10.75
24	21-Dec-06	Empire District Electric Co.	MO	10.90
25	21-Dec-06	Kansas City Power & Light	MO	11.25
26	22-Dec-06	Green Mountain Power	VT	10.25
27	5-Jan-07	Oklahoma G & E	AR	10.00
28	5-Jan-07	Puget Sound Energy	WA	10.40
29	11-Jan-07	Metropolitan Edison	PA	10.10
30	11-Jan-07	Pennsylvania Electric	PA	10.10
31	11-Jan-07	Wisconsin Public Service	WI	10.90
32	12-Jan-07	Portland General Electric	OR	10.10
33	19-Jan-07	Wisconsin Power & Light	WI	10.80
34	22-Mar-07	Rockland Electric	NJ	9.75
35	15-May-07	Appalachian Power	VA	10.00
36	17-May-07	Aquila MPS	MO	10.25

[3] Regulatory Research Associates, Inc., "Major Rate Case Decisions–January 2006–December 2007," January 8, 2008; "Major Rate Case Decisions–January 2007-December 2008," January 12, 2009.

LINE NO.	DATE	COMPANY	STATE	ROE
37	17-May-07	Aquila LP	MO	10.25
38	22-May-07	Union Electric	MO	10.20
39	22-May-07	Monongahela	WV	10.50
40	23-May-07	Nevada Power	NV	10.70
41	25-May-07	Public Service NH	NH	9.67
42	15-Jun-07	Entergy AR	AR	9.90
43	21-Jun-07	PacifiCorp	WA	10.20
44	22-Jun-07	Appalachian Power	WV	10.50
45	28-Jun-07	AZ Public Service	AZ	10.75
46	12-Jul-07	Granite State Electric	NH	9.67
47	19-Jul-07	DelMarva P & L	MD	10.00
48	19-Jul-07	Potomac Electric Power	MD	10.00
49	15-Aug-07	Southern Indiana G & E	IN	10.40
50	9-Oct-07	Public Service Oklahoma	OK	10.00
51	18-Oct-07	Orange and Rockland	NY	9.10
52	31-Oct-07	Electric Transmission Texas	TX	9.96
53	29-Nov-07	Cheyenne Light	WY	10.90
54	6-Dec-07	Kansas City Power & Light	MO	10.75
55	13-Dec-07	AEP Texas	TX	9.96
56	14-Dec-07	South Carolina Electric & Gas	SC	10.70
57	14-Dec-07	Madison Gas and Electric	WI	10.80
58	19-Dec-07	Avista Corporation	WA	10.20
59	20-Dec-07	Bangor Hydro-Electric	ME	10.20
60	20-Dec-07	Duke Energy Carolinas	NC	11.00
61	21-Dec-07	San Diego Gas & Electric	CA	11.10
62	21-Dec-07	Pacific Gas and Electric	CA	11.35
63	21-Dec-07	Southern California Edison	CA	11.50
64	28-Dec-07	PacifiCorp	ID	10.25
65	31-Dec-07	Georgia Power	GA	11.25
66	8-Jan-08	Northern States Power	WI	10.75
67	17-Jan-08	Wisconsin Electric Power	WI	10.75
68	28-Jan-08	Connecticut Light & Power	CT	9.40
69	30-Jan-08	Potomac Electric Power	DC	10.00
70	31-Jan-08	Central Vermont	VT	10.71
71	6-Feb-08	Interstate Power & Light	IA	11.70
72	29-Feb-08	Fitchburg Gas & Electric	MA	10.25
73	12-Mar-08	PacifiCorp	WY	10.25
74	25-Mar-08	Consolidated Edison	NY	9.10
75	31-Mar-08	Virginia Electric Power	VA	12.12
76	22-Apr-08	MDU Resources	MT	10.25
77	24-Apr-08	Public Service Co. New Mexico	NM	10.10
78	1-May-08	Hawaiian Electric Company	HI	10.70
79	27-May-08	UNS Electric	AZ	10.00
80	10-Jun-08	Consumers Energy	MI	10.70
81	16-Jun-08	MidAmerican Energy	IA	11.70
82	27-Jun-08	Appalachian Power	WV	10.50
83	10-Jul-08	Otter Tail Corporation	MN	10.43

LINE NO.	DATE	COMPANY	STATE	ROE
84	16-Jul-08	Orange and Rockland Utilities	NY	9.40
85	30-Jul-08	Empire District Electric Co.	MO	10.80
86	11-Aug-08	PacifiCorp	UT	10.25
87	26-Aug-08	Southwestern Public Service	NM	10.18
88	27-Aug-08	MidAmerican Energy	IA	11.70
89	10-Sep-08	Commonwealth Edison	IL	10.30
90	24-Sep-08	Central Illinois Light	IL	10.65
91	24-Sep-08	Central Illinois Public Service	IL	10.65
92	24-Sep-08	Illinois Power	IL	10.65
93	30-Sep-08	Avista Corp.	ID	10.20
94	8-Oct-08	Puget Sound Energy	WA	10.15
95	13-Nov-08	NorthWestern Corporation	MT	10.00
96	17-Nov-08	Appalachian Power	VA	10.20
97	1-Dec-08	Tucson Electric Power	AZ	10.25
98	23-Dec-08	Detroit Edison	MI	11.00
99	29-Dec-08	Portland General Electric	OR	10.10
100	29-Dec-08	Avista Corp.	WA	10.20
101	31-Dec-08	Northern States Power	ND	10.75
102		Average 2006 - 2008		10.40
103		Average 2008		10.47

EXHIBIT 3 (CONTINUED)
ALLOWED RETURNS ON EQUITY
FOR U.S. ELECTRIC AND NATURAL GAS UTILITIES
2006 – 2008

NATURAL GAS UTILITIES

LINE NO.	DATE	COMPANY	STATE	ROE
1	5-Jan-06	Northern States Power	WI	11.00
2	25-Jan-06	Wisconsin Electric Power	WI	11.20
3	25-Jan-06	Wisconsin Gas	WI	11.20
4	3-Feb-06	Public Service Colorado	CO	10.50
5	23-Feb-06	Southwest Gas	AZ	9.50
6	1-Mar-06	Aquila	IA	10.40
7	26-Apr-06	Sierra Pacific Power	NV	10.60
8	25-May-06	Atmos Energy	LA	10.40
9	24-Jul-06	Central Hudson Gas & Electric	NY	9.60
10	20-Sep-06	Knight Inc.	WY	11.00
11	26-Sep-06	Chesapeake Utilities	MD	10.75
12	20-Oct-06	Orange & Rockland Utilities	NY	9.80
13	2-Nov-06	Centerpoint Energy MN Gas	MN	9.71
14	9-Nov-06	Public Service E & G	NJ	10.00
15	21-Nov-06	Consumers Energy	MI	11.00
16	5-Dec-06	Chatanooga Gas	TN	10.20
17	5-Jan-07	Puget Sound Energy	WA	10.40
18	9-Jan-07	Semco Energy Gas	MI	11.00
19	11-Jan-07	Wisconsin Public Service	WI	10.90
20	19-Jan-07	Wisconsin Power & light	WI	10.80
21	26-Jan-07	Fitchburg Gas & Electric	MA	10.00
22	8-Feb-07	PPL Gas Utilities	PA	10.40
23	14-Mar-07	Connecticut Natural Gas	CT	10.10
24	20-Mar-07	Delmarva Power & Light	DE	10.25
25	22-Mar-07	Southern Union	MO	10.50
26	29-Mar-07	Atmos Energy	TX	10.00
27	5-Jun-07	Cascade Natural Gas	OR	10.10
28	13-Jun-07	Northern States Power	ND	10.75
29	29-Jun-07	Public Service New Mexico	NM	9.53
30	29-Jun-07	Yankee Gas Services	CT	10.10
31	3-Jul-07	Public Serivce Colorado	CO	10.25
32	13-Jul-07	Arkansas Western Gas	AR	9.50
33	24-Jul-07	Aquila	NE	10.40
34	1-Aug-07	Southern Indian Gas & Electric	IN	10.15
35	29-Aug-07	Columbia Gas of Kentucky	KY	10.50
36	10-Sep-07	Northern States Power	MN	9.71
37	19-Sep-07	Washington Gas Light	VA	10.00
38	8-Oct-07	Atmos Energy	TN	10.48
39	19-Oct-07	Delta Natural Gas	KY	10.50
40	25-Oct-07	Centerpoint Energy Resources	AR	9.65
41	15-Nov-07	Washington Gas Light	MD	10.00
42	20-Nov-07	Arkansas Oklahoma Gas	AR	9.90

LINE NO.	DATE	COMPANY	STATE	ROE
43	27-Nov-07	UNS Gas	AZ	10.00
44	29-Nov-07	Cheyenne Light Fuel & Power	WY	10.90
45	14-Dec-07	Madison Gas & Electric	WI	10.80
46	18-Dec-07	Northwestern Energy Div.	NE	10.40
47	19-Dec-07	Avista Corp.	WA	10.20
48	21-Dec-07	Brooklyn Union Gas	NY	9.80
49	21-Dec-07	Keyspan Gas East	NY	9.80
50	21-Dec-07	National Fuel Gas Distribution	NY	9.10
51	21-Dec-07	Pacific Gas & Electric	CA	11.35
52	21-Dec-07	San Diego Gas & Electric	CA	11.10
53	8-Jan-08	Northern States Power	WI	10.75
54	17-Jan-08	Wisconsin Electric Power	WI	10.75
55	17-Jan-08	Wisconsin Gas	WI	10.75
56	5-Feb-08	North Shore Gas	IL	9.99
57	5-Feb-08	Peoples Gas Light & Coke	IL	10.19
58	13-Feb-08	Indiana Gas	IN	10.20
59	31-Mar-08	Avista Corp.	OR	10.00
60	28-May-08	Duke Energy	OH	10.50
61	24-Jun-08	Atmos Energy	TX	10.00
62	27-Jun-08	Questar Gas	UT	10.00
63	27-Aug-08	SourceGas Distribution	CO	10.25
64	2-Sep-08	Chesapeake Utilities	DE	10.25
65	17-Sep-08	Atmos Energy	GA	10.70
66	24-Sep-08	Central Illinois Light	IL	10.68
67	24-Sep-08	Central Illinois Public Service	IL	10.68
68	24-Sep-08	Illinois Power	IL	10.68
69	30-Sep-08	Avista Corp.	ID	10.20
70	3-Oct-08	New Jersey Natural Gas	NJ	10.30
71	8-Oct-08	Puget Sound Energy	WA	10.15
72	20-Oct-08	CenterPoint Energy Resources	TX	10.06
73	24-Oct-08	Piedmont Natural Gas	NC	10.60
74	24-Oct-08	Public Service of North Carolina	NC	10.60
75	24-Nov-08	Southwest Gas-So. California Div.	CA	10.50
76	24-Nov-08	Southwest Gas-No. California Div.	CA	10.50
77	24-Nov-08	Southwest Gas-So. Lk. Tahoe Dist.	CA	10.50
78	24-Nov-08	Narragansett Electric	RI	10.50
79	3-Dec-08	Columbia Gas of Ohio	OH	10.39
80	24-Dec-08	Southwest Gas	AZ	10.00
81	26-Dec-08	Northwest Natural Gas	WA	10.10
82	29-Dec-08	Avista Corporation	WA	10.20
83		Average 2006 - 2008		10.33
84		Average 2008		10.37

EXHIBIT 4
ALLOWED EQUITY RATIOS FOR
U.S. ELECTRIC AND NATURAL GAS UTILITIES
2006 – 2008[4]

ELECTRIC UTILITIES

DATE	COMPANY	STATE	COMMON EQUITY /TOTAL CAP (%)
1/5/2006	Northern States Power Co-WI	Wisconsin	53.66
1/27/2006	United Illuminating Co.	Connecticut	48.00
3/3/2006	Interstate Power & Light Co.	Minnesota	49.10
4/17/2006	PacifiCorp	Washington	46.00
4/26/2006	Sierra Pacific Power Co.	Nevada	40.76
5/17/2006	Southern California Edison Co.	California	48.00
6/6/2006	Delmarva Power & Light Co.	Delaware	47.72
6/27/2006	Upper Peninsula Power Co.	Michigan	47.12
7/6/2006	Maine Public Service Co.	Maine	50.00
7/24/2006	Central Hudson Gas & Electric	New York	45.00
7/28/2006	Commonwealth Edison Co.	Illinois	42.86
8/23/2006	NY State Electric & Gas Corp.	New York	41.60
9/1/2006	Northern States Power Co. - MN	Minnesota	51.67
9/14/2006	PacifiCorp	Oregon	50.00
9/22/2006	Consolidated Edison Co. of NY	New York	48.00
10/6/2006	Unitil Energy Systems Inc.	New Hampshire	43.10
11/21/2006	Central Illinois Light Co.	Illinois	45.57
11/21/2006	Central Illinois Public	Illinois	48.92
11/21/2006	Illinois Power Co.	Illinois	51.56
11/30/2006	Duquesne Light Co.	Pennsylvania	45.00
12/1/2006	Public Service Co. of CO	Colorado	60.00
12/7/2006	Central Vermont Public Service	Vermont	55.57
12/21/2006	Empire District Electric Co.	Missouri	50.80
12/21/2006	Kansas City Power & Light	Missouri	53.69
12/22/2006	Green Mountain Power Corp.	Vermont	52.76
12/22/2006	Green Mountain Power Corp.	Vermont	52.76
1/5/2007	Oklahoma Gas and Electric Co.	Arkansas	32.33
1/11/2007	Metropolitan Edison Co.	Pennsylvania	49.00
1/11/2007	Pennsylvania Electric Co.	Pennsylvania	49.00
1/11/2007	Wisconsin Public Service Corp	Wisconsin	57.46
1/12/2007	Portland General Electric Co.	Oregon	50.00
1/13/2007	Puget Sound Energy Inc.	Washington	44.00
1/19/2007	Wisconsin Power and Light Co	Wisconsin	54.13
3/21/2007	Pacific Gas and Electric Co.	California	52.00

[4] Regulatory Research Associates, Inc., "Major Rate Case Decisions–January 2006–December 2007," January 8, 2008; "Major Rate Case Decisions–January 2007-December 2008," January 12, 2009.

DATE	COMPANY	STATE	COMMON EQUITY /TOTAL CAP (%)
3/22/2007	Rockland Electric Company	New Jersey	46.51
5/15/2007	Appalachian Power Co.	Virginia	41.11
5/17/2007	KCP&L Greater Missouri Op Co	Missouri	48.17
5/17/2007	KCP&L Greater Missouri Op Co	Missouri	48.17
5/22/2007	Monongahela Power Co.	West Virginia	46.07
5/22/2007	Union Electric Co.	Missouri	52.22
5/23/2007	Nevada Power Co.	Nevada	47.29
5/25/2007	Public Service Co. of NH	New Hampshire	47.66
6/15/2007	Entergy Arkansas Inc.	Arkansas	32.19
6/21/2007	PacifiCorp	Washington	46.00
6/22/2007	Appalachian Power Co.	West Virginia	42.88
6/28/2007	Arizona Public Service Co.	Arizona	54.50
7/12/2007	Granite State Electric Company	New Hampshire	50.00
7/19/2007	Potomac Electric Power Co.	Maryland	47.69
7/19/2007	Delmarva Power & Light Co.	Maryland	48.63
8/15/2007	Southern Indiana Gas & Elec Co	Indiana	47.05
10/9/2007	Public Service Co. of OK	Oklahoma	46.02
10/17/2007	Orange & Rockland Utlts Inc.	New York	47.54
10/31/2007	Electric Transmission Texas	Texas	40.00
11/29/2007	Cheyenne Light Fuel Power Co.	Wyoming	54.00
12/6/2007	Kansas City Power & Light	Missouri	57.62
12/13/2007	AEP Texas Central Co.	Texas	40.00
12/14/2007	South Carolina Electric & Gas	South Carolina	53.32
12/14/2007	Madison Gas and Electric Co.	Wisconsin	57.36
12/19/2007	Avista Corp.	Washington	46.00
12/20/2007	Duke Energy Carolinas LLC	North Carolina	53.00
12/28/2007	PacifiCorp	Idaho	50.40
1/8/2008	Northern States Power Co-WI	Wisconsin	52.51
1/17/2008	Wisconsin Electric Power Co.	Wisconsin	54.36
1/28/2008	Connecticut Light & Power Co.	Connecticut	48.99
1/30/2008	Potomac Electric Power Co.	District of Columbia	46.55
1/31/2008	Central Vermont Public Service	Vermont	50.02
2/29/2008	Fitchburg Gas & Electric Light	Massachusetts	42.80
3/12/2008	PacifiCorp	Wyoming	50.80
3/25/2008	Consolidated Edison Co. of NY	New York	47.98
4/22/2008	MDU Resources Group Inc.	Montana	50.67
4/24/2008	Public Service Co. of NM	New Mexico	51.37
5/1/2008	Hawaiian Electric Co.	Hawaii	55.79
5/27/2008	UNS Electric Inc.	Arizona	48.85
6/10/2008	Consumers Energy Co.	Michigan	41.75
6/27/2008	Appalachian Power Co.	West Virginia	41.54
6/27/2008	Sierra Pacific Power Co.	Nevada	43.49
7/10/2008	Otter Tail Corp.	Minnesota	50.00
7/16/2008	Orange & Rockland Utlts Inc.	New York	48.00

DATE	COMPANY	STATE	COMMON EQUITY /TOTAL CAP (%)
7/30/2008	Empire District Electric Co.	Missouri	50.78
7/31/2008	San Diego Gas & Electric Co.	California	49.00
8/11/2008	PacifiCorp	Utah	50.40
8/26/2008	Southwestern Public Service Co	New Mexico	51.23
9/10/2008	Commonwealth Edison Co.	Illinois	45.04
9/17/2008	Consolidated Edison Co. of NY	New York	48.00
9/24/2008	Central Illinois Light Co.	Illinois	46.50
9/24/2008	Central Illinois Public	Illinois	47.91
9/24/2008	Illinois Power Co.	Illinois	51.76
9/30/2008	Avista Corp.	Idaho	47.94
10/8/2008	Puget Sound Energy Inc.	Washington	46.00
12/1/2008	Tucson Electric Power Co.	Arizona	42.50
12/23/2008	Detroit Edison Co.	Michigan	40.68
12/29/2008	Avista Corp.	Washington	46.30
12/29/2008	Portland General Electric Co.	Oregon	50.00
12/30/2008	Wisconsin Public Service Corp	Wisconsin	53.41
12/31/2008	Northern States Power Co. - MN	North Dakota	51.77
	Average		48.35
	Average 2008		48.43

EXHIBIT 4 (CONTINUED)
ALLOWED EQUITY RATIOS FOR
U.S. ELECTRIC AND NATURAL GAS UTILITIES
2006 – 2008[5]

NATURAL GAS UTILITIES

DATE	COMPANY	STATE	COMMON EQUITY /TOTAL CAP (%)
1/5/2006	Northern States Power Co-WI	Wisconsin	53.66
1/25/2006	Wisconsin Gas LLC	Wisconsin	50.20
1/25/2006	Wisconsin Electric Power Co.	Wisconsin	56.34
2/3/2006	Public Service Co. of CO	Colorado	55.49
2/23/2006	Southwest Gas Corp.	Arizona	40.00
3/1/2006	KCP&L Greater Missouri Op Co	Iowa	51.39
4/26/2006	Sierra Pacific Power Co.	Nevada	40.76
7/24/2006	Central Hudson Gas & Electric	New York	45.00
9/20/2006	SourceGas Distribution LLC	Wyoming	43.56
9/26/2006	Chesapeake Utilities Corp.	Maryland	53.00
10/20/2006	Orange & Rockland Utlts Inc.	New York	48.00
11/2/2006	CenterPoint Energy Resources	Minnesota	46.14
11/9/2006	Public Service Electric Gas	New Jersey	47.40
11/21/2006	Consumers Energy Co.	Michigan	35.06
12/5/2006	Chattanooga Gas Company	Tennessee	44.80
1/5/2007	Puget Sound Energy Inc.	Washington	44.00
1/9/2007	SEMCO Energy Inc.	Michigan	42.94
1/11/2007	Wisconsin Public Service Corp	Wisconsin	57.46
1/19/2007	Wisconsin Power and Light Co	Wisconsin	54.13
2/8/2007	UGI Central Penn Gas	Pennsylvania	51.79
3/14/2007	CT Natural Gas Corp.	Connecticut	53.60
3/20/2007	Delmarva Power & Light Co.	Delaware	46.90
3/21/2007	Pacific Gas and Electric Co.	California	52.00
3/22/2007	Southern Union Co.	Missouri	36.06
3/29/2007	Atmos Energy Corp.	Texas	48.10
6/13/2007	Northern States Power Co. - MN	North Dakota	51.59
6/29/2007	Yankee Gas Services Co.	Connecticut	50.30
6/29/2007	Public Service Co. of NM	New Mexico	51.80
7/3/2007	Public Service Co. of CO	Colorado	60.17
7/13/2007	Arkansas Western Gas Co.	Arkansas	34.29
7/24/2007	Black Hills/Nebraska Gas	Nebraska	50.73
8/1/2007	Southern Indiana Gas & Elec Co	Indiana	47.05

[5] Regulatory Research Associates, Inc., "Major Rate Case Decisions–January 2006–December 2007," January 8, 2008; "Major Rate Case Decisions–January–March 2008," April 2, 2008. Data not included for companies whose ratios are identified as including "cost-free items or tax credit balances at the overall rate of return." This does not substantially affect the average result.

DATE	COMPANY	STATE	COMMON EQUITY /TOTAL CAP (%)
9/10/2007	Northern States Power Co. - MN	Minnesota	51.98
9/25/2007	Consolidated Edison Co. of NY	New York	48.00
10/8/2007	Atmos Energy Corp.	Tennessee	44.20
10/25/2007	CenterPoint Energy Resources	Arkansas	33.73
11/15/2007	Washington Gas Light Co.	Maryland	53.02
11/20/2007	Arkansas Oklahoma Gas Corp.	Arkansas	41.46
11/27/2007	UNS Gas Inc.	Arizona	50.00
11/29/2007	Cheyenne Light Fuel Power Co.	Wyoming	54.00
12/14/2007	Madison Gas and Electric Co.	Wisconsin	57.36
12/19/2007	Avista Corp.	Washington	46.00
12/21/2007	National Fuel Gas Dist Corp.	New York	44.35
1/8/2008	Northern States Power Co-WI	Wisconsin	52.51
1/17/2008	Wisconsin Gas LLC	Wisconsin	46.64
1/17/2008	Wisconsin Electric Power Co.	Wisconsin	54.36
2/5/2008	North Shore Gas Co.	Illinois	56.00
2/5/2008	Peoples Gas Light & Coke Co.	Illinois	56.00
2/13/2008	Indiana Gas Co.	Indiana	48.99
3/31/2008	Avista Corp.	Oregon	50.00
5/28/2008	Duke Energy Ohio Inc.	Ohio	55.76
6/24/2008	Atmos Energy Corp.	Texas	48.27
6/27/2008	Questar Gas Co.	Utah	51.38
7/31/2008	Southern California Gas Co.	California	48.00
7/31/2008	San Diego Gas & Electric Co.	California	49.00
8/27/2008	SourceGas Distribution LLC	Colorado	53.13
9/2/2008	Chesapeake Utilities Corp.	Delaware	61.81
9/17/2008	Atmos Energy Corp.	Georgia	45.00
9/24/2008	Central Illinois Light Co.	Illinois	46.50
9/24/2008	Central Illinois Public	Illinois	47.91
9/24/2008	Illinois Power Co.	Illinois	51.76
9/30/2008	Avista Corp.	Idaho	47.94
10/3/2008	New Jersey Natural Gas Co.	New Jersey	51.20
10/8/2008	Puget Sound Energy Inc.	Washington	46.00
10/20/2008	CenterPoint Energy Resources	Texas	55.40
10/24/2008	Piedmont Natural Gas Co.	North Carolina	51.00
10/24/2008	Public Service Co. of NC	North Carolina	54.00
11/21/2008	Southwest Gas Corp.	California	47.00
11/21/2008	Southwest Gas Corp.	California	47.00
11/21/2008	Southwest Gas Corp.	California	47.00
12/24/2008	Southwest Gas Corp.	Arizona	43.44
12/26/2008	Northwest Natural Gas Co.	Washington	50.74
12/29/2008	Avista Corp.	Washington	46.30
12/30/2008	Wisconsin Public Service Corp	Wisconsin	53.41
	Average 2006 – 2008		49.07
	Average 2008		50.43

EXHIBIT 5
COMPARISON OF DCF EXPECTED RETURN ON AN INVESTMENT IN ELECTRIC UTILITIES TO THE INTEREST RATE ON LONG-TERM GOVERNMENT BONDS

LINE NO.	DATE	DCF	BOND YIELD	RISK PREMIUM
1	Sep-99	11.69%	6.50%	5.19%
2	Oct-99	11.77%	6.66%	5.11%
3	Nov-99	12.08%	6.48%	5.60%
4	Dec-99	12.58%	6.69%	5.89%
5	Jan-00	12.50%	6.86%	5.64%
6	Feb-00	12.95%	6.54%	6.41%
7	Mar-00	13.36%	6.38%	6.98%
8	Apr-00	12.57%	6.18%	6.39%
9	May-00	12.42%	6.55%	5.87%
10	Jun-00	12.66%	6.28%	6.38%
11	Jul-00	12.76%	6.20%	6.56%
12	Aug-00	12.47%	6.02%	6.45%
13	Sep-00	11.80%	6.09%	5.71%
14	Oct-00	11.82%	6.04%	5.78%
15	Nov-00	11.87%	5.98%	5.89%
16	Dec-00	11.69%	5.64%	6.05%
17	Jan-01	12.05%	5.65%	6.40%
18	Feb-01	12.10%	5.62%	6.48%
19	Mar-01	12.15%	5.49%	6.66%
20	Apr-01	12.77%	5.78%	6.99%
21	May-01	13.04%	5.92%	7.12%
22	Jun-01	13.09%	5.82%	7.27%
23	Jul-01	13.24%	5.75%	7.49%
24	Aug-01	13.30%	5.58%	7.72%
25	Sep-01	13.56%	5.53%	8.03%
26	Oct-01	13.34%	5.34%	8.00%
27	Nov-01	13.38%	5.33%	8.05%
28	Dec-01	13.35%	5.76%	7.59%
29	Jan-02	13.14%	5.69%	7.45%
30	Feb-02	13.27%	5.61%	7.66%
31	Mar-02	12.86%	5.93%	6.93%
32	Apr-02	12.50%	5.85%	6.65%
33	May-02	12.58%	5.81%	6.77%
34	Jun-02	12.57%	5.65%	6.92%
35	Jul-02	13.22%	5.51%	7.71%
36	Aug-02	12.69%	5.19%	7.50%
37	Sep-02	12.88%	4.87%	8.01%
38	Oct-02	12.92%	5.00%	7.92%
39	Nov-02	12.38%	5.04%	7.34%
40	Dec-02	12.08%	5.01%	7.07%
41	Jan-03	11.72%	5.02%	6.70%
42	Feb-03	12.10%	4.87%	7.23%
43	Mar-03	11.71%	4.82%	6.89%
44	Apr-03	11.31%	4.91%	6.40%

LINE NO.	DATE	DCF	BOND YIELD	RISK PREMIUM
45	May-03	10.72%	4.52%	6.20%
46	Jun-03	10.27%	4.34%	5.93%
47	Jul-03	10.34%	4.92%	5.42%
48	Aug-03	10.35%	5.39%	4.96%
49	Sep-03	10.06%	5.21%	4.85%
50	Oct-03	9.89%	5.21%	4.68%
51	Nov-03	9.78%	5.17%	4.61%
52	Dec-03	9.49%	5.11%	4.38%
53	Jan-04	9.23%	5.01%	4.22%
54	Feb-04	9.19%	4.94%	4.25%
55	Mar-04	9.16%	4.72%	4.44%
56	Apr-04	9.27%	5.16%	4.11%
57	May-04	9.66%	5.46%	4.20%
58	Jun-04	9.67%	5.45%	4.22%
59	Jul-04	9.59%	5.24%	4.35%
60	Aug-04	9.64%	5.07%	4.57%
61	Sep-04	9.56%	4.89%	4.67%
62	Oct-04	9.53%	4.85%	4.68%
63	Nov-04	9.11%	4.89%	4.22%
64	Dec-04	9.31%	4.88%	4.43%
65	Jan-05	9.33%	4.77%	4.56%
66	Feb-05	9.30%	4.61%	4.69%
67	Mar-05	9.25%	4.89%	4.36%
68	Apr-05	9.27%	4.75%	4.52%
69	May-05	9.22%	4.56%	4.66%
70	Jun-05	9.27%	4.35%	4.92%
71	Jul-05	9.13%	4.48%	4.65%
72	Aug-05	9.23%	4.53%	4.70%
73	Sep-05	9.50%	4.51%	4.99%
74	Oct-05	9.62%	4.74%	4.88%
75	Nov-05	10.05%	4.83%	5.22%
76	Dec-05	10.12%	4.73%	5.39%
77	Jan-06	10.15%	4.65%	5.50%
78	Feb-06	11.26%	4.73%	6.53%
79	Mar-06	11.11%	4.91%	6.20%
80	Apr-06	11.22%	5.22%	6.00%
81	May-06	11.18%	5.35%	5.83%
82	Jun-06	11.57%	5.29%	6.28%
83	Jul-06	11.51%	5.25%	6.26%
84	Aug-06	11.38%	5.08%	6.30%
85	Sep-06	11.64%	4.93%	6.71%
86	Oct-06	11.54%	4.94%	6.60%
87	Nov-06	11.58%	4.78%	6.80%
88	Dec-06	11.45%	4.78%	6.67%
89	Jan-07	11.36%	4.95%	6.41%
90	Feb-07	11.10%	4.93%	6.17%
91	Mar-07	11.20%	4.81%	6.39%
92	Apr-07	10.74%	4.95%	5.79%
93	May-07	11.08%	4.98%	6.10%
94	Jun-07	11.69%	5.29%	6.40%
95	Jul-07	11.79%	5.19%	6.60%
96	Aug-07	11.69%	5.00%	6.69%

LINE NO.	DATE	DCF	BOND YIELD	RISK PREMIUM
97	Sep-07	11.35%	4.84%	6.51%
98	Oct-07	11.29%	4.83%	6.46%
99	Nov-07	11.08%	4.56%	6.52%
100	Dec-07	11.29%	4.57%	6.72%
101	Jan-08	12.29%	4.35%	7.94%
102	Feb-08	11.43%	4.49%	6.94%
103	Mar-08	11.78%	4.36%	7.42%
104	Apr-08	11.37%	4.44%	6.93%
105	May-08	11.42%	4.60%	6.82%
106	Jun-08	11.23%	4.74%	6.49%
107	Jul-08	11.72%	4.62%	7.10%
108	Aug-08	11.84%	4.53%	7.31%
109	Sep-08	11.28%	5.32%	5.96%
110	Oct-08	12.19%	4.45%	7.74%
111	Nov-08	12.47%	4.27%	8.20%
112	Dec-08	12.46%	3.18%	9.28%
113	Jan-09	12.25%	3.46%	8.79%
114	Feb-09	12.54%	3.83%	8.71%
115	Average	11.38%	5.17%	6.21%

Notes: See written evidence above and Appendix 3 for a description of the ex ante methodology and data employed. Government bond yield information from the Federal Reserve. DCF results are calculated using a quarterly DCF model as follows:

d_0 = Latest quarterly dividend per Value Line
P_0 = Average of the monthly high and low stock prices for each month per Thomson Reuters.
FC = Flotation costs expressed as a percent of gross proceeds.
g = I/B/E/S forecast of future earnings growth for each month.
k = Cost of equity using the quarterly version of the DCF model.

$$k = \left[\frac{d_0 (1+g)^{\frac{1}{4}}}{P_0 (1-FC)} + (1+g)^{\frac{1}{4}} \right]^4 - 1$$

EXHIBIT 6
COMPARISON OF DCF EXPECTED RETURN ON AN INVESTMENT IN NATURAL GAS UTILITIES TO THE INTEREST RATE ON LONG-TERM GOVERNMENT BONDS

LINE NO.	DATE	DCF	BOND YIELD	RISK PREMIUM
1	Jun-98	11.54%	5.80%	5.74%
2	Jul-98	11.86%	5.78%	6.08%
3	Aug-98	12.34%	5.66%	6.68%
4	Sep-98	12.73%	5.38%	7.35%
5	Oct-98	12.60%	5.30%	7.30%
6	Nov-98	12.11%	5.48%	6.63%
7	Dec-98	11.85%	5.36%	6.49%
8	Jan-99	11.95%	5.45%	6.50%
9	Feb-99	12.43%	5.66%	6.77%
10	Mar-99	12.57%	5.87%	6.70%
11	Apr-99	12.60%	5.82%	6.78%
12	May-99	12.21%	6.08%	6.13%
13	Jun-99	12.08%	6.36%	5.72%
14	Jul-99	12.22%	6.28%	5.94%
15	Aug-99	12.20%	6.43%	5.77%
16	Sep-99	12.26%	6.50%	5.76%
17	Oct-99	12.33%	6.66%	5.67%
18	Nov-99	12.40%	6.48%	5.92%
19	Dec-99	12.80%	6.69%	6.11%
20	Jan-00	13.01%	6.86%	6.15%
21	Feb-00	13.44%	6.54%	6.90%
22	Mar-00	13.44%	6.38%	7.06%
23	Apr-00	13.16%	6.18%	6.98%
24	May-00	12.92%	6.55%	6.37%
25	Jun-00	12.95%	6.28%	6.67%
26	Jul-00	13.17%	6.20%	6.97%
27	Aug-00	12.90%	6.02%	6.88%
28	Sep-00	12.57%	6.09%	6.48%
29	Oct-00	12.60%	6.04%	6.56%
30	Nov-00	12.51%	5.98%	6.53%
31	Dec-00	12.39%	5.64%	6.75%
32	Jan-01	12.61%	5.65%	6.96%
33	Feb-01	12.61%	5.62%	6.99%
34	Mar-01	12.75%	5.49%	7.26%
35	Apr-01	12.27%	5.78%	6.49%
36	May-01	13.02%	5.92%	7.10%
37	Jun-01	13.04%	5.82%	7.22%
38	Jul-01	13.38%	5.75%	7.63%
39	Aug-01	13.27%	5.58%	7.69%
40	Sep-01	12.68%	5.53%	7.15%
41	Oct-01	12.68%	5.34%	7.34%
42	Nov-01	12.68%	5.33%	7.35%

LINE NO.	DATE	DCF	BOND YIELD	RISK PREMIUM
43	Dec-01	12.54%	5.76%	6.78%
44	Jan-02	12.36%	5.69%	6.67%
45	Feb-02	12.41%	5.61%	6.80%
46	Mar-02	11.89%	5.93%	5.96%
47	Apr-02	11.59%	5.85%	5.74%
48	May-02	11.62%	5.81%	5.81%
49	Jun-02	11.70%	5.65%	6.05%
50	Jul-02	12.42%	5.51%	6.91%
51	Aug-02	12.34%	5.19%	7.15%
52	Sep-02	12.60%	4.87%	7.73%
53	Oct-02	12.50%	5.00%	7.50%
54	Nov-02	12.21%	5.04%	7.17%
55	Dec-02	12.16%	5.01%	7.15%
56	Jan-03	12.19%	5.02%	7.17%
57	Feb-03	12.32%	4.87%	7.45%
58	Mar-03	11.95%	4.82%	7.13%
59	Apr-03	11.62%	4.91%	6.71%
60	May-03	11.26%	4.52%	6.74%
61	Jun-03	11.14%	4.34%	6.80%
62	Jul-03	11.27%	4.92%	6.35%
63	Aug-03	11.39%	5.39%	6.00%
64	Sep-03	11.27%	5.21%	6.06%
65	Oct-03	11.23%	5.21%	6.02%
66	Nov-03	10.89%	5.17%	5.72%
67	Dec-03	10.71%	5.11%	5.60%
68	Jan-04	10.59%	5.01%	5.58%
69	Feb-04	10.39%	4.94%	5.45%
70	Mar-04	10.37%	4.72%	5.65%
71	Apr-04	10.41%	5.16%	5.25%
72	May-04	10.45%	5.46%	4.99%
73	Jun-04	10.36%	5.45%	4.91%
74	Jul-04	10.11%	5.24%	4.87%
75	Aug-04	10.08%	5.07%	5.01%
76	Sep-04	9.76%	4.89%	4.87%
77	Oct-04	9.74%	4.85%	4.89%
78	Nov-04	9.62%	4.89%	4.73%
79	Dec-04	9.70%	4.88%	4.82%
80	Jan-05	9.90%	4.77%	5.13%
81	Feb-05	9.79%	4.61%	5.18%
82	Mar-05	9.79%	4.89%	4.90%
83	Apr-05	9.88%	4.75%	5.13%
84	May-05	9.81%	4.56%	5.25%
85	Jun-05	9.76%	4.35%	5.41%
86	Jul-05	9.66%	4.48%	5.18%
87	Aug-05	9.69%	4.53%	5.16%
88	Sep-05	9.80%	4.51%	5.29%
89	Oct-05	9.90%	4.74%	5.16%

LINE NO.	DATE	DCF	BOND YIELD	RISK PREMIUM
90	Nov-05	10.49%	4.83%	5.66%
91	Dec-05	10.45%	4.73%	5.72%
92	Jan-06	9.82%	4.65%	5.17%
93	Feb-06	11.24%	4.73%	6.51%
94	Mar-06	11.27%	4.91%	6.36%
95	Apr-06	11.00%	5.22%	5.78%
96	May-06	10.56%	5.35%	5.21%
97	Jun-06	10.49%	5.29%	5.20%
98	Jul-06	10.87%	5.25%	5.62%
99	Aug-06	10.41%	5.08%	5.33%
100	Sep-06	10.53%	4.93%	5.60%
101	Oct-06	10.30%	4.94%	5.36%
102	Nov-06	10.33%	4.78%	5.55%
103	Dec-06	10.35%	4.78%	5.57%
104	Jan-07	10.13%	4.95%	5.18%
105	Feb-07	10.18%	4.93%	5.25%
106	Mar-07	10.18%	4.81%	5.37%
107	Apr-07	10.07%	4.95%	5.12%
108	May-07	9.67%	4.98%	4.69%
109	Jun-07	9.70%	5.29%	4.41%
110	Jul-07	10.06%	5.19%	4.87%
111	Aug-07	10.21%	5.00%	5.21%
112	Sep-07	10.14%	4.84%	5.30%
113	Oct-07	10.80%	4.83%	5.97%
114	Nov-07	10.83%	4.56%	6.27%
115	Dec-07	10.84%	4.57%	6.27%
116	Jan-08	11.13%	4.35%	6.78%
117	Feb-08	11.39%	4.49%	6.90%
118	Mar-08	11.47%	4.36%	7.11%
119	Apr-08	11.67%	4.44%	7.23%
120	May-08	10.69%	4.60%	6.09%
121	Jun-08	10.62%	4.74%	5.88%
122	Jul-08	10.86%	4.62%	6.24%
123	Aug-08	11.23%	4.53%	6.70%
124	Sep-08	11.30%	5.32%	5.98%
125	Oct-08	12.13%	4.45%	7.68%
126	Nov-08	12.21%	4.27%	7.94%
127	Dec-08	11.62%	3.18%	8.44%
128	Jan-09	11.31%	3.46%	7.85%
129	Feb-09	11.55%	3.83%	7.72%
130	Average	11.43%	5.24%	6.19%

Notes: Government bond yield information from the Federal Reserve. DCF results are calculated using a quarterly DCF model as follows:

d_0	=	Latest quarterly dividend per Value Line
P_0	=	Average of the monthly high and low stock prices for each month per Thomson Reuters.
FC	=	Flotation costs expressed as a percent of gross proceeds.
g	=	I/B/E/S forecast of future earnings growth for each month
k	=	Cost of equity using the quarterly version of the DCF model.

$$k = \left[\frac{d_0 (1+g)^{\frac{1}{4}}}{P_0 (1-FC)} + (1+g)^{\frac{1}{4}} \right]^4 - 1$$

EXHIBIT 7
IMPLIED ALLOWED EQUITY RISK PREMIUM[6]

YEAR	AVERAGE ALLOWED RETURN	20-YEAR U.S. TREASURY BOND	RISK PREMIUM
1988	0.1282	0.0859	0.0423
1989	0.1293	0.0896	0.0397
1990	0.1269	0.0845	0.0424
1991	0.1251	0.0861	0.0390
1992	0.1206	0.0814	0.0392
1993	0.1137	0.0767	0.0370
1994	0.1134	0.0629	0.0505
1995	0.1151	0.0749	0.0402
1996	0.1129	0.0695	0.0434
1997	0.1134	0.0683	0.0451
1998	0.1159	0.0669	0.0490
1999	0.1074	0.0572	0.0502
2000	0.1141	0.0620	0.0521
2001	0.1105	0.0623	0.0482
2002	0.1110	0.0563	0.0547
2003	0.1098	0.0543	0.0555
2004	0.1067	0.0496	0.0571
2005	0.1050	0.0504	0.0546
2006	0.1039	0.0464	0.0575
2007	0.1030	0.0500	0.0530
2008	0.1042	0.0491	0.0551

IMPLIED ALLOWED EQUITY RISK PREMIUM
REGRESSION RESULTS

INTERCEPT COEFFICIENT	0.0776
Slope Coefficient	(0.4509)
Treasury Bond Yield	0.0480
Slope x Bond Yield	(0.0216)
Forecast Risk Premium	0.0560

[6] Regulatory Research Associates, Inc., "Major Rate Case Decisions–January 2006–December 2007," January 8, 2008; "Major Rate Case Decisions–January 2007–December 2008," January 12, 2009. Treasury bond yield is 2010 forecast at March 2009 from Global Insight.

EXHIBIT 8
SUMMARY OF DISCOUNTED CASH FLOW ANALYSIS
FOR VALUE LINE ELECTRIC COMPANIES

LINE NO.	COMPANY	d_0	P_0	GROWTH	COST OF EQUITY
1	Amer. Elec. Power	0.410	31.363	4.16%	10.1%
2	Avista Corp.	0.180	17.990	4.67%	9.1%
3	Dominion Resources	0.438	34.423	8.16%	13.8%
4	DPL Inc.	0.275	21.508	10.33%	16.6%
5	Duke Energy	0.230	14.863	4.46%	11.5%
6	Consol. Edison	0.585	39.205	2.61%	9.3%
7	Entergy Corp.	0.750	77.203	9.42%	14.1%
8	Exelon Corp.	0.525	53.210	8.47%	13.1%
9	FirstEnergy Corp.	0.550	49.527	9.00%	14.4%
10	FPL Group	0.473	48.890	9.62%	14.1%
11	NSTAR	0.375	34.283	6.00%	10.8%
12	Northeast Utilities	0.238	23.365	8.15%	12.5%
13	PG&E Corp.	0.390	37.313	6.84%	11.7%
14	Progress Energy	0.620	38.453	5.56%	13.0%
15	Pinnacle West Capital	0.525	31.242	4.33%	12.0%
16	Pepco Holdings	0.270	17.060	4.67%	12.0%
17	Portland General	0.245	18.268	5.44%	11.6%
18	SCANA Corp.	0.460	34.060	4.52%	10.7%
19	Southern Co.	0.420	34.428	5.36%	11.0%
20	Sempra Energy	0.350	42.948	7.20%	10.9%
21	Vectren Corp.	0.335	24.848	7.20%	13.4%
22	Wisconsin Energy	0.338	42.678	9.13%	12.3%
23	Westar Energy	0.290	19.268	3.84%	10.7%
24	Xcel Energy Inc.	0.238	18.153	6.72%	12.8%
25	Market-Weighted Average				12.4%

Notes:

d_0 = Most recent quarterly dividend.
d_1,d_2,d_3,d_4 = Next four quarterly dividends, calculated by multiplying the last four quarterly dividends per *Value Line* by the factor (1 + g).
P_0 = Average of the monthly high and low stock prices during the three months ending February 2009 per Thomson Reuters.
FC = Flotation costs expressed as a percent of gross proceeds.
g = I/B/E/S forecast of future earnings growth February 2009.
k = Cost of equity using the quarterly version of the DCF model.

$$k = \frac{d_1(1+k)^{.75} + d_2(1+k)^{.50} + d_3(1+k)^{.25} + d_4}{P_0(1-FC)} + g$$

EXHIBIT 9
SUMMARY OF DISCOUNTED CASH FLOW ANALYSIS
FOR VALUE LINE NATURAL GAS COMPANIES

LINE NO.	COMPANY	d_0	P_0	GROWTH	COST OF EQUITY
1	AGL Resources	0.430	30.354	4.25%	10.6%
2	Atmos Energy	0.330	23.847	5.00%	11.3%
3	Equitable Resources	0.220	32.892	11.67%	15.0%
4	Nicor Inc.	0.465	34.098	2.85%	9.0%
5	NiSource Inc.	0.230	10.462	1.60%	11.4%
6	Northwest Nat. Gas	0.395	43.777	4.75%	8.8%
7	Piedmont Natural Gas	0.260	28.345	7.13%	11.4%
8	South Jersey Inds.	0.284	37.268	7.50%	11.0%
9	Questar Corp.	0.125	31.988	9.00%	10.8%
10	Southwest Gas	0.238	24.100	6.00%	10.3%
11	Market-Weighted Average				11.5%

Notes:

d_0 = Most recent quarterly dividend.
d_1,d_2,d_3,d_4 = Next four quarterly dividends, calculated by multiplying the last four quarterly dividends per *Value Line* by the factor (1 + g).
P_0 = Average of the monthly high and low stock prices during the three months ending February 2009 per Thomson Reuters.
FC = Flotation costs expressed as a percent of gross proceeds.
g = I/B/E/S forecast of future earnings growth February 2009.[7]
k = Cost of equity using the quarterly version of the DCF model.

$$k = \frac{d_1(1+k)^{.75} + d_2(1+k)^{.50} + d_3(1+k)^{.25} + d_4}{P_0(1-FC)} + g$$

[7] Although I normally specify that the I/B/E/S long-term earnings growth forecast must include the forecasts of at least three analysts, in March 2009 there are only four companies with growth forecasts from at least three analysts. In this study, therefore, I also include results for companies that had growth forecasts based on two analysts' growth forecasts.

EXHIBIT 10
MARKET VALUE EQUITY RATIOS FOR U.S. ELECTRIC AND NATURAL GAS COMPANIES AT MARCH 2009

LINE NO.	COMPANY	LONG-TERM DEBT	PREFERRED EQUITY	MARKET CAP $ (MIL)	% MARKET EQUITY
1	Amer. Elec. Power	14,202	61	11,320	44%
2	Avista Corp.	635	0	779	55%
3	Dominion Resources	13,235	257	17,610	57%
4	DPL Inc.	1,542	23	2,331	60%
5	Duke Energy	9,498	0	17,043	64%
6	Consol. Edison	7,611	213	9,908	56%
7	Entergy Corp.	9,728	311	12,759	56%
8	Exelon Corp.	11,965	87	31,082	72%
9	FirstEnergy Corp.	8,869	0	12,974	59%
10	FPL Group	11,280	0	18,528	62%
11	NSTAR	2,501	43	3,436	57%
12	Northeast Utilities	4,401	116	3,411	43%
13	PG&E Corp.	9,753	252	13,979	58%
14	Progress Energy	8,737	93	9,280	51%
15	Pinnacle West Capital	3,127	0	2,652	46%
16	Pepco Holdings	4,735	0	3,033	39%
17	Portland General	1,313	0	1,027	44%
18	SCANA Corp.	2,879	113	3,541	54%
19	Southern Co.	14,143	1,080	23,478	61%
20	Sempra Energy	4,553	193	10,119	68%
21	Vectren Corp.	1,245	0	1,690	58%
22	Wisconsin Energy	3,173	30	4,656	59%
23	Westar Energy	1,890	21	1,830	49%
24	Xcel Energy Inc.	6,342	105	7,966	55%
25	Market-Weighted Average	157,357	2,999	224,432	58%
26	Average				55%

Data are from The Value Line Investment Analyzer, March 2009.

EXHIBIT 10 (CONTINUED)
MARKET VALUE EQUITY RATIOS FOR U.S. ELECTRIC AND NATURAL GAS COMPANIES AT MARCH 2009

LINE NO.	COMPANY	LONG-TERM DEBT	PREFERRED EQUITY	MARKET CAP $ (MIL)	% MARKET EQUITY
1	AGL Resources	1,674	0	2,133	56%
2	Atmos Energy	2,126	0	2,000	48%
3	Equitable Resources	754	0	4,024	84%
4	Nicor Inc.	423	1	1,418	77%
5	NiSource Inc.	5,594	0	2,400	30%
6	Northwest Nat. Gas	512	0	1,084	68%
7	Piedmont Natural Gas	794	0	1,769	69%
8	South Jersey Inds.	358	0	1,072	75%
9	Questar Corp.	1,021	0	5,000	83%
10	Southwest Gas	1,366	0	856	39%
11	Market-Weighted Average	14,623	1	21,756	60%
12	Average				63%

EXHIBIT 11
APPENDIX 1
QUALIFICATIONS OF JAMES H. VANDER WEIDE, PH.D.

James H. Vander Weide is Research Professor of Finance and Economics at Duke University, the Fuqua School of Business. Dr. Vander Weide is also founder and President of Financial Strategy Associates, a consulting firm that provides strategic, financial, and economic consulting services to corporate clients, including cost of capital and valuation studies.

Educational Background and Prior Academic Experience

Dr. Vander Weide holds a Ph.D. in Finance from Northwestern University and a Bachelor of Arts from Cornell University. He joined the faculty at Duke University and was named Assistant Professor, Associate Professor, Professor, and then Research Professor of Finance and Economics.

Since joining the faculty at Duke, Dr. Vander Weide has taught courses in corporate finance, investment management, and management of financial institutions. He has also taught courses in statistics, economics, and operations research, and a Ph.D. seminar on the theory of public utility pricing. In addition, Dr. Vander Weide has been active in executive education at Duke and Duke Corporate Education, leading executive development seminars on topics including financial analysis, cost of capital, creating shareholder value, mergers and acquisitions, real options, capital budgeting, cash management, measuring corporate performance, valuation, short-run financial planning, depreciation policies, financial strategy, and competitive strategy. Dr. Vander Weide has designed and served as Program Director for several executive education programs, including the Advanced Management Program, Competitive Strategies in Telecommunications, and the Duke Program for Manager Development for managers from the former Soviet Union.

Publications

Dr. Vander Weide has written a book entitled *Managing Corporate Liquidity: An Introduction to Working Capital Management* published by John Wiley and Sons, Inc. He has also written a chapter titled, "Financial Management in the Short Run" for *The Handbook of Modern Finance*, and written research papers on such topics as portfolio management, capital budgeting, investments, the effect of regulation on the performance of public utilities, and cash management. His articles have been published in *American Economic Review, Financial Management, International Journal of Industrial Organization, Journal of Finance, Journal of Financial and Quantitative Analysis, Journal of Bank*

Research, Journal of Portfolio Management, Journal of Accounting Research, Journal of Cash Management, Management Science, Atlantic Economic Journal, Journal of Economics and Business, and *Computers and Operations Research*.

Professional Consulting Experience

Dr. Vander Weide has provided financial and economic consulting services to firms in the electric, gas, insurance, telecommunications, and water industries for more than 25 years. He has testified on the cost of capital, competition, risk, incentive regulation, forward-looking economic cost, economic pricing guidelines, depreciation, accounting, valuation, and other financial and economic issues in more than 400 cases before the United States Congress, the Canadian Radio-Television and Telecommunications Commission, the Federal Communications Commission, the National Telecommunications and Information Administration, the Federal Energy Regulatory Commission, the public service commissions of 42 states and the District of Columbia, the insurance commissions of five states, the Iowa State Board of Tax Review, the National Association of Securities Dealers, and the North Carolina Property Tax Commission. In addition, he has testified as an expert witness in proceedings before the United States District Court for the District of New Hampshire; United States District Court for the Northern District of California; United States District Court for the District of Nebraska; United States District Court for the Eastern District of North Carolina; Superior Court of North Carolina, the United States Bankruptcy Court for the Southern District of West Virginia; and United States District Court for the Eastern District of Michigan. With respect to implementation of the Telecommunications Act of 1996, Dr. Vander Weide has testified in 30 states on issues relating to the pricing of unbundled network elements and universal service cost studies and has consulted with Bell Canada, Deutsche Telekom, and Telefónica on similar issues. He has also provided expert testimony on issues related to electric and natural gas restructuring. He has worked for Bell Canada/Nortel on a special task force to study the effects of vertical integration in the Canadian telephone industry and has worked for Bell Canada as an expert witness on the cost of capital. Dr. Vander Weide has provided consulting and expert witness testimony to the following companies:

Telecommunications Companies

ALLTEL and its subsidiaries
AT&T (old)
Bell Canada/Nortel
Centel and its subsidiaries
Cisco Systems
Concord Telephone Company
Deutsche Telekom
Heins Telephone Company
Ameritech (now AT&T new)
Verizon (Bell Atlantic) and subsidiaries
BellSouth and its subsidiaries
Cincinnati Bell (Broadwing)
Citizens Telephone Company
Contel and its subsidiaries
GTE and subsidiaries (now Verizon)
Lucent Technologies

Minnesota Independent Equal Access Corp.
Pacific Telesis and its subsidiaries
Pine Drive Cooperative Telephone Co.
Siemens
Sherburne Telephone Company
The Stentor Companies
Telefónica
Woodbury Telephone Company
U S West (Qwest)
NYNEX and its subsidiaries (Verizon)
Phillips County Cooperative Tel. Co.
Roseville Telephone Company (SureWest)
SBC Communications (now AT&T new)
Southern New England Telephone
Sprint/United and its subsidiaries
Union Telephone Company
United States Telephone Association
Valor Telecommunications (Windstream)

Electric, Gas, and Water Companies
Alcoa Power Generating, Inc.
Alliant Energy
Ameren
American Water Works
Atmos Energy
Central Illinois Public Service
Citizens Utilities
Consolidated Natural Gas and its subsidiaries
Dominion Resources
Duke Energy
Empire District Electric Company
Interstate Power Company
Iowa-American Water Company
Iowa-Illinois Gas and Electric
Iowa Southern
Kentucky-American Water Company
Kentucky Power Company
MidAmerican Energy and its subsidiaries
Nevada Power Company
NICOR
North Carolina Natural Gas
Northern Natural Gas Company
NOVA Gas Transmission Ltd.
North Shore Gas
PacifiCorp
PG&E
Peoples Energy and its subsidiaries
The Peoples Gas, Light and Coke Co.
Progress Energy
Public Service Company of North Carolina
PSE&G
Sempra Energy
South Carolina Electric and Gas
Southern Company and subsidiaries
Tennessee-American Water Company
Trans Québec & Maritimes Pipeline Inc.
United Cities Gas Company

Insurance Companies
Allstate
North Carolina Rate Bureau
United Services Automobile Association (USAA)
The Travelers Indemnity Company
Gulf Insurance Company

Other Professional Experience

Dr. Vander Weide conducts in-house seminars and training sessions on topics such as creating shareholder value, financial analysis, competitive strategy, cost of capital, real options, financial strategy, managing growth, mergers and acquisitions, valuation, measuring corporate performance, capital budgeting, cash management, and financial planning. Among the firms for whom he has designed and taught tailored programs and training sessions are ABB Asea Brown Boveri, Accenture, Allstate, Ameritech, AT&T, Bell Atlantic/Verizon, BellSouth, Progress Energy/Carolina Power & Light, Contel, Fisons, GlaxoSmithKline, GTE, Lafarge, MidAmerican Energy, New Century Energies, Norfolk Southern, Pacific Bell Telephone, The Rank Group, Siemens, Southern New England Telephone, TRW, and Wolseley Plc. Dr. Vander Weide has also hosted a nationally prominent conference/workshop on estimating the cost of capital. In 1989, at the request of Mr. Fuqua, Dr. Vander Weide designed the Duke Program for Manager Development for

managers from the former Soviet Union, the first in the United States designed exclusively for managers from Russia and the former Soviet republics.

In the 1970's, Dr. Vander Weide helped found University Analytics, Inc., which at that time was one of the fastest growing small firms in the country. As an officer at University Analytics, he designed cash management models, databases, and software packages that are still used by most major U.S. banks in consulting with their corporate clients. Having sold his interest in University Analytics, Dr. Vander Weide now concentrates on strategic and financial consulting, academic research, and executive education.

PUBLICATIONS
JAMES H. VANDER WEIDE

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Recent Developments in Management Science in Banking, *Management Science*, October 1981 (with K. Cohen and S. Maier).

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The Bond Scheduling Problem of the Multi-subsidiary Holding Company, *Management Science*, July 1982 (with K. Baker).

Deregulation and Locational Rents in Banking: a Comment, *Journal of Bank Research*, Summer 1983.

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Financial Management in the Short Run, *Handbook of Modern Finance*, edited by Dennis Logue, published by Warren, Gorham, & Lamont, Inc., New York, 1984.

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SUMMARY EXPERT TESTIMONY
JAMES H. VANDER WEIDE

SPONSOR	JURISDICTION	DATE	DOCKET NO.
Sidley Austin LLP, Tellabs, Inc. Securities Litigation	U.S. District Court Northern Dist. Illinois	Jul-09	C.A.NO. 02-C-4356
Duke Energy Carolinas	South Carolina	Jul-09	2009-226-E
MidAmerican Energy Company	Iowa	Jul-09	RPU-2009-0003
Duke Energy Carolinas	North Carolina	Jun-09	E-7, SUB 909
Empire District Electric Company	Missouri	Jun-09	GR-2009-0434
Terasen Gas Inc.	British Columbia Utilities Comm.	May-09	
Atmos Energy	Railroad Commission of Texas	Apr-09	GUD-9869
Progress Energy	Florida	Mar-09	090079-EI
EPCOR, FortisAlberta, AltaLink	Alberta Utilities Commission	Nov-08	1578571, ID-85
NOVA Gas Transmission Ltd.	Alberta Utilities Commission	Nov-08	1578571, ID-85
Kentucky-American Water Company	Kentucky	Oct-08	2008-00427
Atmos Energy	Tennessee	Oct-08	0800197
Dorsey & Whitney LLP-Williams v. Gannon	Montana 2nd Judicial Dist. Ct. Silver Bow County	Apr-08	DV-02-201
Atmos Energy	Georgia	Mar-08	27163-U
North Carolina Rate Bureau (auto)	North Carolina Dept. of Insurance	Jan-08	
Trans Québec & Maritimes Pipeline Inc.	National Energy Board (Canada)	Dec-07	
Xcel Energy	North Dakota	Dec-07	PU-07-776
Verizon Southwest	Texas	Nov-07	34723
Empire District Electric Company	Missouri	Oct-07	ER-2008-0093
North Carolina Rate Bureau (workers compensation)	North Carolina Dept. of Insurance	Sep-07	
Verizon North Inc. Contel of the South Inc.	Michigan	Aug-07	Case No. U-15210
Georgia Power Company	Georgia	Jun-07	25060-U
Duke Energy Carolinas	North Carolina	May-07	E-7 Sub 828 et al
MidAmerican Energy Company	Iowa	May-07	SPU-06-5 et al
Morrison & Foerster LLP-JDS Uniphase Securities Litigation	U.S. District Court Northern District California	Feb-07	C-02-1486-CW
TransCanada Pipelines Ltd.	National Energy Board (Canada)	Feb-07	
North Carolina Rate Bureau (homeowners)	North Carolina Dept. of Insurance	Dec-06	
San Diego Gas & Electric	FERC	Nov-06	ER07-284-000
North Carolina Rate Bureau (workers compensation)	North Carolina Dept. of Insurance	Aug-06	
Union Electric Company d/b/a AmerenUE	Missouri	Jun-06	ER-2007-0002
North Carolina Rate Bureau (homeowners)	North Carolina Dept. of Insurance	May-06	
North Carolina Rate Bureau (dwelling fire)	North Carolina Dept. of Insurance	Mar-06	
Empire District Electric Company	Missouri	Feb-06	ER-2006-0315
PacifiCorp Power & Light Company	Washington	Jan-06	UE-050684
Verizon Maine	Maine	Dec-05	2005-155
Winston & Strawn LLP-Cisco Systems Securities Litigation	U.S. District Court Northern District California	Nov-05	C-01-20418-JW
Dominion Virginia Power	Virginia	Nov-05	PUE-2004-00048
Bryan Cave LLP-Omniplex Comms. v. Lucent Technologies	U.S. District Court Eastern District Missouri	Sep-05	04CV00477 ERW
North Carolina Rate Bureau (workers comp)	North Carolina Dept. of Insurance	Sep-05	
Empire District Electric Company	Kansas	Sep-05	05-EPDE-980-RTS
Verizon Southwest	Texas	Jul-05	29315
PG&E Company	FERC	Jul-05	ER-05-1284
Dominion Hope	West Virginia	Jun-05	05-034-G42T
Empire District Electric Company	Missouri	Jun-05	EO-2005-0263
Verizon New England	U.S. District Court New Hampshire	May-05	04-CV-65-PB
San Diego Gas & Electric	California	May-05	05-05-012

SPONSOR	JURISDICTION	DATE	DOCKET NO.
Progress Energy	Florida	May-05	50078
Verizon Vermont	Vermont	Feb-05	6959
North Carolina Rate Bureau (homeowners)	North Carolina Dept. of Insurance	Feb-05	
Verizon Florida	Florida	Jan-05	050059-TL
Verizon Illinois	Illinois	Jan-05	00-0812
Dominion Resources	North Carolina	Sep-04	E-22 Sub 412
Tennessee-American Water Company	Tennessee	Aug-04	04-00288
Valor Telecommunications of Texas, LP.	New Mexico	Jul-04	3495 Phase C
Alcoa Power Generating Inc.	North Carolina Property Tax Commission	Jul-04	02 PTC 162 and 02 PTC 709
PG&E Company	California	May-04	04-05-21
Verizon Northwest	Washington	Apr-04	UT-040788
Verizon Northwest	Washington	Apr-04	UT-040788
Kentucky-American Water Company	Kentucky	Apr-04	2004-00103
MidAmerican Energy	South Dakota	Apr-04	NG4-001
Empire District Electric Company	Missouri	Apr-04	ER-2004-0570
Interstate Power and Light Company	Iowa	Mar-04	RPU-04-01
North Carolina Rate Bureau (auto)	North Carolina Dept. of Insurance	Feb-04	
Northern Natural Gas Company	FERC	Feb-04	RP04-155-000
Verizon New Jersey	New Jersey	Jan-04	TO00060356
Verizon	FCC	Jan-04	03-173, FCC 03-224
Verizon	FCC	Dec-03	03-173, FCC 03-224
Verizon California Inc.	California	Nov-03	R93-04-003,I93-04-002
Phillips County Telephone Company	Colorado	Nov-03	03S-315T
North Carolina Rate Bureau (homeowners)	North Carolina Dept. of Insurance	Oct-03	
PG&E Company	FERC	Oct-03	ER04-109-000
Allstate Insurance Company	Texas Department of Insurance	Sep-03	2568
Verizon Northwest Inc.	Washington	Jul-03	UT-023003
Empire District Electric Company	Oklahoma	Jul-03	Case No. PUD 200300121
Verizon Virginia Inc.	FCC	Apr-03	CC-00218,00249,00251
North Carolina Rate Bureau (dwelling fire)	North Carolina Dept. of Insurance	Apr-03	
Northern Natural Gas Company	FERC	Apr-03	RP03-398-000
MidAmerican Energy	Iowa	Apr-03	RPU-03-1, WRU-03-25-156
PG&E Company	FERC	Mar-03	ER03666000
Verizon Florida Inc.	Florida	Feb-03	981834-TP/990321-TP
Verizon North	Indiana	Feb-03	42259
San Diego Gas & Electric	FERC	Feb-03	ER03-601000
North Carolina Rate Bureau (auto)	North Carolina Dept. of Insurance	Jan-03	
Gulf Insurance Company	Superior Court, North Carolina	Jan-03	2000-CVS-3558
PG&E Company	FERC	Jan-03	ER03409000
Verizon New England Inc. New Hampshire	New Hampshire	Dec-02	DT 02-110
Verizon Northwest	Washington	Dec-02	UT 020406
PG&E Company	California	Dec-02	
MidAmerican Energy	Iowa	Nov-02	RPU-02-3, 02-8
MidAmerican Energy	Iowa	Nov-02	RPU-02-10
Verizon Michigan	US District Court Eastern District of Michigan	Sep-02	Civil Action No. 00-73208
North Carolina Rate Bureau (workers comp)	North Carolina Dept. of Insurance	Sep-02	
Verizon New England Inc. New Hampshire	New Hampshire	Aug-02	DT 02-110
Interstate Power Company	Iowa Board of Tax Review	Jul-02	832
PG&E Company	California	May-02	A 02-05-022 et al
Verizon New England Inc. Massachusetts	FCC	May-02	EB 02 MD 006
Verizon New England Inc. Rhode Island	Rhode Island	May-02	Docket No. 2681
Neumedia, Inc.	US Bankruptcy Court Southern District W. Virginia	Apr-02	Case No. 01-20873
North Carolina Rate Bureau (homeowners)	North Carolina Dept. of Insurance	Mar-02	

SPONSOR	JURISDICTION	DATE	DOCKET NO.
MidAmerican Energy Company	Iowa	Mar-02	RPU 02 2
North Carolina Natural Gas Company	North Carolina	Feb-02	G21 Sub 424
North Carolina Rate Bureau (auto)	North Carolina Dept. of Insurance	Jan-02	
Verizon Pennsylvania	Pennsylvania	Dec-01	R-00016683
Verizon Florida	Florida	Nov-01	99064B-TP
PG&E Company	FERC	Nov-01	ER0166000
Verizon Delaware	Delaware	Oct-01	96-324 Phase II
Florida Power Corporation	Florida	Sep-01	000824-EL
North Carolina Rate Bureau (workers comp)	North Carolina Dept. of Insurance	Sep-01	
Verizon Washington DC	District of Columbia	Jul-01	962
Verizon Virginia	FCC	Jul-01	CC-00218,00249,00251
Sherburne County Rural Telephone Company	Minnesota	Jul-01	P427/CI-00-712
Verizon New Jersey	New Jersey	Jun-01	TO01020095
Verizon Maryland	Maryland	May-01	8879
Verizon Massachusetts	Massachusetts	May-01	DTE 01-20
North Carolina Rate Bureau (auto)	North Carolina Dept. of Insurance	Apr-01	
PG&E Company	FERC	Mar-01	ER011639000
Maupin Taylor & Ellis P.A.	National Association of Securities Dealers	Jan-01	99-05099
USTA	FCC	Oct-00	RM 10011
Verizon New York	New York	Oct-00	98-C-1357
Verizon New Jersey	New Jersey	Oct-00	TO00060356
PG&E Company	FERC	Oct-00	ER0166000
Verizon New Jersey	New Jersey	Sep-00	TO99120934
North Carolina Rate Bureau (workers comp)	North Carolina Dept. of Insurance	Sep-00	
PG&E Company	California	Aug-00	00-05-018
Verizon New York	New York	Jul-00	98-C-1357
PG&E Company	California	May-00	00-05-013
PG&E Company	FERC	Mar-00	ER00-66-000
PG&E Company	FERC	Mar-00	ER99-4323-000
Bell Atlantic	New York	Feb-00	98-C-1357
USTA	FCC	Jan-00	94-1, 96-262
MidAmerican Energy	Iowa	Nov-99	SPU-99-32
PG&E Company	California	Nov-99	99-11-003
PG&E Company	FERC	Nov-99	ER973255,981261,981685
North Carolina Rate Bureau (workers comp)	North Carolina Dept. of Insurance	Sep-99	
MidAmerican Energy	Illinois	Sep-99	99-0534
PG&E Company	FERC	Sep-99	ER99-4323-000
MidAmerican Energy	FERC	Jul-99	ER99-3887
North Carolina Rate Bureau (homeowners)	North Carolina Dept. of Insurance	Jun-99	
Bell Atlantic	Vermont	May-99	6167
Nevada Power Company	FERC	May-99	
Bell Atlantic, GTE, US West	FCC	Apr-99	CC98-166
Nevada Power Company	Nevada	Apr-99	
Bell Atlantic, GTE, US West	FCC	Mar-99	CC98-166
North Carolina Rate Bureau (auto)	North Carolina Dept. of Insurance	Mar-99	
PG&E Company	FERC	Mar-99	ER99-2326-000
MidAmerican Energy	Illinois	Mar-99	099-0310
PG&E Company	FERC	Feb-99	ER99-2358,2087,2351
MidAmerican Energy	US District Court, District of Nebraska	Feb-99	8:97 CV 346
Bell Atlantic, GTE, US West	FCC	Jan-99	CC98-166
The Southern Company	FERC	Jan-99	ER98-1096
Deutsche Telekom	Germany	Nov-98	
Telefonica	Spain	Nov-98	
Cincinnati Bell Telephone Company	Ohio	Oct-98	96899TPALT

SPONSOR	JURISDICTION	DATE	DOCKET NO.
MidAmerican Energy	Iowa	Sep-98	RPU 98-5
MidAmerican Energy	South Dakota	Sep-98	NG98-011
MidAmerican Energy	Iowa	Sep-98	SPU 98-8
GTE Florida Incorporated	Florida	Aug-98	980696-TP
GTE North and South	Illinois	Jun-98	960503
GTE Midwest Incorporated	Missouri	Jun-98	TO98329
GTE North and South	Illinois	May-98	960503
MidAmerican Energy	Iowa Board of Tax Review	May-98	835
San Diego Gas & Electric	California	May-98	98-05-024
GTE Midwest Incorporated	Nebraska	Apr-98	C1416
Carolina Telephone	North Carolina	Mar-98	P100Sub133d
GTE Southwest	Texas	Feb-98	18515
North Carolina Rate Bureau (auto)	North Carolina Dept. of Insurance	Feb-98	P100sub133d
Public Service Electric & Gas	New Jersey	Feb-98	PUC734897N,-734797N,BPUEO97070461,-07070462
GTE North	Minnesota	Dec-97	P999/M97909
GTE Northwest	Oregon	Dec-97	UM874
The Southern Company	FERC	Dec-97	ER981096000
GTE North	Pennsylvania	Nov-97	A310125F0002
Bell Atlantic	Rhode Island	Nov-97	2681
GTE North	Indiana	Oct-97	40618
GTE North	Minnesota	Oct-97	P442,407/5321/CI961541
GTE Southwest	New Mexico	Oct-97	96310TC,96344TC
GTE Midwest Incorporated	Iowa	Sep-97	RPU-96-7
North Carolina Rate Bureau (workers)	North Carolina Dept. of Insurance	Sep-97	
GTE Hawaiian Telephone	Hawaii	Aug-97	7702
The Stentor Companies	Canadian Radio-television and Telecommunications Commission	Jul-97	CRTC97-11
New England Telephone	Vermont	Jul-97	5713
Bell-Atlantic-New Jersey	New Jersey	Jun-97	TX95120631
Nevada Bell	Nevada	May-97	96-9035
New England Telephone	Maine	Apr-97	96-781
GTE North, Inc.	Michigan	Apr-97	U11281
Bell Atlantic-Virginia	Virginia	Apr-97	970005
Cincinnati Bell Telephone	Ohio	Feb-97	96899TPALT
Bell Atlantic - Pennsylvania	Pennsylvania	Feb-97	A310203,213,236,258F002
North Carolina Rate Bureau (auto)	North Carolina Dept. of Insurance	Feb-97	
Bell Atlantic-Washington, D.C.	District of Columbia	Jan-97	962
Pacific Bell, Sprint, US West	FCC	Jan-97	CC 96-45
United States Telephone Association	FCC	Jan-97	CC 96-262
Bell Atlantic-Maryland	Maryland	Jan-97	8731
Bell Atlantic-West Virginia	West Virginia	Jan-97	961516, 1561, 1009TPC,961533TT
Poe, Hoof, & Reinhardt	Durham Cnty Superior Court Kountis vs. Circle K	Jan-97	95CVS04754
Bell Atlantic-Delaware	Delaware	Dec-96	96324
Bell Atlantic-New Jersey	New Jersey	Nov-96	TX95120631
Carolina Power & Light Company	FERC	Nov-96	OA96-198-000
New England Telephone	Massachusetts	Oct-96	DPU 96-73/74,-75, -80/81, -83, -94
New England Telephone	New Hampshire	Oct-96	96-252
Bell Atlantic-Virginia	Virginia	Oct-96	960044
Citizens Utilities	Illinois	Sep-96	96-0200, 96-0240
Union Telephone Company	New Hampshire	Sep-96	95-311
Bell Atlantic-New Jersey	New Jersey	Sep-96	TO-96070519
New York Telephone	New York	Sep-96	95-C-0657, 94-C-0095,91-C-1174
North Carolina Rate Bureau (workers comp)	North Carolina Dept. of Insurance	Sep-96	
MidAmerican Energy Company	Illinois	Sep-96	96-0274

SPONSOR	JURISDICTION	DATE	DOCKET NO.
MidAmerican Energy Company	Iowa	Sep-96	RPU96-8
United States Telephone Association	FCC	Mar-96	AAD-96.28
United States Telephone Association	FCC	Mar-96	CC 94-1 PhaseIV
Bell Atlantic - Maryland	Maryland	Mar-96	8715
Nevada Bell	Nevada	Mar-96	96-3002
North Carolina Rate Bureau (auto)	North Carolina Dept. of Insurance	Mar-96	
Carolina Tel. and Telegraph Co, Central Tel Co	North Carolina	Feb-96	P7 sub 825, P10 sub 479
Oklahoma Rural Telephone Coalition	Oklahoma	Oct-95	PUD950000119
BellSouth	Tennessee	Oct-95	95-02614
Wake County, North Carolina	US District Court, Eastern Dist. NC	Oct-95	594CV643H2
Bell Atlantic - District of Columbia	District of Columbia	Sep-95	814 Phase IV
South Central Bell Telephone Company	Tennessee	Aug-95	95-02614
GTE South	Virginia	Jun-95	95-0019
Roseville Telephone Company	California	May-95	A.95-05-030
Bell Atlantic - New Jersey	New Jersey	May-95	TX94090388
Cincinnati Bell Telephone Company	Ohio	May-95	941695TPACE
North Carolina Rate Bureau (auto)	North Carolina Dept. of Insurance	May-95	727
Northern Illinois Gas	Illinois	May-95	95-0219
South Central Bell Telephone Company	Kentucky	Apr-95	94-121
Midwest Gas	South Dakota	Mar-95	
Virginia Natural Gas, Inc.	Virginia	Mar-95	PUE940054
Hope Gas, Inc.	West Virginia	Mar-95	95-0003G42T
The Peoples Natural Gas Company	Pennsylvania	Feb-95	R-943252
and Coke Co., North Shore Gas, Iowa-Illinois Gas	Illinois	Jan-95	94-0403
and Electric, Central Illinois Public Service,	Illinois	Jan-95	94-0403
Northern Illinois Gas, The Peoples Gas, Light	Illinois	Jan-95	94-0403
United Cities Gas, and Interstate Power	Illinois	Jan-95	94-0403
Cincinnati Bell Telephone Company	Kentucky	Oct-94	94-355
Midwest Gas	Nebraska	Oct-94	
Midwest Power	Iowa	Sep-94	RPU-94-4
Bell Atlantic	FCC	Aug-94	CS 94-28, MM 93-215
Midwest Gas	Iowa	Jul-94	RPU-94-3
Bell Atlantic	FCC	Jun-94	CC 94-1
Nevada Power Company	Nevada	Jun-94	93-11045
Cincinnati Bell Telephone Company	Ohio	Mar-94	93-551-TP-CSS
Cincinnati Bell Telephone Company	Ohio	Mar-94	93-432-TP-ALT
GTE South/Contel	Virginia	Feb-94	PUC9300036
North Carolina Rate Bureau (auto)	North Carolina Dept. of Insurance	Feb-94	689
Bell of Pennsylvania	Pennsylvania	Jan-94	P930715
GTE South	South Carolina	Jan-94	93-504-C
United Telephone-Southeast	Tennessee	Jan-94	93-04818
C&P of VA, GTE South, Contel, United Tel. SE	Virginia	Sep-93	PUC920029
Bell Atlantic, NYNEX, Pacific Companies	FCC	Aug-93	MM 93-215
C&P, Centel, Contel, GTE, & United	Virginia	Aug-93	PUC920029
Chesapeake & Potomac Tel Virginia	Virginia	Aug-93	93-00-
GTE North	Illinois	Jul-93	93-0301
Midwest Power	Iowa	Jul-93	INU-93-1
Midwest Power	South Dakota	Jul-93	EL93-016
Chesapeake & Potomac Tel. Co. DC	District of Columbia	Jun-93	926
Cincinnati Bell	Ohio	Jun-93	93432TPALT
North Carolina Rate Bureau (dwelling fire)	North Carolina Dept. of Insurance	Jun-93	671
North Carolina Rate Bureau (homeowners)	North Carolina Dept. of Insurance	Jun-93	670
Pacific Bell Telephone Company	California	Mar-93	92-05-004
Minnesota Independent Equal Access Corp.	Minnesota	Mar-93	P3007/GR931
South Central Bell Telephone Company	Tennessee	Feb-93	92-13527

SPONSOR	JURISDICTION	DATE	DOCKET NO.
South Central Bell Telephone Company	Kentucky	Dec-92	92-523
Southern New England Telephone Company	Connecticut	Nov-92	92-09-19
Chesapeake & Potomac Tel. Co.CDC	District of Columbia	Nov-92	814
Diamond State Telephone Company	Delaware	Sep-92	PSC 92-47
New Jersey Bell Telephone Company	New Jersey	Sep-92	TO-92030958
Allstate Insurance Company	New Jersey Dept. of Insurance	Sep-92	INS 06174-92
North Carolina Rate Bureau (auto)	North Carolina Dept. of Insurance	Aug-92	650
North Carolina Rate Bureau (workers' comp)	North Carolina Dept. of Insurance	Aug-92	647
Midwest Gas Company	Minnesota	Aug-92	G010/GR92710
Pennsylvania-American Water Company	Pennsylvania	Jul-92	R-922428
Central Telephone Co. of Florida	Florida	Jun-92	920310-TL
C&P of VA, GTE South, Contel, United Tel. SE	Virginia	Jun-92	PUC920029
Chesapeake & Potomac Tel. Co. Maryland	Maryland	May-92	8462
Pacific Bell Telephone Company	California	Apr-92	92-05-004
Iowa Power Inc.	Iowa	Mar-92	RPU-92-2
Contel of Texas	Texas	Feb-92	10646
Southern Bell Telephone Company	Florida	Jan-92	880069-TL
Nevada Power Company	Nevada	Jan-92	92-1067
GTE South	Georgia	Dec-91	4003-U
GTE South	Georgia	Dec-91	4110-U
Allstate Insurance Company (property)	Texas Dept. of Insurance	Dec-91	1846
IPS Electric	Iowa	Oct-91	RPU-91-6
GTE South	Tennessee	Aug-91	91-05738
North Carolina Rate Bureau (workers' comp)	North Carolina Dept. of Insurance	Aug-91	609
Midwest Gas Company	Iowa	Jul-91	RPU-91-5
Pennsylvania-American Water Company	Pennsylvania	Jun-91	R-911909
North Carolina Rate Bureau (auto)	North Carolina Dept. of Insurance	Jun-91	606
Allstate Insurance Company	California Dept. of Insurance	May-91	RCD-2
Nevada Power Company	Nevada	May-91	91-5055
Kentucky Power Company	Kentucky	Apr-91	91-066
Chesapeake & Potomac Tel. Co.CD.C.	District of Columbia	Feb-91	850
Allstate Insurance Company	New Jersey Dept. of Insurance	Jan-91	INS-9536-90
GTE South	South Carolina	Nov-90	90-698-C
Southern Bell Telephone Company	Florida	Oct-90	880069-TL
GTE South	West Virginia	Aug-90	90-522-T-42T
North Carolina Rate Bureau (workers' comp)	North Carolina Dept. of Insurance	Aug-90	R90-08-
The Travelers Indemnity Company	Pennsylvania Dept. of Insurance	Aug-90	R-90-06-23
Chesapeake & Potomac Tel. Co.-Maryland	Maryland	Jul-90	8274
Allstate Insurance Company	Pennsylvania Dept. of Insurance	Jul-90	R90-07-01
Central Tel. Co. of Florida	Florida	Jun-90	89-1246-TL
Citizens Telephone Company	North Carolina	Jun-90	P-12, SUB 89
North Carolina Rate Bureau (auto)	North Carolina Dept. of Insurance	Jun-90	568
Iowa Resources, Inc. and Midwest Energy	Iowa	Jun-90	SPU-90-5
Contel of Illinois	Illinois	May-90	90-0128
Southern New England Tel. Co.	Connecticut	Apr-90	89-12-05
Bell Atlantic	FCC	Apr-90	89-624 II
Pennsylvania-American Water Company	Pennsylvania	Mar-90	R-901652
Bell Atlantic	FCC	Feb-90	89-624
GTE South	Tennessee	Jan-90	
Allstate Insurance Company	California Dept. of Insurance	Jan-90	REB-1002
Bell Atlantic	FCC	Nov-89	87-463 II
Allstate Insurance Company	California Dept. of Insurance	Sep-89	REB-1006
Pacific Bell	California	Mar-89	87-11-0033
Iowa Power & Light	Iowa	Dec-88	RPU-88-10
Pacific Bell	California	Oct-88	88-05-009

SPONSOR	JURISDICTION	DATE	DOCKET NO.
Southern Bell	Florida	Apr-88	880069TL
Carolina Independent Telcos.	North Carolina	Apr-88	P-100, Sub 81
United States Telephone Association	U. S. Congress	Apr-88	
Carolina Power & Light	South Carolina	Mar-88	88-11-E
New Jersey Bell Telephone Co.	New Jersey	Feb-88	87050398
Carolina Power & Light	FERC	Jan-88	ER-88-224-000
Carolina Power & Light	North Carolina	Dec-87	E-2, Sub 537
Bell Atlantic	FCC	Nov-87	87-463
Diamond State Telephone Co.	Delaware	Jul-87	86-20
Central Telephone Co. of Nevada	Nevada	Jun-87	87-1249
ALLTEL	Florida	Apr-87	870076-PU
Southern Bell	Florida	Apr-87	870076-PU
Carolina Power & Light	North Carolina	Apr-87	E-2, Sub 526
So. New England Telephone Co.	Connecticut	Mar-87	87-01-02
Northern Illinois Gas Co.	Illinois	Mar-87	87-0032
Bell of Pennsylvania	Pennsylvania	Feb-87	860923
Carolina Power & Light	FERC	Jan-87	ER-87-240-000
Bell South	NTIA	Dec-86	61091-619
Heins Telephone Company	North Carolina	Oct-86	P-26, Sub 93
Public Service Co. of NC	North Carolina	Jul-86	G-5, Sub 207
Bell Atlantic	FCC	Feb-86	84-800 III
BellSouth	FCC	Feb-86	84-800 III
ALLTEL Carolina, Inc	North Carolina	Feb-86	P-118, Sub 39
ALLTEL Georgia, Inc.	Georgia	Jan-86	3567-U
ALLTEL Ohio	Ohio	Jan-86	86-60-TP-AIR
Western Reserve Telephone Co.	Ohio	Jan-86	85-1973-TP-AIR
New England Telephone & Telegraph	Maine	Dec-85	
ALLTEL-Florida	Florida	Oct-85	850064-TL
Iowa Southern Utilities	Iowa	Oct-85	RPU-85-11
Bell Atlantic	FCC	Sep-85	84-800 II
Pacific Telesis	FCC	Sep-85	84-800 II
Pacific Bell	California	Apr-85	85-01-034
United Telephone Co. of Missouri	Missouri	Apr-85	TR-85-179
South Carolina Generating Co.	FERC	Apr-85	85-204
South Central Bell	Kentucky	Mar-85	9160
New England Telephone & Telegraph	Vermont	Mar-85	5001
Chesapeake & Potomac Telephone Co.	West Virginia	Mar-85	84-747
Chesapeake & Potomac Telephone Co.	Maryland	Jan-85	7851
Central Telephone Co. of Ohio	Ohio	Dec-84	84-1431-TP-AIR
Ohio Bell	Ohio	Dec-84	84-1435-TP-AIR
Carolina Power & Light Co.	FERC	Dec-84	ER85-184000
BellSouth	FCC	Nov-84	84-800 I
Pacific Telesis	FCC	Nov-84	84-800 I
New Jersey Bell	New Jersey	Aug-84	848-856
Southern Bell	South Carolina	Aug-84	84-308-C
Pacific Power & Light Co.	Montana	Jul-84	84.73.8
Carolina Power & Light Co.	South Carolina	Jun-84	84-122-E
Southern Bell	Georgia	Mar-84	3465-U
Carolina Power & Light Co.	North Carolina	Feb-84	E-2, Sub 481
Southern Bell	North Carolina	Jan-84	P-55, Sub 834
South Carolina Electric & Gas	South Carolina	Nov-83	83-307-E
Empire Telephone Co.	Georgia	Oct-83	3343-U
Southern Bell	Georgia	Aug-83	3393-U
Carolina Power & Light Co.	FERC	Aug-83	ER83-765-000
General Telephone Co. of the SW	Arkansas	Jul-83	83-147-U

SPONSOR	JURISDICTION	DATE	DOCKET NO.
Heins Telephone Co.	North Carolina	Jul-83	No.26 Sub 88
General Telephone Co. of the NW	Washington	Jul-83	U-82-45
Leeds Telephone Co.	Alabama	Apr-83	18578
General Telephone Co. of California	California	Apr-83	83-07-02
North Carolina Natural Gas	North Carolina	Apr-83	G21 Sub 235
Carolina Power & Light	South Carolina	Apr-83	82-328-E
Eastern Illinois Telephone Co.	Illinois	Feb-83	83-0072
Carolina Power & Light	North Carolina	Feb-83	E-2 Sub 461
New Jersey Bell	New Jersey	Dec-82	8211-1030
Southern Bell	Florida	Nov-82	820294-TP
United Telephone of Missouri	Missouri	Nov-82	TR-83-135
Central Telephone Co. of NC	North Carolina	Nov-82	P-10 Sub 415
Concord Telephone Company	North Carolina	Nov-82	P-16 Sub 146
Carolina Telephone & Telegraph	North Carolina	Aug-82	P-7, Sub 670
Central Telephone Co. of Ohio	Ohio	Jul-82	82-636-TP-AIR
Southern Bell	South Carolina	Jul-82	82-294-C
General Telephone Co. of the SW	Arkansas	Jun-82	82-232-U
General Telephone Co. of Illinois	Illinois	Jun-82	82-0458
General Telephone Co. of the SW	Oklahoma	Jun-82	27482
Empire Telephone Co.	Georgia	May-82	3355-U
Mid-Georgia Telephone Co.	Georgia	May-82	3354-U
General Telephone Co. of the SW	Texas	Apr-82	4300
General Telephone Co. of the SE	Alabama	Jan-82	18199
Carolina Power & Light Co.	South Carolina	Jan-82	81-163-E
Elmore-Coosa Telephone Co.	Alabama	Nov-81	18215
General Telephone Co. of the SE	North Carolina	Sep-81	P-19, Sub 182
United Telephone Co. of Ohio	Ohio	Sep-81	81-627-TP-AIR
General Telephone Co. of the SE	South Carolina	Sep-81	81-121-C
Carolina Telephone & Telegraph	North Carolina	Aug-81	P-7, Sub 652
Southern Bell	North Carolina	Aug-81	P-55, Sub 794
Woodbury Telephone Co.	Connecticut	Jul-81	810504
Central Telephone Co. of Virginia	Virginia	Jun-81	810030
United Telephone Co. of Missouri	Missouri	May-81	TR-81-302
General Telephone Co. of the SE	Virginia	Apr-81	810003
New England Telephone	Vermont	Mar-81	4546
Carolina Telephone & Telegraph	North Carolina	Aug-80	P-7, Sub 652
Southern Bell	North Carolina	Aug-80	P-55, Sub 784
General Telephone Co. of the SW	Arkansas	Jun-80	U-3138
General Telephone Co. of the SE	Alabama	May-80	17850
Southern Bell	North Carolina	Oct-79	P-55, Sub 777
Southern Bell	Georgia	Mar-79	3144-U
General Telephone Co. of the SE	Virginia	Mar-76	810038
General Telephone Co. of the SW	Arkansas	Feb-76	U-2693, U-2724
General Telephone Co. of the SE	Alabama	Sep-75	17058
General Telephone Co. of the SE	South Carolina	Jun-75	D-18269

EXHIBIT 12
APPENDIX 2
ESTIMATING THE EXPECTED RISK PREMIUM
ON UTILITY STOCKS USING THE DCF MODEL

The DCF model is based on the assumption that investors value an asset on the basis of the future cash flows they expect to receive from owning the asset. Thus, investors value an investment in a bond because they expect to receive a sequence of semi-annual coupon payments over the life of the bond and a terminal payment equal to the bond's face value at the time the bond matures. Likewise, investors value an investment in a firm's stock because they expect to receive a sequence of dividend payments and, perhaps, expect to sell the stock at a higher price sometime in the future.

A second fundamental principle of the DCF method is that investors value a dollar received in the future less than a dollar received today. A future dollar is valued less than a current dollar because investors could invest a current dollar in an interest earning account and increase their wealth. This principle is called the time value of money.

Applying the two fundamental DCF principles noted above to an investment in a bond leads to the conclusion that investors value their investment in the bond on the basis of the present value of the bond's future cash flows. Thus, the price of the bond should be equal to:

EQUATION 1

$$P_B = \frac{C}{(1+i)} + \frac{C}{(1+i)^2} + \ldots + \frac{C+F}{(1+i)^n}$$

where:

P_B = Bond price;

C = Cash value of the coupon payment (assumed for notational convenience to occur annually rather than semi-annually);

F = Face value of the bond;

i = The rate of interest the investor could earn by investing his money in an alternative bond of equal risk; and

n = The number of periods before the bond matures.

Applying these same principles to an investment in a firm's stock suggests that the price of the stock should be equal to:

EQUATION 2

$$P_s = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \cdots + \frac{D_n + P_n}{(1+k)^n}$$

where:

P_S = Current price of the firm's stock;

$D_1, D_2 \ldots D_n$ = Expected annual dividend per share on the firm's stock;

P_n = Price per share of stock at the time the investor expects to sell the stock; and

k = Return the investor expects to earn on alternative investments of the same risk, i.e., the investor's required rate of return.

Equation (2) is frequently called the annual discounted cash flow model of stock valuation. Assuming that dividends grow at a constant annual rate, *g*, this equation can be solved for *k*, the cost of equity. The resulting cost of equity equation is $k = D_1/P_s + g$, where *k* is the cost of equity, D_1 is the expected next period annual dividend, P_s is the current price of the stock, and *g* is the constant annual growth rate in earnings, dividends, and book value per share. The term D_1/P_s is called the dividend yield component of the annual DCF model, and the term *g* is called the growth component of the annual DCF model.

The annual DCF model is only a correct expression for the present value of future dividends if dividends are paid annually at the end of each year. Since most industrial and utility firms pay dividends quarterly, the annual DCF model produces downwardly biased estimates of the cost of equity. Investors can expect to earn a higher annual

effective return on an investment in a firm that pays quarterly dividends than in one which pays the same amount of dollar dividends once at the end of each year.

The Dividend Component

The quarterly DCF model requires an estimate of the expected dividends for the next four quarters. I estimated the expected dividends for the next four quarters by multiplying the actual dividends for the last four quarters by the factor, (1 + the growth rate, g).

The Growth Component

To estimate the growth component of the DCF model, I used the analysts' estimates of future earnings per share (EPS) growth reported by I/B/E/S Thomson Financial. As part of their research, financial analysts working at Wall Street firms periodically estimate EPS growth for each firm they follow. The EPS forecasts for each firm are then published. Investors who are contemplating purchasing or selling shares in individual companies review the forecasts. These estimates represent five-year forecasts of EPS growth. I/B/E/S is a firm that reports analysts' EPS growth forecasts for a broad group of companies. The forecasts are expressed in terms of a mean forecast and a standard deviation of forecast for each firm. Investors use the mean forecast as a consensus estimate of future firm performance. The I/B/E/S growth rates: (1) are widely circulated in the financial community, (2) include the projections of reputable financial analysts who develop estimates of future EPS growth, (3) are reported on a timely basis to investors, and (4) are widely used by institutional and other investors.

I relied on analysts' projections of future EPS growth because there is considerable empirical evidence that investors use analysts' forecasts to estimate future earnings growth. To test whether investors use analysts' growth forecasts to estimate future dividend and earnings growth, I prepared a study in conjunction with Willard T. Carleton, Karl Eller Professor of Finance at the University of Arizona, on why analysts' forecasts are the best estimate of investors' expectation of future long-term growth. This study is described in a paper entitled "Investor Growth Expectations and Stock Prices: the Analysts versus Historical Growth Extrapolation," published in the Spring 1988 edition of *The Journal of Portfolio Management*.

In our paper, we describe how we first performed a correlation analysis to identify the historically-oriented growth rates which best described a firm's stock price. Then we

did a regression study comparing the historical growth rates with the consensus analysts' forecasts. In every case, the regression equations containing the average of analysts' forecasts statistically outperformed the regression equations containing the historical growth estimates. These results are consistent with those found by Cragg and Malkiel, the early major research in this area (John G. Cragg and Burton G. Malkiel, *Expectations and the Structure of Share Prices*, University of Chicago Press, 1982). These results are also consistent with the hypothesis that investors use analysts' forecasts, rather than historically-oriented growth calculations, in making stock buy and sell decisions. They provide overwhelming evidence that the analysts' forecasts of future growth are superior to historically-oriented growth measures in predicting a firm's stock price.

My study has been updated to include more recent data. Researchers at State Street Financial Advisors updated my study using data through year-end 2003. Their results continue to confirm that analysts' growth forecasts are superior to historically-oriented growth measures in predicting a firm's stock price.

The Price Component

To measure the price component of the DCF model, I used a simple average of the monthly high and low stock prices for each firm over a three-month period. These high and low stock prices were obtained from Thomson Financial. I used the three-month average stock price in applying the DCF method because stock prices fluctuate daily, while financial analysts' forecasts for a given company are generally changed less frequently, often on a quarterly basis. Thus, to match the stock price with an earnings forecast, it is appropriate to average stock prices over a three-month period.

EXHIBIT 13
APPENDIX 3
THE SENSITIVITY OF THE FORWARD-LOOKING
REQUIRED EQUITY RISK PREMIUM ON UTILITY STOCKS
TO CHANGES IN INTEREST RATES

My estimate of the required equity risk premium on utility stocks is based on studies of the discounted cash flow ("DCF") expected return on comparable groups of utilities in each month of my study period compared to the interest rate on long-term government bonds. Specifically, for each month in my study period, I calculate the risk premium using the equation

$$RP_{COMP} = DCF_{COMP} - I_B$$

where:

RP_{COMP} = the required risk premium on an equity investment in the comparable companies,

DCF_{COMP} = average DCF expected rate of return on a portfolio of comparable companies; and

I_B = the yield to maturity on an investment in long-term U.S. Treasury bonds.

Electric Company Ex Ante Risk Premium Analysis. For my electric company ex ante risk premium analysis, I began with the Moody's group of 24 electric companies shown in Table 1. I used the Moody's group of electric companies because they are a widely followed group of electric utilities, and use of this constant group greatly simplified the data collection task required to estimate the ex ante risk premium over the months of my study. Simplifying the data collection task was desirable because the ex ante risk premium approach requires that the DCF model be estimated for every company in every month of the study period. Exhibit 5 displays the average DCF expected return on an investment in the portfolio of electric companies and the yield to maturity on long-term Treasury bonds in each month of the study.

Previous studies have shown that the ex ante risk premium tends to vary inversely with the level of interest rates, that is, the risk premium tends to increase when interest rates decline, and decrease when interest rates go up. To test whether my studies also indicate that the ex ante risk premium varies inversely with the level of interest rates, I performed a

regression analysis of the relationship between the ex ante risk premium and the yield to maturity on long-term Treasury bonds, using the equation,

$$RP_{COMP} = a + (b \times I_B) + e$$

where:

RP_{COMP} = risk premium on comparable company group;

I_B = yield to maturity on long-term U.S. Treasury bonds;

e = a random residual; and

a, b = coefficients estimated by the regression procedure.

Regression analysis assumes that the statistical residuals from the regression equation are random. My examination of the residuals revealed that there is a significant probability that the residuals are serially correlated (non-zero serial correlation indicates that the residual in one time period tends to be correlated with the residual in the previous time period). Therefore, I made adjustments to my data to correct for the possibility of serial correlation in the residuals.

The common procedure for dealing with serial correlation in the residuals is to estimate the regression coefficients in two steps. First, a multiple regression analysis is used to estimate the serial correlation coefficient, *r*. Second, the estimated serial correlation coefficient is used to transform the original variables into new variables whose serial correlation is approximately zero. The regression coefficients are then re-estimated using the transformed variables as inputs in the regression equation. Based on my regression analysis of the statistical relationship between the yield to maturity on long-term Treasury bonds and the required risk premium, my estimate of the ex ante risk premium on an investment in my proxy electric company group as compared to an investment in long-term Treasury bonds is given by the equation:

$$RP_{COMP} = \underset{(12.96)}{12.10} - \underset{(-8.44)}{1.123} \times I_B.$$ [8] $R^2 = 39.07$ percent.

This equation suggests that the ex ante risk premium on electric utility stocks increases by more than 100 basis points when the interest rate on long-term Treasury bonds declines by

[8] The t-statistics are shown in parentheses.

100 basis points. [9] Equivalently, this regression equation suggests that the cost of equity for electric utilities declines by less than 20 basis points when the interest rate on long-term Treasury bonds declines by 100 basis points. These data demonstrate that the Board's ROE formula, which assumes that the cost of equity declines by 75 basis points when the yield to maturity on long Canada bonds declines by 100 basis points, is not appropriate for estimating the cost of equity.

Using the 2010 forecast 3.62 percent yield to maturity on long-term Canada bonds obtained from Consensus Economics as of March 2009, the regression equation produces an ex ante risk premium equal to 8.0 percent (12.1 – 1.123 x 3.62 = 8.0).

Natural Gas Company Ex Ante Risk Premium Analysis. I also conducted an ex ante risk premium study applied to a natural gas proxy group and followed the procedures described above. To select my ex ante risk premium natural gas proxy group of companies, I used the same criteria that I use when estimating the DCF cost of equity, namely, I selected all the companies in Value Line's groups of natural gas companies that: (1) paid dividends during every quarter of the last two years; (2) did not decrease dividends during any quarter of the past two years; (3) had at least three analysts included in the I/B/E/S mean growth forecast; (4) have an investment grade bond rating and a Value Line Safety Rank of 1, 2, or 3; and (5) have not announced a merger. Exhibit 6 displays the results of my ex ante risk premium study, showing the average DCF expected return on an investment

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[9] Dr. Vander Weide used the yield on long-term government bonds as the interest rate in his ex ante risk premium analyses. The unusual result that the ex ante risk premium on electric utility stocks increases by more than 100 basis points when the interest rate on long-term Treasury bonds decreases is significantly affected by the unusual capital market conditions since September 2008. Since that time, the DCF cost of equity for utilities has increased at the same time that the interest rate on long-term Treasury bonds has declined due to the active intervention of the U. S. Government to lower interest rates in the face of difficult economic conditions. The unusual result disappears if the interest rate on A-rated utility bonds is used in the regression rather than the interest rate on long-term Government bonds. Specifically, when the yield on A-rated utility bonds in the regression, the bond coefficient is -0.5918, indicating that the risk premium over A-rated utility bonds increases by approximately 60 basis points when the yield on A-rated utility bonds declines by 100 basis points. Using a forecasted yield on A-rated utility bonds equal to 6.32 percent in the regression equation produces a required risk premium over A-rated utility bonds equal to 5.1 percent and a cost of equity equal to 11.4 percent.

in the portfolio of natural gas companies and the yield to maturity on long-term Treasury bonds in each month.[10]

Based on my knowledge of the statistical relationship between the yield to maturity on long-term Treasury bonds and the required risk premium, my estimate of the ex ante risk premium on an investment in my proxy natural gas companies as compared to an investment in long-term Treasury bonds is given by the equation:

$$RP_{COMP} = \underset{(15.44)}{10.26} - \underset{(-6.20)}{7.73 \times I_B}.$$ [11] $R^2 = 23.40$ percent

This equation suggests that the ex ante risk premium on natural gas utility stocks increases by more than 75 basis points when the interest rate on long-term Treasury bonds declines by 100 basis points. Equivalently, this regression equation suggests that the cost of equity for natural gas utilities declines by less than 25 basis points when the interest rate on long-term Treasury bonds declines by 100 basis points. These data demonstrate that the Board's ROE formula, which assumes that the cost of equity declines by 75 basis points when the yield to maturity on long Canada bonds declines by 100 basis points, is not appropriate for estimating the cost of equity.

Using the 3.62 percent forecast yield to maturity on long-term Canada bonds for 2010, the regression equation produces an ex ante risk premium equal to 7.46 percent (10.26 – 7.73 x 3.62 = 7.46).

As described above, my ex ante risk premium regression analysis indicates that the cost of equity for utilities is significantly less sensitive to interest rate changes than the Board's ROE formula implies. Rather than declining by 75 basis points when the yield to maturity on long-term government bonds declines by 100 basis points, my analysis indicates that the cost of equity declines by significantly less than 50 basis points when interest rates decline by 100 basis points.

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[10] My two ex ante risk premium studies cover slightly different time periods, with the natural gas company risk premium study extending over a longer period of time, because I began doing an ex ante study using natural gas companies before I began performing a similar study for the electric companies.

[11] The t-statistics are shown in parentheses.

TABLE 1
MOODY'S ELECTRIC COMPANIES

American Electric Power
Constellation Energy
Progress Energy
CH Energy Group
Cinergy Corp.
Consolidated Edison Inc.
DPL Inc.
DTE Energy Co.
Dominion Resources Inc.
Duke Energy Corp.
Energy East Corp.
FirstEnergy Corp.
Reliant Energy Inc.
IDACORP. Inc.
IPALCO Enterprises Inc.
NiSource Inc.
OGE Energy Corp.
Exelon Corp.
PPL Corp.
Potomac Electric Power Co.
Public Service Enterprise Group
Southern Company
Teco Energy Inc.
Xcel Energy Inc.

Source of data: *Mergent Public Utility Manual*, August 2002. Of these 24 companies, I did not include three companies in my ex ante risk premium DCF analysis because there was insufficient data to perform a DCF analysis for most of my study period. Specifically, IPALCO merged with a company that is not in the electric utility industry; Reliant divested its electric utility operations; and CH Energy does not have any I/B/E/S analysts' estimates of long-term growth. In addition, Cinergy completed its merger with Duke Energy in 2006.