TESTIMONY

ON

COST OF CAPITAL

FOR THE

FORTISBC UTILITIES

Prepared by

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I. INTRODUCTION AND SUMMARY OF CONCLUSIONS

A. INTRODUCTION

My name is Kathleen C. McShane and my business address is One Church Street, Suite 101, Rockville, Maryland 20850. I am President of Foster Associates, Inc., an economic consulting firm. I hold a Masters in Business Administration with a concentration in Finance from the University of Florida (1980) and am a Chartered Financial Analyst (1989). I have testified on issues related to cost of capital and various ratemaking issues on behalf of electric utilities, local gas distribution utilities, pipelines and telephone companies in more than 200 proceedings in Canada and the U.S., including the British Columbia Utilities Commission ("BCUC" or "Commission"). My professional experience is provided in Appendix G.

On February 12, 2012, the BCUC issued Order G-20-12, which initiated the Generic Cost of Capital ("GCOC") Proceeding. In Order G-47-12, dated April 12, 2012, the Commission issued its Final Scoping Document. In Order G-72-12, issued June 1, 2012, the BCUC set out the final filing requirements for the GCOC proceeding. I have been requested by the FortisBC Utilities ("FBCU")[1] to provide an expert opinion on various cost of capital matters contained in the Final Scoping Document and final filing requirements in Order G-72-12.

B. SUMMARY OF CONCLUSIONS

My principal conclusions are as follows:

1. The allowed return must meet all three requirements of the fair return standard: comparable returns, financial integrity and capital attraction. The fair return extends to all components of the return, including the allowed capital structure, and return on equity (or "ROE"), that is, the overall return allowed must satisfy the fair return standard.

[1] FortisBC Energy Inc. ("FEI"), FortisBC Energy (Vancouver Island) Inc. ("FEVI"), FortisBC Energy (Whistler) Inc. ("FEW") and FortisBC Inc. ("FBC").

2. The economic principle guiding the fair return is the opportunity cost principle. The opportunity cost of capital represents the expected return foregone when the decision is made to commit capital to an alternative investment of comparable risk. It represents the return that investors require to commit capital to a specific investment and the cost to the firm of attracting and retaining capital. Satisfying the fair return standard means allowing a return commensurate with the opportunity cost of capital.

3. Satisfying the comparable return requirement of the fair return standard requires consideration of returns available to comparable utilities in the U.S., given the similarity of operating and regulatory environments, the integration of the two capital markets, and the small number of Canadian utilities with equity market data.

4. The capital structure and the fair ROE are inextricably linked. The fair ROE for a specific utility cannot be estimated independently of its capital structure, a fair ROE is a function of capital structure.

5. With regard to the benchmark BC utility:

   a. The purpose of designating a utility as the benchmark is partly for efficiency, i.e. to be able to assess factors that are common to all utilities in a single process, and partly to provide a foundation to ensure that the allowed returns of all affected BC utilities appropriately reflect their relative business risk.

   b. In light of these objectives, the Commission should designate a specific utility as the benchmark utility.

c. The benchmark utility represents the point of reference against which other utilities can be compared. The designated benchmark utility need not be the lowest business risk utility.

d. FEI is the logical choice to serve as the benchmark BC utility.

e. My recommendations for capital structure and fair ROE are premised on FEI as the benchmark BC utility.

6. With respect to broad cost of capital trends since the end of the oral portion of the 2009 Application ("2009 Application") which bear on the fair return:

a. Risks to the global financial system, as assessed by the Bank of Canada, are as high in mid-2012 as they were at the end of 2009.

b. There has been a material reduction in long-term Government of Canada bond yields. This decline largely reflects a confluence of factors, including deterioration in the global economic outlook, the Bank of Canada's decisions to maintain its overnight rate at historically low levels, investor flight to quality, i.e., away from riskier assets including equities, and a decreasing global pool of safe haven assets. The reduction in long-term Government of Canada bond yields since the end of the oral portion of 2009 Application has little, if any, correlation with trends in the market cost of equity.

c. Although the absolute level of yields on long-term A-rated Canadian utility bonds has declined, the spread between those yields and the yield on long-term Government of Canada bonds is somewhat higher than it was at the end of the oral portion of the 2009 Application. The somewhat higher recent spreads indicate that investors view the risk associated with

A-rated utility bonds to be no less than at the end of the oral portion of the 2009 Application.

d. As of mid-2012, the level of the equity markets is little changed from the end of the oral portion of the 2009 Application, equity market volatility is similar and investor confidence levels are lower. Equity market indicators point to a higher current market cost of equity than at the end of the oral portion of the 2009 Application. In combination with the decline in long-term Government of Canada bond yields, the equity market risk premium is even higher.

e. The persistently unsettled capital markets and the unstable relationships between the utility cost of equity and Government bond yields make it difficult to construct an ROE automatic adjustment mechanism that would successfully capture changes in the utility cost of equity.

f. My estimate of a fair ROE for the benchmark BC utility is based on the premise that the allowed ROE will remain unchanged for at least three years. As a result, my equity risk premium tests are based on forecasts of long-term Government of Canada bond yields for 2013-2015.

7. With respect to capital structure, the analysis of the factors relevant to capital structure lead to my conclusion that FEI's current deemed common equity ratio of 40% should be viewed as the lower end of a reasonable range. Specifically:

a. The common equity ratio for FEI, the benchmark BC utility, should, in conjunction with the returns allowed on the various sources of capital, provide the basis for debt ratings in the A category.

b. The allowed common equity ratio should be compatible with FEI's business risk. The level of business risk, in the aggregate, to which FEI is

exposed is no lower, and may be somewhat higher, than when it was last assessed in 2009. In the context of the trend in business risk, FEI's current deemed 40% common equity ratio remains at the lower end of a reasonable range, consistent with my assessment in the 2009 Application.

c. FEI's credit metrics at the current capital structure remain weak for its rating and are weaker than both its Canadian and U.S. peers, with which it competes for capital.

d. Moody's has strengthened its capital structure guidelines. FEI's current allowed common equity ratio is no longer within an investment grade rating category.

e. There have been a number of increases in allowed common equity ratios for FEI's Canadian utility peers since the oral portion of the 2009 Application. The across-the-board increase by the Alberta Utilities Commission ("AUC") was based on changed capital market conditions and credit metrics considerations, not changes in business risk of the specific utilities. The AUC's rationale for the increase would have been equally applicable to FEI, supporting, at a minimum, the retention of FEI's current 40% deemed common equity ratio.

8. The fair return on equity for FEI as the benchmark BC utility was estimated at 10.5%, based on a 40% common equity ratio, and reflects the following:

a. The recommended return on equity is based on the results of equity risk premium, discounted cash flow and comparable earnings tests.

b. A forecast 30-year Government of Canada bond yield for 2013-2015 of 4.0%.

c. The application of three separate equity risk premium tests.

d. The application of several models of the discounted cash flow ("DCF") test to a sample of U.S electric and gas utilities, as well as to a sample of Canadian utilities.

e. The addition to each of the market-based equity risk premium and DCF tests of a minimum 0.50% allowance for financing flexibility, sufficient to notionally allow a utility to maintain the market value of its investment at a small premium to book value.

f. The application of the comparable earnings test to a sample of relatively low risk unregulated Canadian firms.

g. The results of the tests, as summarized in Table 1 below:

Table 1

Cost of Equity Test	"Bare-bones" Cost of Equity	Financing Flexibility Adjustment	Return on Equity
Risk Premium Tests:			
Risk-Adjusted Equity Market	9.0%	0.50%	9.5%
Discounted Cash Flow-Based	9.6%	0.50%	10.1%
Historic Utility	10.5%	0.50%	11.0%
Discounted Cash Flow Test	9.4%	0.50%	9.9%
Comparable Earnings Test	N/A	N/A	11.5%

h. The specific weight to be given the comparable earnings test versus the market-based (equity risk premium and discounted cash flow) tests is largely a matter of judgment. The comparable earnings test is, in my opinion, entitled to significant weight. When preponderant weight is given to the market-based tests, the fair ROE for the benchmark BC utility, i.e., FEI, is approximately 10.5%.

i. Alternatively, should only the market-based tests be relied upon (equity risk premium and discounted cash flow), a reasonable allowance for financing flexibility is 1.0%, reflecting the mid-point of a range of the minimum 0.50% described above to 1.50%. The upper end of the range represents full recognition of the disparity between the levels of financial risk in the market value capital structures and utility book value capital structures. The alternative approach also supports a fair ROE on the book value of common equity for FEI as the benchmark BC utility of 10.5%.

9. In the limited scenarios where a deemed cost of long-term and/or short-term debt may be warranted, I recommend that the Commission continue to address the appropriate cost on a case-by-case basis. There is no "one size fits all" cost that should be determined by means of an interest automatic adjustment mechanism.

10. There is no generic methodology or mechanism that can be used to set each utility's ROE and common equity in relation to the benchmark BC utility's ROE and common equity ratio. Each utility should be afforded the opportunity to tender and support the evidence it determines to be supportive of its requested capital structure and equity risk premium relative to the benchmark BC utility.

II. FAIR RETURN STANDARD

The standards for a fair return arise from legal precedents[2] which are echoed in numerous regulatory decisions across North America, including the Commission's *2009 ROE Decision.*[3] A fair return gives a regulated utility the opportunity to:

1. earn a return on investment commensurate with that of comparable risk enterprises;
2. maintain its financial integrity; and,
3. attract capital on reasonable terms.

The legal precedents make it clear that the three requirements are separate and distinct. The fair return standard is met only if all three requirements are satisfied. In other words, the fair return standard is only satisfied if the utility can attract capital on reasonable terms and conditions, its financial integrity can be maintained ***and*** the return allowed is comparable to the returns of enterprises of similar risk. The BCUC has recognized that the comparable return requirement is distinct from the capital attraction standard, specifically:

> The Commission Panel accepts the relevance of two separate standards namely the capital attraction standard and the comparable returns standard in establishing a fair return on equity for a benchmark low-risk utility. One standard does not trump the other, neither is one subsumed by the other.[4,5]

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[2] The principal seminal court cases in Canada and the U.S. establishing the standards include *Northwestern Utilities Ltd.* v. *Edmonton (City)*, [1929] S.C.R. 186; *Bluefield Water Works & Improvement Co. v. Public Service Commission of West Virginia,(262 U.S. 679, 692 (1923))*; and, *Federal Power Commission v. Hope Natural Gas Company (320 U.S. 591 (1944))*.

[3] British Columbia Utilities Commission, *In the Matter of Terasen Gas Inc. Terasen Gas (Vancouver Island) Inc. Terasen Gas (Whistler) Inc. and Return on Equity and Capital Structure Decision,* December 16, 2009, page 15, hereafter referred to as *2009 ROE Decision.*

[4] BCUC, *In the Matter of Terasen Gas Inc. and Terasen Gas (Vancouver Island) Inc., Application to Determine the Appropriate Return on Equity and Capital Structure and to Review and Revise the Automatic Adjustment Mechanism, Decision,* March 2, 2006, page 48, hereafter referred to as *2006 ROE Decision*.

[5] The AUC recognized that the requirements of the fair return standard are separate and distinct:

> The Commission notes with approval the following description by the ATCO Utilities of how the three factors or criteria of the fairness standard are assessed:
>
> In the ATCO Utilities' view, the assertion that the three-part test is "simply three ways of looking at the same thing" fails to recognize the critical fact that there are differing tests which help to "triangulate" a Fair Return. Each may have greater or lesser relevance depending upon the economic landscape upon which the tests are conducted. The frailty of reliance on only a single leg of the three legged stool for stability and

Further, as the Federal Court of Appeal held in *TransCanada PipeLines Ltd. v. National Energy Board et al.*, [2004] F.C.A. 149, the required rate of return must be based on the cost of equity. The impact on customers of any rate increases cannot be a factor in the determination of the cost of equity capital.[6]

A fair return on the capital provided by investors not only compensates the investors who have put up, and continue to commit, the funds necessary to deliver service, but benefits all stakeholders, including ratepayers. Fair compensation on the capital committed to the utility provides the financial means to pursue technological innovations and build the infrastructure required to support long-term growth in the underlying economy. An inadequate return, on the other hand, undermines the ability of a utility to compete for investment capital. Moreover, inadequate returns act as a disincentive to necessary expansion and innovation, potentially degrading the quality of service or depriving existing customers from the benefit of lower unit costs that might be achieved from growth. In short, if a utility is not provided the opportunity to earn a fair return, it may be prevented from making the requisite level of investments in the existing infrastructure in order to reliably provide utility services to its customers. In this context, it also bears noting that the lowest possible return is not an appropriate test, as the Commission has recognized:

> As for the JIESC's lowest cost argument, the Commission Panel shares the view of the NEB, which recognized that "lowest possible" was not the appropriate test when it stated, at page 25 of its RH-2-94 Decision on generic cost of capital:
>
> > "Contrary to what some parties advocated during the hearing, the Board is of the view that it is not appropriate to over-leverage a pipeline in order to identify the minimum acceptable deemed common equity ratio possible."[7]

reliability of the result over changing economic conditions should be obvious. (Alberta Utilities Commission, *2009 Generic Cost of Capital, Decision 2009-216*, November 12, 2009, page 28)

[6] The Commission accepted this principle in 2006 ROE Decision, page 8, stating: "In coming to a conclusion of a fair return, the Commission does not consider the rate impacts of the revenue required to yield the fair return. Once the decision is made as to what is a fair return, the Commission has a duty to approve rates that will provide a reasonable opportunity to earn a fair return on invested capital." In BCUC, *An Application by Pacific Northern Gas Ltd. (PNG-West and Granisle) for Approval of 2006 Rates, Reasons for Decision,* August 21, 2006, page 25, the Commission stated that it "agrees with PNG that 'affordability' is not a test under the Act or the relevant case law and that it is a vague, relative and potentially shifting concept."

[7] BCUC, *2006 ROE Decision*, page 8.

III. STAND-ALONE PRINCIPLE

Under the stand-alone principle:

> a utility is regulated as if the provision of the regulated service were the only activity in which the company was engaged. The cost of providing utility service and rates for provision of that service are to reflect only the expenses, capital costs, risks and required returns associated with the provision of regulated service (National Energy Board, *Reasons for Decision, TransCanada PipeLines Limited, RH-R-1-2002, Review of RH-4-2001 Cost of Capital Decision*, February 2003, page 25).

The stand-alone principle encompasses the notion that the cost of capital incurred by a utility should be equivalent to that which would be faced if it was raising capital in the public markets on the strength of its own business and financial parameters; in other words, as if it were operating as an independent entity. The cost of capital for the company should reflect neither subsidies given to, nor taken from, other activities of the firm. Respect for the stand-alone principle is intended to promote efficient allocation of capital resources among the various activities of the firm. Adherence to the stand-alone principle ensures that the focus of the determination of a fair return is on the use of capital, i.e., their opportunity cost, not the source of the capital. The opportunity cost of capital reflects the return that could be earned if that capital were invested in an alternative venture of similar risk.

The stand-alone principle, a cornerstone of Canadian utility regulation with a history dating to at least 1978,[8] and has been respected by virtually every Canadian regulator, including the BCUC, in setting both regulated capital structures and allowed rates of returns on equity.[9]

[8] Public Utilities Board of Alberta, *In the Matter of The Alberta Gas Trunk Line Company Act*, Decision C78221, December 21, 1978, pages 19-27.

[9] The stand-alone principle has been recognized by the BCUC by adopting capital structures and ROEs for the individual utilities it regulates that reflect the risks of those utilities, rather than the risks of their intermediate or ultimate parents, e.g., *2006 ROE Decision* and *2009 ROE Decision*.

IV. RELATIONSHIP BETWEEN CAPITAL STRUCTURE AND RETURN ON EQUITY

The economic principle guiding the fair return is the opportunity cost principle. The opportunity cost of capital represents the expected return foregone when a decision is made to commit capital to an alternative investment of comparable risk. It represents the return investors require to commit capital to a specific investment and the cost to the firm of attracting and retaining capital. Satisfying the fair return standard means allowing a return commensurate with the opportunity cost of capital.

A utility's overall cost of capital represents the weighted average cost of the various sources of capital that it uses to finance its rate base assets. The weights represent the proportion of each source of funds used to finance the rate base assets and the cost of each source of funds represents what the company must pay for each type of capital it uses, including debt and common equity.

For utilities that are regulated on an original cost rate base, as is typical in Canada, including BC, and the U.S., in most cases, the cost of debt is an embedded cost, or weighted average of the costs that were determined at the time the debt was issued.

The utility cost of equity is a forward-looking cost, which, in accordance with the opportunity cost principle articulated above, represents the return that an equity shareholder expects to earn on an equity investment. It also represents the return that an equity investor requires in order to commit equity funds to or retain equity funds in an equity investment. From the perspective of the firm, it represents the cost that must be paid in order to attract and retain equity funding.

The overall cost of capital to a firm depends, in the first instance, on business risk. Business risk comprises the fundamental characteristics of the business and the political/regulatory operating environment that together determine the probability that future returns (including the return on and of the capital invested) to investors will fall short of their expected and required returns. Business risk thus relates largely to the assets of the firm.

304

305 The cost of capital is also a function of financial risk. The use of debt in a firm's capital
306 structure creates a class of investors whose claims on the cash flows of the firm take precedence
307 over those of the equity holder. Financial risk refers to the additional risk that is borne by the
308 common equity shareholder because the firm is using debt to finance a portion of its assets. The
309 capital structure, comprised of debt and equity, can be viewed as a summary measure of the
310 financial risk of the firm. Since the issuance of debt carries unavoidable servicing costs which
311 must be paid before the equity shareholder receives any return, the potential variability of the
312 equity shareholder's return rises as more debt is added to the capital structure. Thus, as the debt
313 ratio rises, the cost of equity rises. As a result, the cost of equity, and thus the fair ROE depends
314 on the capital structure.
315
316 There are effectively three approaches that can be used to determine the fair return. The first two
317 approaches entail separate determinations of capital structure and return on equity. The third
318 approach establishes an overall allowed rate of return without separately specifying the capital
319 structure and return on equity.
320
321 The first approach either accepts the utility's actual capital structure for regulatory purposes or
322 deems a capital structure that does not necessarily equate the total (fundamental business,
323 regulatory and financial) risk of the "subject" regulated company to those of the proxy
324 companies used to estimate the cost of equity. If, at the subject utility's actual or deemed capital
325 structure, its total (business and financial) risk is higher or lower than that of the proxy
326 companies, the proxies' estimated cost of equity needs to be adjusted upward or downward to
327 arrive at the cost of equity of the specific utility.
328
329 The second approach assesses the utility's fundamental business and regulatory risks, and then
330 establishes a capital structure that will equate its total risk with that of the proxy companies.
331 This approach permits the application of the proxy companies' cost of equity without adjustment
332 for differential total risk.
333

The third approach establishes the overall return (combining capital structure, cost of debt and cost of equity) for proxy companies and applies that overall return to the subject company, adjusted as warranted for differences in total risk between the subject utility and the proxy companies.

All three approaches have been taken by regulators in Canada. The first approach has been used by the BCUC, the Ontario Energy Board (OEB),[10] and the Régie de l'énergie du Québec (Régie).[11] The second approach has been used by the AUC (and its predecessor)[12] and the National Energy Board (NEB).[13] The third approach has also been utilized by the NEB in setting the allowed return on rate base for Trans Québec and Maritimes Pipelines Inc.[14]

The three approaches are equally valid as long as the overall return, i.e., the combination of capital structure and return on equity in the first two approaches, satisfies all three fair return requirements.

In summary, the various components of the cost of capital are inextricably linked; it is impossible to determine if the return on equity is fair without reference to the capital structure of the utility. Thus, the determination of a fair return must take into account all of the elements of the cost of capital, including the capital structure and the cost rates for each of the types of financing. It is the overall return on capital which must meet the requirements of the fair return standard.

[10] The Ontario Energy Board historically awarded different returns on equity and capital structures for Enbridge Gas Distribution, Natural Resource Gas and Union Gas.

[11] The Régie has awarded different capital structures and returns on equity for Gazifère, Gaz Métro and Hydro Québec Distribution and Transmission.

[12] Alberta Energy and Utilities Board, *Generic Cost of Capital, Decision 2004-052,* July 2, 2004, Alberta Utilities Commission (AUC), *2009 Generic Cost of Capital, Decision 2009-216,* November 12, 2009 and AUC, *2011 Generic Cost of Capital, Decision 2011-47,* December 8, 2011.

[13] National Energy Board, *Reasons for Decision, Cost of Capital, RH-2-94,* March 1995

[14] National Energy Board, *Reasons for Decision, Trans Québec and Maritimes Pipelines Inc., RH-1-2008,* March 2009.

V. THE BENCHMARK UTILITY

A. PURPOSE OF BENCHMARK UTILITY

The objective of specifying a benchmark utility is to have a point of reference against which the regulator can compare other utilities under its jurisdiction for the purpose of setting their allowed returns (capital structure and ROE) without conducting a "from first principles" cost of capital proceeding for each one.[15] A "from first principles" proceeding entails a comprehensive review of capital market and economic conditions and the application of the various traditional tests for estimating the fair return on equity. By designating one utility as the benchmark, the Commission can conduct a single "from first principles" cost of capital proceeding, from which it can establish an appropriate common equity ratio and ROE for that benchmark utility. Those two parameters, common equity ratio and ROE, then become the benchmarks for the remaining utilities' allowed common equity ratios and ROEs.

The designation of one utility as the benchmark utility is partly a matter of efficiency, i.e., it avoids frequent reassessment of factors that are common to all utilities.[16] In addition, it provides a means of ensuring that all the utilities subject to the jurisdiction of the Commission are awarded overall returns that appropriately reflect their business risk relative to the benchmark utility, and, in turn, relative to each other.

Given both objectives, it makes most sense to designate a specific utility as the benchmark utility, rather than to rely on a hypothetical construct or hypothetical utility as the benchmark. By designating a specific real utility as the benchmark, that utility's business risks can used as a

[15] When comparable companies are initially selected for the purpose of the estimating a "benchmark" ROE, the concept of "benchmark utility" is *per force* a hypothetical construct, inasmuch as the estimated benchmark return reflects the composite of the risks of the selected companies, each of which, individually, has different characteristics. The resulting benchmark return is applicable to an actual utility, designated as the benchmark utility, which has specific risk characteristics that provide a single tangible foundation for making inter-utility comparisons.

[16] In the 2009 Application, FortisBC Inc. summarized the advantages of a benchmark (cited by the Commission in the *2009 ROE Decision*) as (1) cost savings to the Commission and to Intervenors in avoiding additional, unnecessary hearings; the evidence related to economic outlook and capital market conditions need not be presented nor heard more than once; (2) a consistent approach to economic outlook and capital market conditions, considered with reference to expert evidence gathered at a single point in time; and (3) and greater consistency with respect to ROE determinations for individual utilities from a common base.

baseline for assessing the relative risks of the other utilities in the jurisdiction. The concept of a hypothetical utility is too ambiguous to serve as a meaningful yardstick for the purpose of comparing business risks of utilities. It is not feasible to delineate the "generic" business risk characteristics of a hypothetical utility, be it a "low", "average" or "high" business risk utility, to an extent that would permit specifying what capital structure and ROE should apply to the hypothetical utility.

Every utility has unique business risk characteristics that are a function of: (1) the utility sector in which it operates; (2) the nature and age of its assets; (3) the geographic characteristics of its service area; (4) the economic characteristics of its service area; (5) its customer profile; (6) the political landscape; and (7) the regulatory framework under which it operates. The specifics of these broad factors interact to define an individual utility's aggregate market/demand, competitive, operating, supply and regulatory risks. While it might be fair to conclude that, as a general proposition, an electric transmission utility is a "low business risk" utility compared to other utilities operating in other sectors, it would still be necessary to identify and understand a particular electric transmission utility's specific circumstances in order to specify what the appropriate capital structure and ROE would be for that utility. In sum, it is not practical to determine an appropriate capital structure and fair ROE for a fictitious utility.

B. CHOICE OF BENCHMARK UTILITY

The benchmark utility is simply the entity that serves as the standard or point of reference against which other utilities can be compared. The utility designated the benchmark utility need not be the lowest business risk utility in the province. It is no more difficult to subtract percentage points of equity or basis points of incremental equity risk premium from the ROE or the equity ratio of the benchmark utility than it is to add them.

The utility designated as the benchmark against which other utilities will be compared should preferably be a large, well established entity, with a relatively diverse geographic, customer and asset base, and no exceptional risk characteristics. Ideally, the designated benchmark utility will

411 have market data that will provide an independent capital market assessment of its risks and
412 return requirements.
413
414 FEI is the logical choice to serve as the benchmark BC utility. FEI is the largest investor-owned
415 utility in British Columbia, is one of the largest gas distribution utilities in the country, and has a
416 relatively diverse geographic, customer and asset base. It has no exceptional business risk
417 characteristics that are likely to make comparisons with other BC utilities problematic. Although
418 FEI's equity is not publicly traded, its debt is rated by two debt rating agencies, providing some
419 independent capital market assessment of its overall business and financial risks, albeit from a
420 bondholder's perspective.[17] Further, its business risks and the trends in those risks have been
421 extensively and comprehensively assessed by the Commission in multiple proceedings.
422
423 FEI is currently part of the FortisBC Energy Utilities' Common Rates, Amalgamation and Rates
424 Design Application, which, if it is approved and it proceeds, will result in an amalgamation of,
425 and postage stamp rates for, FEI, FEVI and FEW. The proposed amalgamation does not
426 invalidate designating FEI as the benchmark BC utility, as comparisons with other BC utilities
427 can be made based on the characteristics of FEI pre-amalgamation for purposes of establishing
428 their cost of capital by reference to the benchmark utility. In addition, FEI pre-amalgamation
429 can be used as the benchmark utility for establishing the cost of capital for FEI Amalco, should
430 amalgamation proceed. Whether FEI Amalco should be designated the benchmark utility (if
431 amalgamation proceeds) can be resolved in a future proceeding.
432
433 The analysis that follows determines an appropriate capital structure and fair return on equity for
434 FEI pre-amalgamation as the benchmark BC utility.
435
436

[17] Although bondholders and equity shareholders would consider the same business risks (and financial risks), the bondholders not only have a prior claim on the assets and earnings of the company, but also may benefit from protective covenants in the bond indentures. As a result, it would be incorrect to assume that the equity risks of two regulated companies with A rated debt are the same.

VI. TRENDS IN ECONOMIC AND CAPITAL MARKET CONDITIONS SINCE 2009

This section addresses broad trends in cost of capital since the oral portion of the 2009 Application that ended October 1, 2009. In simple terms, the purpose of this section is to compare the current state of, and risks in, the markets where the costs of the various forms of capital are determined compared to the end of the oral portion of the 2009 Application. It is also intended to provide an appreciation of the protracted nature of the recovery from the global financial crisis and economic recession and of the recurrent bouts of capital market turbulence in the intervening 2¾ years.

In brief, as of the end of June 2012:

1. The systemic risks to the global financial system, as assessed by the Bank of Canada, are no lower than they were at the end of 2009.

2. Long-term Government of Canada bond yields are much lower than they were at the end of the oral portion of the 2009 Application. The reduction reflects a confluence of factors, including weak global economic conditions, central bank decisions to keep short-term interest rates low, investor risk aversion/flight to safety and a shrinking pool of risk-free assets. The trend in long-term Government of Canada bond yields is not indicative of the trend in the market cost of equity.

3. Yields on high grade Canadian corporate bonds have also fallen, largely tracking the decline in long-term Government of Canada bond yields. Spreads on high grade corporate bonds, including utility bonds, are slightly higher than they were at the end of the oral portion of the proceeding, indicating that the credit risk is not perceived to have declined.

4. Investor confidence is lower, equity market volatility is similar and the indicated market cost of equity is higher than it was at the end of the oral portion of the 2009 Application.

When the 2009 Application that culminated in the *2009 ROE Decision* (December 2009) commenced in May 2009, recovery from the global financial crisis was underway. Governments world-wide had already begun to take extraordinary steps, using both monetary and fiscal policy tools, to stabilize the capital markets and real economies. By the close of the oral portion of the 2009 Application:

1. The 10-year and 30-year Government of Canada bond yields, which had fallen to lows of approximately 2.6% and 3.3% respectively during the crisis, hovered around 3.3% and 3.8% at the beginning of October 2009. The September 2009 Consensus Economics, *Consensus Forecasts* anticipated that the 10-year Canada bond yield would increase to 3.9% over the next year, suggesting a forecast 30-year Canada bond yield of approximately 4.4%.

2. Spreads on investment grade long-term corporate debt (measured by the DEX Long Corporate Index) had sky-rocketed from close to 100 basis points in early 2007 to almost 400 basis points in December 2008. By the beginning of October 2009, the spreads had retreated to just over 200 basis points.

3. Spreads on the Bloomberg 30-year Canadian A-rated utility bond index, which had averaged approximately 95 basis points between 2003 and 2007, jumped to a peak of over 300 basis points in December 2008, recovering to around 145 basis points at the beginning of October 2009, corresponding to a yield of 5.3%.

4. The S&P/TSX Index had plummeted by 50% from late May 2008 to early March 2009. By October 1 2009, the equity market had recovered significantly, moving

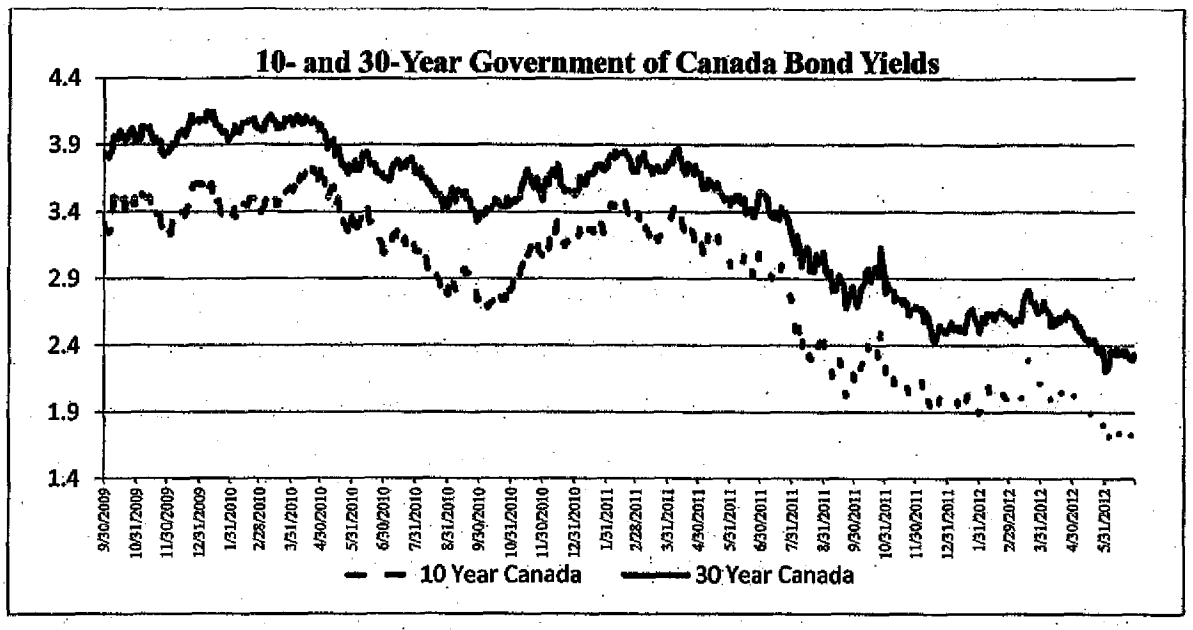
up almost 50% from the market trough. While the market was still over 25% below its 2008 peak, investor confidence had been on an upward trajectory.[18]

5. In early June 2009, Finance Minister Jim Flaherty announced that there were cautious signs that the Canadian economy, which had been in recession since 2008Q4, had stabilized. The September 2009 Consensus Economics, *Consensus Forecasts* anticipated positive real GDP growth in 2009Q4, and 2.4% growth in 2010.

From the close of the oral portion of the 2009 Application to April 2010, economic and financial market conditions in Canada continued to improve. Real GDP growth rates in Canada in 2009Q4 and 2010Q1 were 4.9% and 5.5% respectively. Between December 2009 and April 2010, long-term Canada bond yields hovered within a fairly narrow range of 3.9% to 4.2%. Chart 1 below shows the trends in 10-year and 30-year Government of Canada bond yields from the end of 2009Q3 to the end of June 2012.

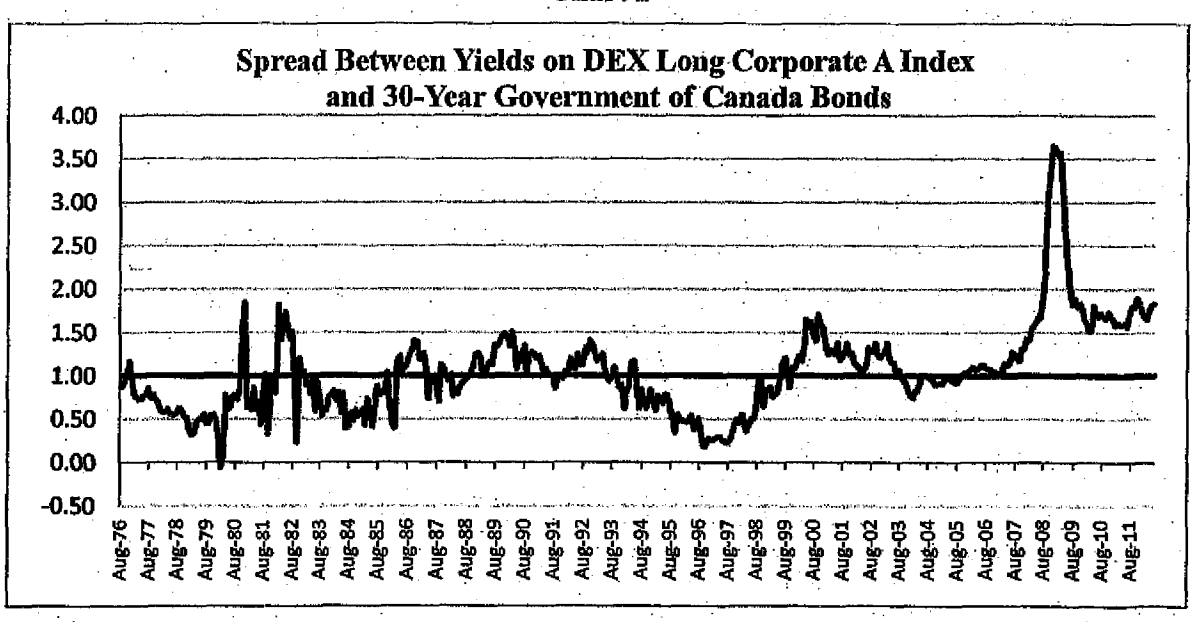
[18] As measured by the State Street Investor Confidence Global and North American Indices, which represent a quantitative assessment of investors' risk appetite, by measuring the actual and changing levels of risk contained in investment portfolios. The indices use "the aggregated portfolios of the world's most sophisticated investors, representing approximately 15 percent of the world's investable securities." The higher the index value is, the higher is investor confidence. A level of 100 is considered neutral, that is, it represents the level at which investors are neither increasing nor decreasing their allocations to risky assets. At the end of September 2009, the Global and North American index levels were 118 and 114 respectively, compared to 95 and 86 at the March 2009 equity market trough.

Chart 1



The spread between A-rated corporate and long-term Canada bond yields, having narrowed from the March 2009 peak of 360 to 190 basis points at the end of September 2009, contracted further. The spread reached 150 basis points at the end of April 2010, still well above the pre-crisis long-term average of less than 100 basis points. Chart 2 below sets out the spreads since 1976, the first year that 30-year Government of Canada bond yields were reported.

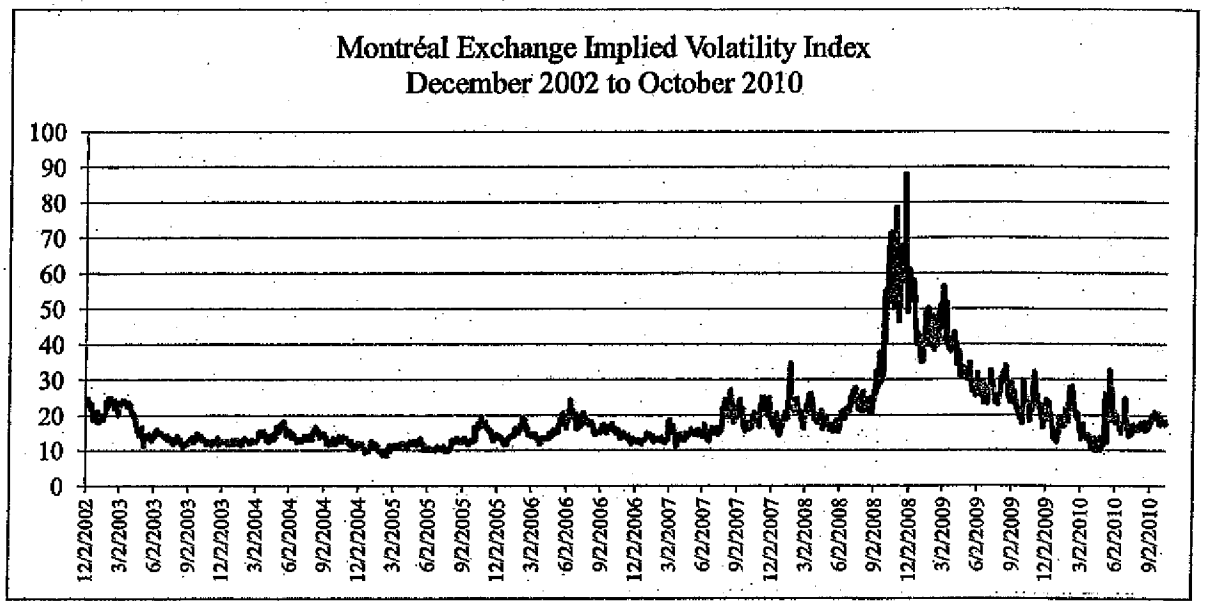
Chart 2



The corresponding spread between the Bloomberg 30-year A-rated utility bond index and the 30-year Canada bond had also contracted to approximately 130 basis points at the end of April 2010 (yield of 5.3%).

The equity market's recovery from its March 2009 trough had continued; the S&P/TSX Composite Index ended April 2010 approximately 20% below its 2008 peak. Expected equity market volatility, as measured by the Implied Volatility Index ("MVX"), had fallen to below pre-crisis average levels. Chart 3 below tracks the MVX from its inception in December 2002 until mid-October 2010.[19]

Chart 3



In May 2010, the sovereign debt crisis in Europe erupted. As the Bank of Canada noted in its June 2010 *Financial System Review*, "mounting concerns over fiscal sustainability in some euro-area member states and the exposure of global banks to sovereign risk erupted into a period of severe stress in international financial markets....". With Government of Canada bonds increasingly viewed as a safe haven alternative to U.S. Treasuries, a flight to quality exerted

[19] The MVX, introduced by the Montréal Stock Exchange in 2002, measured the market expectation of stock market volatility over the next month. It has been described as a good proxy of investor sentiment for the Canadian equity market: the higher the index, the greater the risk of market turmoil. A rising index reflects the heightened fears of investors for the coming month. The MVX was replaced by a somewhat different measure of implied volatility, called the S&P/TSX 60 VIX Index (VIXC), in October 2010, with historical data available from October 1, 2009. Similar to the MVX, the VIXC measures the market's expectation of stock market volatility over the next month.

downward pressure on Canada bond yields. Foreign investors acquired over $11 billion of Government of Canada bonds in May 2010,[20] helping to push long-term Canada bond yields to their lowest level since April 2009. At the end of May 2010, the yield on long-term Government of Canada bonds had fallen to 3.73%. The corresponding yields on the Bloomberg 30-year A-rated utility index had not changed materially (yield of 5.36%), pushing the A-rated utility/government bond yield spread to close to 165 basis points.

In its June 2010 *Financial System Review*, the Bank considered that, despite the momentum gained in the domestic and global economic recovery, the strengthening of the Canadian financial system and the fact that "bold policy actions taken by European governments and central banks, with international support, succeeded in heading off a full-blown crisis of confidence" the risks to Canadian financial stability had increased during the prior six months.

The strength in the Canadian economy during the first part of 2010 led the Bank of Canada to raise its target overnight rate three times between June and September (from 0.25% to 1.0%). However, in October 2010, the Bank of Canada announced that the economic outlook for Canada had changed and it expected growth to be more muted and the global recovery more gradual than previously forecasted. The changed economic outlook led the Bank of Canada to leave its target overnight rate (at a historically low 0.25%) unchanged, leaving significant monetary stimulus in place, and to conclude that "any further reduction in monetary policy stimulus would need to be carefully considered."[21] The Bank's statements led economists to conclude that there would likely be no further reduction in monetary policy stimulus before mid-2011.[22]

The relatively modest expected pace of growth reflected a combination of domestic factors (high household debt, which limits consumer spending) and international factors (e.g., the weak labour and residential real estate markets in the U.S., the strained balance sheets of banks and governments in Europe and related austerity programs in those countries, as well as constraints on export growth arising from a combination of tempered growth abroad, the high Canadian dollar and relatively weak productivity).

[20] Statistics Canada, *Canada's International Transactions in Securities*, May 2010.
[21] Bank of Canada, *Monetary Policy Report*, October 2010.
[22] Consensus Forecasts, *Consensus Economics*, November 2010.

In its December 2010 *Financial System Review*, the Bank of Canada again assessed the risks to the Canadian financial system, summing up those risks as follows:

1. Sovereign debt concerns in several countries;
2. Financial fragility associated with the weak global economic recovery;
3. Global imbalances;[23]
4. The potential for excessive risk-taking behaviour arising from a prolonged period of exceptionally low interest rates in major advanced economies; and
5. High leverage of Canadian households.

In all but one (potential for excessive risk-taking behaviour) of these categories, the Bank of Canada concluded that the risks to the Canadian financial system had risen over the previous six months. The nature of most of these risks, like the financial crisis itself, underscores the extent to which economies and capital markets globally are inter-twined.

With the Bank of Canada and other central banks maintaining their policy rates at historically low levels to stimulate economic growth, expectations that the global recovery would be protracted, along with rising risks from global sovereign debt, particularly in Europe and the U.S., and continued strong inflows into Canadian bonds,[24] Government of Canada bond yields drifting downward during the latter half of 2010, as did forecast yields.[25] At the end of 2010, the yield on the 30-year Government of Canada bonds was 3.5%; the corresponding yield on the Bloomberg 30-year A-rated utility index had also declined, to just below 5%.

[23] Global imbalances refer to imbalances between savings and investment in the world economies, as reflected in the significant distortions among current account balances, e.g., the large and persistent current account deficit in the U.S. and surplus in China.

[24] On average over the period 2009-2011 non-residents acquired government of Canada bonds at a rate of approximately $6.8 billion a month compared to approximately $1.0 billion per month in 2004-2006. At the end of 2011, foreign holdings were 26% compared to 13% in 2006.

[25] In May 2010, Consensus Economics, *Consensus Forecasts*, had anticipated that the 10-year Government of Canada bond would yield 3.8% and 4.2% three and twelve months forward; in November 2010, the corresponding forecasts had dropped to 2.8% and 3.3%.

As 2011 unfolded, despite headwinds from the ongoing sovereign debt vulnerabilities in Europe and the complications of a two-speed global economic recovery (i.e., modest growth in advanced economies versus emerging economies at risk of overheating), the Canadian economy appeared poised to advance at a steady, but modest pace. GDP growth in Canada in both the fourth quarter of 2010 and the first quarter of 2011 had been stronger than anticipated. From their third quarter 2010 low of 3.33%, long-term Canada bond yields gradually shifted upward, peaking in early second quarter 2011 at 3.87%. Similarly, the downward trend in forecast Canada bond yields reversed; the consensus forecast of the twelve-month forward 10-year Canada increased each month between November 2010 and April 2011.

In its June 2011 *Financial System Review*, the Bank of Canada noted decreased risk aversion in financial markets, evidenced by low yields on and record bond issuance in high yield (non-investment grade) debt, as well as low volatility in the equity markets. Nevertheless, in the Bank's view, risks to the financial system were still higher than in their six month earlier assessment, as the risk associated with global sovereign debt had edged higher and the risk associated with the low interest rate environment in advanced economies had increased with the growing popularity of riskier securities and strategies in both Canadian and global markets.

The decrease in investor risk aversion can be seen in the decline in yields on high yield Canadian bonds. High yield bonds are considered to have characteristics of both debt and equity, the latter due in large part to their higher default risk, higher sensitivity to the business cycle and closer connection to the underlying fundamental risks of the issuers than high grade corporate bonds. The yield on the DEX Overall High Yield Bond Index, designed to be a broad measure of the Canadian non-investment grade fixed income market, had fallen from 8.2% at the beginning of October 2009 to an average of 6.7% during 2011Q2.

By July 2011, market sentiment had started to shift. In the July 2011 *Monetary Policy Report*, the Bank of Canada pointed to several developments weighing on investor sentiment, including:

1. declines in equity market prices in both advanced and emerging economies during the prior three months in reaction to increasing uncertainty over the strength of the global recovery;

2. some deterioration in corporate credit markets;

3. a sharp reduction in bond issuance; and

4. shifting of capital into perceived safe haven assets and currencies, putting downward pressure on government bond yields in major advanced economies.

By the end of August 2011, 10-year and 30-year Canada bond yields had fallen to 2.5% and 3.1% respectively. The Bloomberg 30-year A-rated utility index yield had also declined (to 4.7%), but not as sharply. In contrast, the yield on the DEX Overall High Yield Bond Index, which had been yielding 6.5% in March and April 2011, had risen to 7.8%.

Over the next few months, a number of the risks with which the Bank of Canada had expressed concern in earlier reports were experienced. In its October 2011 *Monetary Policy Report*, the Bank of Canada referenced the acute fiscal and financial strains in Europe and concerns about the strength of global economic activity that had led to increased and significant financial market volatility, reduced business and consumer confidence, and an escalation of risk aversion. The increased volatility was triggered by a reassessment of the prospects for global economic growth, as well as heightened worries over debt sustainability in the euro area and uncertainty over the direction of fiscal policy in the United States. According to the Bank, the already negative tone in financial markets was exacerbated by numerous credit rating downgrades of sovereigns and global financial institutions. As the Bank noted, as a result, investment flows shifted toward safer and more liquid assets. Government bond yields in a number of advanced economies, where markets are most liquid and which are perceived to be better credit risks, had fallen sharply. At the same time, prices of riskier assets had declined significantly.

In its December 2011 *Financial System Review*, the Bank of Canada judged that the risks to the stability of Canada's financial system were high and had increased markedly over the past six months. In the Bank of Canada's assessment, over the prior six months, the risks associated with global sovereign debt and an economic downturn in advanced economies had risen, with the risks associated with global imbalances, Canadian household finances and the low interest rate environment unchanged.

By the end of 2011, 10-year and 30-year Government of Canada bonds were yielding 1.9% and 2.5% respectively.[26] With the core rate of inflation running at approximately 2.0% during 2011 and expected to average 2.0% over the longer-term,[27] the real yield on the 10-year Government of Canada bond was negative. Long-term A-rated utility bonds were yielding just over 4%. In contrast, the S&P/TSX Composite ended the year down more than 15% from its early year high. High yield Canadian bonds had continued to climb, reaching 9.5% at the end of September 2011 and ending the year at 9.1%.

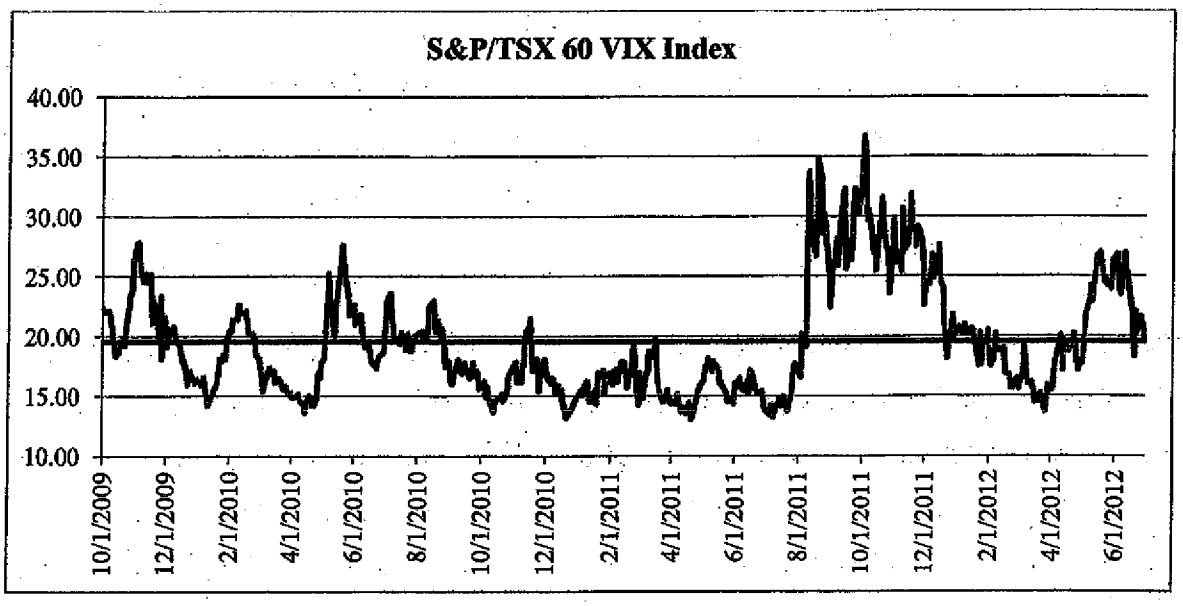
As Chart 4 below demonstrates, expected equity market volatility, as measured by the VIXC,[28] increased markedly in August 2011. On average during November 2011-January 2012, the VIXC was slightly more than 20% higher than during the corresponding period in 2009-2010.

[26] Forecasts of long-term Government of Canada bonds had also experienced another significant decline. From November 2010 to April 2011, the monthly 12-month forward consensus forecasts of 10-year Canada bond yields had gradually moved up from 3.3% to 4.0%. They then reversed course; by December 2011, the 12-month forward consensus forecast of 10-year Canada bond yields had declined to 2.7%. Of that 1.3 percentage point decline, 1.1 percentage points occurred between August and October 2011; it represents the largest two month change (positive or negative) observed since the inception of the *Consensus Forecasts* in 1990.

[27] Consensus Economics, *Consensus Forecasts*, October 2011.

[28] Chart 4 tracks expected volatility as measured by the S&P/TSX 60 VIX Index (VIXC) from October 1, 2009, the first day for which historical data are available.

Chart 4



In its January 2012 *Monetary Policy Report*, the Bank anticipated that growth in the Canadian economy throughout 2012 would be weaker than previously forecast, despite the better than anticipated momentum experienced during the second half of 2011. The weaker growth forecast was largely due to the continued deterioration in the global economy, resulting in further tightening of international financial markets and continued risk aversion. Economic indicators suggested that the euro area had entered into a recession in the fourth quarter of 2011 and the "deteriorating financial conditions, bank deleveraging, fiscal consolidation and large negative confidence effects" of this recession were expected to last well into 2012. The Bank found that, since the October *Monetary Policy Report,* investors had continued to shift toward safer and more liquid assets, resulting in yields on government bonds in Canada, Germany, the United Kingdom and the United States continuing to decline at the same time that spreads in some of the euro area's largest economies had risen, in some cases to post-euro record highs. Investor anxiety had also continued at high levels, resulting in continued market volatility in global markets.

The International Monetary Fund's *World Economic Outlook Update* released January 24, 2012 echoed the Bank of Canada's concerns, concluding that the global economic recovery is threatened by intensifying strains in the euro area and fragilities elsewhere and that financial

conditions have deteriorated, growth prospects have dimmed and downside risks have escalated. The downside risks relate to the potential reduction in credit availability and output in the eurozone arising from sovereign and bank funding pressures, which is transmitted to the rest of the world, excessive fiscal tightening in the U.S. in the near term but failure to arrive at a credible fiscal consolidation strategy in the medium term, a hard landing in emerging economies, and intensified concerns about an Iran-related oil supply shock.

During the first quarter of 2012, there were signs of improvement in the global economy, e.g., an improving labor market in the U.S. and the provision of liquidity by the European Central Bank. Capital markets appeared to calm and risk aversion to moderate, only to be roiled again by a re-intensification of the eurozone sovereign debt crisis, focused on Greece, Spain and Italy.

The Bank of Canada's June 2012 *Financial System Review* noted that:

1. the global recovery remains modest, fragile and uneven, with economic momentum solid in Canada, growth in the U.S. continuing at a modest pace, but European economic activity expected to remain sluggish and growth in emerging markets having moderated;

2. the principal risk to domestic financial stability continues to stem from sovereign debt strains in the euro area;

3. the risks associated with high levels of household debt in Canada and a potential correction in the housing market are elevated and have not diminished since the Bank's last assessment in December 2011;

4. global current account imbalances continue to represent an important risk to the global financial system, although they have declined slightly and are expected to narrow further over the next several years. The Bank considered that the reason for their narrowing, i.e., deficient demand for imports in advanced economies due to contractionary fiscal policies and household deleveraging., which, in turn, is

leading to weak demand for exports from surplus countries and lower global economic growth;

5. the low interest rate environment continues to create incentives for risky behaviour (e.g., drive for yield, particularly by institutions with balance sheets under stress like pension funds and life insurance companies), with the potential for misallocation of credit and the mispricing of risk.

In summary, the Bank of Canada concluded that the systemic risks to the global economy and financial system are high and unchanged since its previous (December 2011) assessment. A review of each of the Bank of Canada's six-month *Financial System Reviews* indicates that the risks to the global economy and financial system rose in each assessment between December 2009 and December 2011, with no change between December 2011 and June 2012.

With increased economic uncertainty, investor risk aversion and global shifting of funds into the safe haven of a smaller pool of highly rated government bonds,[29] long-term Canada bond yields have fallen more than a full percentage point over the past 12 months, hitting a historical low of 2.21% on June 1, 2012. At the end of June 2012, the yield on long-term[30] Canada bonds stood at 2.33%.

High grade corporate bond yields have also been impacted by the smaller pool of highly rated sovereign bonds, as investors have sought relatively safe fixed income alternatives.[31] The end of June 2012 yield on the Bloomberg 30-year A-rated utility index was 3.92%. The corresponding spread with the long-term Government of Canada bond yield, at 160 basis points, was slightly

[29] After the United States and the United Kingdom, Canada is the largest non-eurozone economy with AAA sovereign debt ratings. The U.S. was downgraded to AA+ by Standard & Poor's in August 2011, but still has AAA ratings by Moody's, Fitch and DBRS. Despite the S&P downgrade, U.S. Treasury bonds continue to be regarded as a safe haven investment.

[30] As represented by the yield on the Government of Canada marketable bonds over 10 years Series V39062.

[31] The "flight to quality" arising from market conditions is exacerbated by demographic trends, i.e., the aging of the population, and a corresponding shift of investment into fixed income securities. As baby boomers have aged and the ratio of retirees to active workers in the U.S. has increased, there has been a "strong trend in mutual fund flows that suggests investors have begun earnestly diversifying their portfolios toward fixed-income products, in many cases away from equity funds." (Tom Roseen, Lipper Funds, March 1, 2012) Lipper reported that over the past three years mutual fund investors have invested almost $5 into fixed income funds for every $1 invested in equity funds. In the three years following the 2001/2002 equity market collapse, almost $15 was invested in equity markets for every $1 invested in fixed income markets.

higher than at the close of the oral portion of the 2009 Application. The higher spread indicates that investors view the risk associated with A-rated utility bonds as no less than at the end of the oral portion of the 2009 Application.

The current level of Canada bond yields reflects a confluence of factors, including deterioration in the global economic outlook, the Bank of Canada's decisions to maintain its overnight rate at historically low levels, and investor flight to quality, i.e., away from riskier assets including equities. With respect to the last factor, with the numerous ratings downgrades of sovereign bonds that have taken place in the eurozone over the past two years, the supply of safe haven assets has shrunk,[32] and a scarcity value attributed to high grade sovereign bonds (including those of Canada, the U.S., the U.K. and Germany) that are viewed as least affected by the eurozone debt crisis.

Over the longer-term, 10-year Government of Canada bond yields are forecast to rise to more normal levels, as indicated in Table 2 below.[33]

Table 2

Year	2014	2015	2016	2017	2018-2022
Forecast 10-year Canada	3.6%	4.2%	4.5%	4.6%	4.7%

Source: Consensus Economics, *Consensus Forecasts*, April 2012.

With an average historical spread between 30-year and 10-year Government of Canada bonds of 35 basis points, the corresponding longer term yield on 30-year Canada bonds is approximately 5.0%.

[32] Barclay's *Equity Gilt Study 2012* concluded that "An important reason for these low yields is the structural decrease in the supply of risk-free assets that is not likely to be corrected in the next few years." In its April 2012 *Global Financial Stability Report*, the International Monetary Fund found that "the number of sovereigns whose debt is considered safe is declining - taking potentially $9 trillion in safe assets out of the market by 2016 (roughly 16 percent of the projected total). These developments will put upward pricing pressures on the remaining assets considered safe."

[33] Consensus Economics issues long-term forecasts of key economic indicators, including the 10-year Government of Canada bond yield, twice a year, in April and October.

769 The recent downward trend in long-term Government of Canada bond yields has little, if any,
770 correlation with trends in the market cost of equity. A comparison of equity market indicators
771 points to a higher market cost of equity in mid-2012 versus at the end of the oral portion of the
772 2009 Application, and, due to the decline in long-term Government of Canada bond yields, an
773 even higher equity market risk premium.
774
775 The VIXC averaged 23 during June 2012, slightly higher than the October 2009[34] average of 21
776 (Chart 4 above). High yield bonds, which as noted above, have both debt and equity
777 characteristics, were yielding 8.4% at the end of June 2012, slightly above their 8.2% end of
778 September 2009 level. As referred to above, Global and North American investor confidence
779 levels at the end of June 2012 were well below the September 2009 levels.
780
781 While both the reported earnings and dividends of the companies that comprise the S&P/TSX
782 Composite and the S&P/TSX 60 have increased materially since September 2009, at the end of
783 June 2012, the two price indices were little changed from their September 2009 levels. As Table
784 3 below shows, the resulting index price/earnings (P/E) ratios were lower (and the dividend
785 yields were higher) at the end of June 2012 than at the end of September 2009. The comparative
786 earnings yields (E/P), the inverse of the P/E ratios, provide a rough guide to the direction in the
787 market cost of equity over this time period. The forward E/P ratio of the S&P/TSX 60 has
788 increased from approximately 5.2% to 7.8%, implying that the market cost of equity has risen
789 since late 2009. With Government of Canada bond yields having declined significantly between
790 late 2009 and mid-2012, the corresponding implication is that the equity market risk premium is
791 higher currently than it was in late 2009.
792

[34] The first month for which there are data for the new S&P/TSX 60 VIXC.

Table 3

	September 2009	June 2012
S&P/TSX Composite		
Price Index	11,395	11,597
Earnings	$530.8	$789.0
Dividends	$314.4	$365.8
Trailing P/E	21.5X	14.7X
Dividend Yield	2.8%	3.2%
S&P/TSX 60		
Price Index	678	664
Earnings	$38.5	$48.0
Dividends	$17.5	$20.9
Trailing P/E	17.6X	13.8X
Dividend Yield	2.6%	3.1%
Forward P/E [1/]	19.1X	12.6X
Forward Earnings Yield (E/P)	5.2%	7.8%
10-year Canada Bond Yield	3.3%	1.7%
E/P less 10-year Canada Bond	1.9%	6.2%

[1/] Forward P/E ratio estimated as market-value weighted average of the month-end prices of equities in the S&P/TSX 60 divided by I/B/E/S consensus forecast of earnings per share for next fiscal year (2010 and 2013).

Source: www.bankofcanada.ca, I/B/E/S from S&P, Research Insight, *TSX Review*.

As regards the cost of equity capital for utilities and the implication of the observed decline in long-term Canada bond yields, before the onset of the financial crisis, publicly-traded Canadian utility dividend yields generally tracked the long-term Government of Canada bond yield. On average from 1998-2007, the median dividend yield of the five major publicly-traded Canadian utilities[35] was, on average, 25% **lower** than the corresponding yield on the 30-year Government of Canada bond. Since the beginning of 2008, the ratio of utility dividend yields to long-term Canada bond yields has risen markedly. At the end of June 2012, the median Canadian utility dividend yield was approximately 60% **higher** than the 30-year Canada bond yield.[36]

[35] Canadian Utilities Limited, Emera Inc., Enbridge Inc., Fortis Inc., and TransCanada Corporation. Excludes Valener Inc., as it was previously a limited partnership (Gaz Métro LP), which converted to a conventional corporation in September 2010. Hereafter referred to as the "five major publicly-traded Canadian utilities".

[36] The ratio of Canadian utility dividend yields to A-rated utility bond yields is also significantly higher than it was pre-crisis. At the end of June 2012, Canadian utility dividend yields were approximately 95% of A-rated utility bond yields, compared approximately 60% from March 2002 (the starting date of the Bloomberg 30-year Canadian A-rated utility bond index) to the end of 2007.

If the pre-crisis relationship between utility dividend yields and the yield on the 30-year Canada bond were still valid, at the end of June 2012 30-year Canada bond yield of 2.3%, the current Canadian utility dividend yield should be approximately 1.75% (75% of 2.3%). Instead, it is 3.7%.[37]

The observed change in the relationship between Canadian utility dividend yields (which represent a significant component of the cost of equity[38]) and long-term Government of Canada bond yields represents compelling support for the following conclusions:

1. The estimation of a fair ROE for the benchmark BC utility should be based on multiple tests, including tests which are not benchmarked to the long-term Government of Canada bond yield.

2. In the application of equity risk premium tests that are benchmarked to the long-term Government of Canada bond yield, the abnormally low level of recent and forecast long-term Government of Canada bond yields needs to be taken into account in the assessment of what constitutes an appropriate equity risk premium.

In light of the persistently unsettled capital markets and the unstable relationships between the utility cost of equity and Government bond yields, it would be, in my view, difficult to construct an automatic adjustment mechanism for return on equity at this time that would successfully capture prospective changes in the utility cost of equity. In particular, an automatic adjustment formula tied to changes in government bond yields has the potential to unfairly suppress the allowed ROE.[39]

[37] Alternatively, based on the pre-crisis relationship, all other things equal, the observed 3.7% utility dividend yield would correspond to a 30-year Canada bond yield of approximately 4.9% (3.7%/0.75), rather than the much lower end of June 2012 yield of 2.3%.

[38] The utility cost of equity can be estimated as the sum of the expected dividend yield and the expected growth in dividends. For a utility with approximately industry average long-run growth potential, the dividend yield component can account for approximately one-half the total estimated cost of equity.

[39] In October 2010 and November 2011 the Régie implemented automatic adjustment formulas for Gazifère and Gaz Métro respectively that change the allowed ROE by 75% of the change in forecast 30-year Government of Canada bond yields and 50% of the change in long-term A-rated utility bond yield spreads. Gaz Métro's allowed ROE for 2012 was set at 8.9%, reflecting a forecast long-term Government of Canada bond yield of 4.0% and a utility bond yield spread of 150 basis points. Based on the most recent forecast and spreads, Gaz Métro's 2013 allowed ROE will be close to a full percentage point lower than in 2012. The trend in Canadian utility dividend yields indicates

In developing a fair ROE for the benchmark BC utility, I have proceeded on the premise that the ROE adopted in this proceeding will be in place for at least three years. On that basis, in the application of equity risk premium tests, I have developed forecasts of long-term Government of Canada bond yields that encompass the three-year period 2013-2015, not solely 2013.

VII. CAPITAL STRUCTURE FOR FEI AS BENCHMARK BC UTILITY

A. PRINCIPLES FOR CAPITAL STRUCTURE DETERMINATION

The principles which should be respected in the determination of an appropriate capital structure for a utility include (1) the stand-alone principle; (2) compatibility with business risk; (3) the ability to attract capital on reasonable terms and conditions; (4) maintenance of financial integrity; and (5) comparability of returns. Principles (3) to (5) represent the three requirements of the fair return standard, and reflect the inter-dependence between capital structure and ROE.

1. Stand-alone Principle

   As indicated in Section III above, the stand-alone principle means that the allowed return on capital should reflect only the risks and required returns associated with the provision of regulated service. This principle extends to both capital structure and ROE, and the combination thereof.

2. Compatibility of Capital Structure with Business Risk

   The capital structure of a utility should be consistent with the business and regulatory risks of the specific entity for which the capital structure is being set. At a high level, because debt financing magnifies business risk, all other things equal, the higher the business risk of the utility, the higher a reasonable common equity ratio would be. As the Commission pointed out in its *2009 ROE Decision*,

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the opposite: higher Canadian utility dividend yields in mid-2012 than when the Régie rendered its decision for Gaz Métro in November 2011 point to an increase in the cost of equity for Canadian utilities since late 2011.

"The assessment of risks has significant bearing on the application of the fair return standard and the determination of an appropriate common equity ratio for regulatory purposes."

3. Attraction of Capital and Financial Integrity

A reasonable capital structure for the benchmark utility, FEI, in conjunction with the returns allowed on the various sources of capital, should permit the utility to attract capital on reasonable terms and conditions and to maintain its financial integrity.

To be able to attract debt capital on reasonable terms and conditions and to maintain its creditworthiness, a reasonable capital structure for the benchmark BC utility, FEI should provide the basis for stand-alone investment grade debt ratings in the A category.[40] Debt ratings in the A category ensure that the utility would be able to access the capital markets on reasonable terms and conditions during both robust and difficult, or weak, capital market conditions. In contrast to unregulated companies, utilities do not have the same flexibility to defer financing new assets. Utilities have an obligation to provide service on demand, and must maintain access to the capital markets to fulfill that obligation.

The importance of credit ratings in the A category arises from two factors: market access and cost. Even a utility with split-ratings (that is, one debt rating in the A category and one rating in the Baa/BBB[41] category) faces a higher cost of debt and lesser market access relative to a utility with all debt ratings in the A category. Regulated issuers with Baa/BBB ratings can be closed out of the Canadian debt market at times, particularly at the longer end (20-30 year term) of

[40] The Commission has accepted that a credit rating in the A category is appropriate for FEI. In the *2009 ROE Decision*, page 15, the Commission stated that "It also agrees with Terasen that the combination of the equity ratio and the allowed return thereon should be adequate to attract capital on reasonable terms and conditions and allow TGI to maintain the A3 rating on its debt and unsecured debt from Moody's." The AUC explicitly considers that a rating in the A category is an appropriate objective in setting the regulated capital structures for Alberta utilities (AUC, *Decision 2009-216*, page 88, and *Decision 2011-474*, pages 31 and 35).

[41] Baa is the Moody's medium grade ratings designation; BBB is the corresponding DBRS and Standard & Poor's designation.

the debt market.[42] Utilities, including FEI, are principally financing long-term assets. Thus, the Company needs to maintain the financing flexibility required to be able to access debt with long-term maturities in both strong and weak capital market conditions.[43]

Insufficient equity for the level of business risk and/or inadequate credit metrics (which largely reflect the debt/equity structure and cash flows from returns on and of capital) are factors that could result in a downgrade of a utility's debt rating. If a utility experiences a downgrade, the downgrade would not only result in an increase in the cost of any additional debt that the company needs to raise, but will also affect all of the utility's outstanding debt. An increase in the cost of new debt to a utility increases the required yield on the outstanding debt and reduces the value of that debt. Since existing debt holders are the most likely purchasers of future issues, a debt rating downgrade, with the resulting negative impact on the value of their existing holdings, would likely make them less willing to purchase future issues.

A higher cost of debt to the utility translates into a higher cost of debt to ratepayers. The relative cost of A rated debt versus Baa/BBB rated debt varies with market conditions, but ratings in the Baa/BBB category can be materially more costly to ratepayers than ratings in the A category.[44] As the global financial market crisis demonstrated, capital markets can deteriorate rapidly, and spreads can widen dramatically. Although the market for lower rated credits in Canada has been growing, it is still relatively small. Institutional investors continue to face limits on the proportion of Baa/BBB rated debt they are allowed to hold in their portfolios or are precluded from investing in Baa/BBB rated debt. The

[42] During the period June 11, 2008 to January 29, 2009 inclusive there was not a single issuer without at least one "A" credit rating who was able to issue long-term debt on any terms in the public Canadian debt market.

[43] Although the market for lower rated credits has been growing, for the period January 2010 – June 2012, of the $140 billion of new corporate debt in Canada reported by RBC Capital Markets (*Credit Weekly*, various issues), only 20% was for issues rated in the BBB rating category or lower. Of the 108 issues that were rated in the BBB rating category or lower, only eight were for a term longer than 10 years.

[44] Over the past 15 years, the average spread between yields on long-term BBB-rated and A-rated corporate debt in Canada has been 75 basis points. During the same period, the spread has been as high as 200 basis points.

relatively small size of the Canadian market for Baa/BBB rated debt and the limitations on the ability of Baa/BBB issuers to raise debt in the long-term end of the debt market underscore the importance of A credit ratings.

FEI, as well as other BC utilities, are competing for capital in a global market in which there may be unprecedented requirements for energy infrastructure capital, particularly in the power sector. In its 2011 *World Energy Outlook*, the International Energy Agency estimated that between 2011 and 2035 close to $38 trillion in global cumulative energy infrastructure investment is required, including $9.5 trillion in the gas industry ($2 trillion in transmission and distribution) and $16.9 trillion in the electricity industry.[45] The Conference Board of Canada estimates that investment in electricity infrastructure alone in Canada over the period 2011 to 2030 will be close to $348 billion.[46]

To compete successfully for the capital it needs, that is, to continue to be able to attract capital on flexible terms and conditions, FEI requires credit metrics (which reflect the combination of capital structure and ROE) that are competitive with those of its peers.

The maintenance of debt ratings in the A category, which depends partly on an appropriate capital structure, and partly on adequate cash flows from earnings and return of capital, should allow FEI, the benchmark BC utility, to attract debt capital on reasonable terms and conditions.

4. Comparability of Returns

As it is the overall return which must meet the comparable returns requirement of the fair return standard, it is the composite of a regulated utility's financial

[45] International Energy Agency, *2011 World Energy Outlook*, October 2011, Figure 2.20.

[46] Conference Board of Canada, *Shedding Light on the Economic Impact of Investing in Electricity Infrastructure*, February 2012. The INGAA Foundation estimated that approximately $205 billion of investment was required in North American natural gas midstream (including mainline transmission, laterals, gathering lines, compression, storage and processing) infrastructure from 2011 to 2035, with an additional $46 billion investment in the natural gas liquids and oil midstream sector (INGAA Foundation, *North American Natural Gas Midstream Infrastructure Through 2035: A Secure Energy Future: Executive Summary*, June 2011).

parameters, including the adopted capital structure and allowed returns on capital, that need to be comparable to the returns of similar risk companies.

Comparability of the regulated utility's overall return to its peers, including capital structure, is not only a legal requirement, it is necessary in order to be competitive in the capital markets. FEI competes for capital not only with other Canadian regulated companies, but with regulated companies globally, as well as with unregulated companies, both within Canada and globally. The achievement of comparable returns requires recognition of the financial parameters, including capital structure, of FEI's comparable risk peers, including regulated companies throughout North America.

B. BUSINESS RISK OVERVIEW

As noted above, a utility's business risk comprises the fundamental characteristics of the business (e.g., market/demand, competitive, supply and operating factors) and political/regulatory risk that together determine the probability that the utility's future returns (including the return on and of capital) will fall short of the returns that investors expect and require.

Utility business risks have both short-term and longer-term aspects. Short-term business risks relate primarily to year-to-year variability in earnings due to the combination of fundamental underlying economic factors and the existing regulatory framework. Long-term business risks are important because utility assets are long-lived. Long-term business risks comprise factors that may negatively impact the long-run viability of the utility and impair the ability of the shareholders to fully recover their invested capital and a compensatory return thereon. As utilities represent capital-intensive investments with very limited alternative uses, whose committed capital is recovered over an extended period of time, it is the long-term business risks that are of primary concern to the investor.

Because utilities are generally regulated on the basis of annual revenue requirements, the longer-term risks are sometimes downplayed, essentially on the grounds that the regulatory framework will allow the regulator to provide compensation to investors as the risks materialize, through higher ROEs and/or assurance of return of capital. This premise may not hold. If the utility is losing customers and throughput, competitive limits on regulated prices may constrain a utility's ability to earn higher returns or recover the invested capital when the risk materializes. Second, utility assets are long-lived. No regulatory panel can bind its successors and thus guarantee that investors will be compensated in the future for risks as they materialize.

The capital structure needs to recognize long-term business risks. As the business risks materialize, the utility may find it more difficult to raise new debt capital. Consequently, the common equity component effectively provides a cushion in the event of deterioration of access to capital. This should not be interpreted to mean that business risks are only reflected in capital structure. Nor should it be interpreted to mean that the long-term aspects of business risk are captured only in capital structure with short-term variability in earnings captured solely in the ROE. Both the capital structure that is appropriate for a particular utility and the required rate of return on equity incorporate elements of short-term and long-term business risks. Investors look at the risks of a utility in the aggregate in assessing what return they require from a utility equity investment; they do not assign short-term risks to ROE and long-term risks to capital structure.

The primary categories of utility business risk are:

1. Market/Demand Risk

   Market demand risks relate to the size of the market for the utility's services and the ability of the utility to capture market share. Market demand risks reflect the demographics of the service area, including the diversity of the economy, economic growth potential, geography/weather, customer concentration, customer spending patterns, customer mix, and customer preferences.

2. Competitive Risk

Competitive risk refers to the business risk arising from competition for customers and load due to the existence of alternatives to, or potential for substitutes for, the utility's services. Competitive risks would include a utility's cost structure; e.g., a high cost structure has the potential to lead to customer and load attrition and to the development of lower cost alternatives.

3. Supply Risk

Supply risk relates to the physical availability of the commodities required to deliver service to end use customers. Supply risk includes exposure to supply interruption, and thus, for gas utilities, the degree of reliance on a single supply basin and/or pipeline and the availability of storage. For electric utilities, supply risk also reflects the diversity of supply sources, including owned generation and purchased power.

4. Operating Risk

Operating risk encompasses the physical risks to the revenue generating capabilities of the utility system arising from technical and operational factors, including asset concentration, the technologies employed to deliver service, service area geography and weather.

5. Political Risk

Political risk relates to the potential for government to intervene directly in the utility regulatory process or negatively impact utility operations through policy, legislation and/or regulations relating to such issues as tax, energy and environmental policies, industry structure, safety regulations and Aboriginal Rights.[47]

[47] S&P has stated: "Governments change, government policies change, views on ownership change, economic circumstances change... Politics by definition is populist, expedient, and capricious, and creditors should not dismiss the likelihood of change." (Standard & Poor's, *Credit FAQ: Implied Government Support as a Rating Factor for Hydro One Inc. and Ontario Power Generation Inc.*, October 20, 2005) While S&P's statements were made in a specific context, i.e., the risk related to future financial support by the province of Ontario of its Crown utilities, the references to the potential for political change as it relates to utility risk are more broadly applicable.

6. Regulatory Risk

Regulatory risk relates to the framework that determines how the fundamental business risks are allocated between ratepayers and shareholders. Regulatory risk can be considered either as a component of business risk or as a separate risk category. The regulatory framework is dynamic: it is subject to change as a result of shifts in regulatory philosophy, government policies, including energy policy, and underlying fundamental business risk factors, e.g., the competitive environment.

The assessment of business risk is an inherently qualitative exercise, not amenable to quantification.[48] There is no recognized methodology for isolating individual business risk factors and quantifying the corresponding required increment of common equity or ROE. Different categories of business risk can be identified and ranked in order of importance, but the order ranking may differ among utilities. It is also possible to assign each risk a number or level (e.g., "low", "medium", "high") to represent the potential likelihood of the risk being experienced and a weight to represent the potential severity of the risk should it be experienced. However, the numbers or levels assigned to convey "how much riskier" would be inherently subjective, as would be weights to denote potential severity.

Further, the various categories of business risks are inter-related[49] and inter-dependent. A change in one category or type of business risk can have a subsequent impact on another type or category of business risk. To illustrate, high market/demand risk may lead to significant customer loss, in turn, raising the utility's cost structure, leading to higher competitive risk. Alternatively, high supply risk may lower customer demand, increasing market/demand risk.

[48] The NEB stated, for example, in RH-2-94, page 24, "The Board has systematically assessed the various risk factors for each of the pipelines but has not found it possible to express, in any quantitative fashion, specific scores or weights to be given to risk factors. The determination of business risk, in our view, must necessarily involve a high degree of judgment, and is best expressed qualitatively." The AUCs' predecessor similarly acknowledged that the level of utility business risk is a subjective concept (EUB, Decision 2004-052, page 35).

[49] The NEB noted in its *Reasons for Decision, TransCanada Pipelines Limited, RH-2-2004, Phase II*, April 2005, "The various forms of risk are related, and the boundaries between them are subjective. What one party may consider a source of market risk may be viewed by another as part of competitive risk."

Finally, the exercise of creating a risk by risk "scorecard" would not comport with the manner in which investors evaluate business risk. Investors appraise business risk on an overall aggregate basis, not by relying on a risk by risk checklist.

While business risk cannot be quantified, a qualitative business risk analysis does allow the assessment of both the relative total business risk among utilities and the trends in business risk. However, while necessary, neither a relative business risk assessment nor an assessment of the trends in a particular utility's business risk, in isolation, is sufficient to determine a reasonable capital structure. The business risk assessment must be used in conjunction with other factors, both qualitative and quantitative, such as capital structures adopted by peer companies, debt rating agency guidelines, actual credit metrics, debt ratings and trends in the credit environment in order to judge what constitutes a reasonable capital structure and, ultimately, how the overall risk of a utility compares to its peers.

Moreover, while trends in business risk are an important consideration in assessing whether there should be a change in a utility's regulated capital structure, other trends, including changes in capital market conditions, credit metrics, and industry practice, are also important considerations. An increase in common equity ratio may be warranted, even if there has been no change in business risk if, for example, investors have become more risk averse and require more conservative financial parameters for a given level of business risk. An increase in equity ratio may also be warranted if credit metrics are weakening due to diminished cash flows.[50]

[50] For example, the AUC's 2% across-the-board increase to the common equity ratios of the Alberta utilities in *Decision 2009-216* (confirmed in *Decision 2011-474*) was not due to changes in business risk. Rather, the increase reflected reductions in ROEs and income tax rates over time that would otherwise lead to a deterioration in credit metrics as well as the AUC's conclusion that it:

> must also consider that the events that drove the original [financial] crisis will be factored into investors' perceptions. Companies will therefore protect their balance sheets and investors will adjust risk perceptions whether unexpected events present themselves again or not. In order to protect investors' and ratepayers' interests, the Commission must award equity ratios that recognize the need for the ongoing viability of the utility even in adverse conditions. (AUC, *Decision 2009-216*, page 90).

C. BUSINESS RISK RANKING BY UTILITY SECTOR

1. Overview

In its Minimum Filing Requirements ("MFR"), the Commission requested a business risk ranking and rationale by industry sector, specifying electricity, natural gas and alternative energy service providers.

It is virtually impossible to rank the three sectors generically, largely because the utilities that constitute the "electricity sector" in Canada (as well as in the United States) span a wide range of business risk. In Alberta, for example, the electricity industry has been restructured, with separate entities or divisions of entities performing different functions. Only electricity transmission and distribution remain regulated; generation has been deregulated. Electricity distributors in Alberta no longer have the obligation to acquire power (either by building generating capacity or contracting for power) and, although they retain the default supplier obligation, they have exited the retail function and have designated other firms as their default supplier. The electricity industry has also been restructured in Ontario, where each of the functions (transmission, distribution and generation) is regulated separately, with regulation of the last limited to specific generating facilities of Ontario Power Generation. In that jurisdiction, while electric distribution utilities retain the retail function, they no longer bear the obligation to acquire power on behalf of their end use customers; the cost of purchased power is flowed through to customers. Similarly, in Québec, the electricity industry has been restructured, with the transmission and distribution functions separately regulated by the Régie; the generation function is not regulated by the Régie. In contrast, in the remaining provinces, including British Columbia, the electric utilities are predominantly vertically integrated, operating all three functions on a regulated basis.

Given the different electricity industry models in use in Canada, rankings are provided for electric transmission, distribution and vertically integrated utilities, as well as for natural gas distribution and alternative energy service providers. In regard to the last, the ranking applies only to British Columbia, since alternative energy service providers are not regulated in other

provinces in Canada. The rankings provided below, from lowest business risk to highest business risk are intended to be "generic", i.e., based on fundamental characteristics that are generally common to utilities in each category. They should not be interpreted to mean, for example, that every utility categorized as an electric distribution utility is of lower business risk than every gas distribution utility, or that every gas distribution utility is of lower business risk than every vertically integrated utility. While it might be fair to conclude that, as a general proposition, electric distribution is an "average business risk" sector compared to other sectors, without analyzing a particular electric distribution utility's specific circumstances, it would not be reasonable to conclude that the specific electric distribution utility is indeed an "average business risk" utility.

The extent to which the "generic" relative risk sector rankings hold for individual utilities would be dependent on such factors as:

1. Energy policies in the regulatory jurisdiction.
2. The regulatory environment generally in the utility's service area.
3. The specific elements of the regulatory model to which the utility is subject.
4. The size, economic diversity and growth potential of the service area.
5. Customer mix and concentration.
6. Competitive environment.
7. Geography, which is a factor in the nature and extent of competition, as well as of operating risks.
8. In the case of vertically integrated utilities, the diversity of power supply and the specific technologies employed to generate electricity.

2. Sector Rankings (Lowest to Highest Business Risk) and Rationale

2.a Electricity Transmission

1. Electricity is required by every household and business for some applications. End uses of electricity are more diverse than for natural gas.

2. Although there is some bypass risk, electric transmission is the closet to a pure monopoly of the sectors ranked.

3. No commodity price risk.

4. Rate structures of electric transmission utilities provide for high degree of assurance of recovery of forecast annual revenue requirements.

5. Credit (bad debt) risk is relatively low, as transmission utilities typically recover revenues from highly rated entities (distribution utilities or an independent system operator).

6. Relatively low operating risk.

2.b Electricity Distribution

1. As with electricity transmission, electricity is required by every household and business for some applications. End uses of electricity are more diverse than for natural gas.

2. In some cases (e.g., Alberta and Ontario) there is no obligation to ensure an adequate supply of electricity, and no power purchase agreements. In Alberta, the electricity distributors do not purchase power at all. In Ontario, purchased power is a flow through cost, purchased from the Ontario Electricity System Operator and power costs are not subject to prudence review. Hydro Québec Distribution is responsible for acquiring a supply portfolio to meet demand which exceeds

commitments from the fixed price "heritage" supply and faces some risk of higher than forecast supply costs.

3. While not a pure monopoly, as there is some competition with alternative fuels, the distribution system is not likely to be duplicated. Competition with alternative fuels in Ontario and Alberta, as natural gas is the fuel of choice for heating load. More competition with natural gas in BC and Québec, where electricity prices are relatively low and electricity is almost exclusively generated from a renewable resource.

4. Higher volatility of revenues than electric transmission due to recovery of fixed costs in variable charges.

5. Higher exposure to economic downturn than electric transmission.

6. Relatively low operating risk.

2.c Natural Gas Distribution

1. More limited end uses for natural gas than for electricity.

2. Heating load generally a significant portion of throughput, for which there are substitutes, including solutions that are more technologically and economically feasible than were available historically.

3. Throughput is generally more weather sensitive than for electricity distribution utilities.

4. Industrial processes that use natural gas can frequently switch to other sources of energy.

5. As heating load oriented utilities, more exposure to declining throughput (due to factors such as smaller and more energy efficient homes and more energy efficient equipment) than electricity distributors.

6. With some exceptions (e.g., ATCO Gas), gas distributors retain responsibility for acquiring a gas supply portfolio; gas purchases are subject to prudence review.

7. As sellers and transporters of fossil fuel, may have more exposure than electricity distributors, particularly where electricity is produced by "green" energy sources, to impacts of environmental policies and regulations directed at reducing emissions and favoring clean and/or renewable energies as well as of consumer perceptions of natural gas as a fossil fuel.

8. Relatively low operating risk

2.d Vertically Integrated Electric Utilities

1. Electricity is required by every household and business for some applications. End uses are more diverse than for natural gas.

2. Vertically integrated utilities have the obligation to build, lease or contract for power to serve their customers. The construction of base load generation frequently has long lead times, the potential deferral of the recovery of significant financing costs until the plant goes into service, risk that the market may not have materialized when the plant is complete, and risk that construction costs may be disallowed.

3. Purchased power and fuel costs are subject to prudence review.

4. If generating plants are not operating, costs of obtaining replacement power may be borne by shareholders.

5. Generating plants are more likely to be substituted with, or bypassed by, a lower cost alternative power source or subjected to a competitive market than a distribution system.

6. A "typical" vertically integrated electric utility (i.e., one which generates the preponderance of the power that is sold to its native load) has approximately 45% to 50% of its rate base invested in generation plant, which is inherently more risky

from an operational standpoint than distribution or transmission assets. The extent to which that is the case depends on the technologies utilized (e.g., nuclear generation is more technologically challenging than hydroelectric generation).

7. Fossil fuel generating capacity is subject to higher environmental risks than distribution systems.

2.e BC Alternative Energy Service Providers

1. Typically start-up ("greenfield") operations without an established customer base.

2. May require non-traditional rate structures for the operation to be competitive and provide opportunity to recover invested capital due to "front end loaded" rate base.

3. Generally, a small customer base from which invested capital must be recovered.

4. Reliance on less established energy technologies to provide service.

5. Competition to install services with both conventional sources of energy and other alternative energy providers.

6. Small size is a dominant risk characteristic.

D. BUSINESS RISK OF THE BENCHMARK UTILITY FEI

1. Purpose of Business Risk Analysis

In the *2009 ROE Decision*, the Commission increased FEI's deemed common equity ratio from 35% to 40%, having found that FEI's business risk had increased since the *2006 ROE*

Decision.[51] The section that follows represents my assessment of whether there have been any changes in FEI's business risk that would, in isolation, warrant a change in the deemed common equity ratio from the 40% approved in the *2009 ROE Decision*. Based on my assessment, the level of business risk, in the aggregate, to which FEI is exposed is at least as high as when it was last assessed in 2009.

2. Market/Demand and Competitive Risk

Market/demand and competitive risks are integrally related and thus are assessed together. Prices of natural gas have declined materially since the 2009 Application, due largely to a combination of the shale gas boom in North America and relatively weak economic conditions. Despite natural gas prices that are currently lower than in 2009, the market and competitive trends identified in the 2009 Application persist.

FEI's core business continues to be the residential and commercial space and water heating markets. Close to 90% of FEI's delivery revenue, or gross margin, is derived from the residential and commercial sectors, of which over 80% is from space and water heating applications. In the residential sector, which alone accounts for over 60% of the gross margin, new customer additions have declined significantly since their 2007 peak, and are expected to remain modest, consistent with minimal growth in housing starts over the longer term.

The new housing construction market continues to shift toward multi-unit dwellings; in 2011, close to two-thirds of all housing starts in British Columbia were multi-unit dwellings. The persistent trend in new housing construction toward multi-family units reflects affordability and space availability.

FEI's capture rate in new multi-unit dwellings has been, and continues, to be materially lower than in single family housing (approximately 30% versus 70%). The lower capture rates in

[51] The Commission also increased the benchmark utility ROE (applicable to FEI as the designated benchmark utility) relative to the level that would have been produced by the automatic adjustment mechanism terminated in the *2009 ROE Decision*. A thorough review of the *2009 ROE Decision* indicates that the increase in the benchmark utility ROE was not related to the increase in FEI's business risk, but rather to the Commission's conclusion that the automatic adjustment formula was not producing a fair ROE.

multi-unit dwellings largely reflect the fact that the energy choice is made by builders and developers, rather than the end user. Builders and developers focus more on the upfront capital costs of equipment installation and space considerations than on operating costs, or what it costs the end user at the burner tip. Builder and developer objectives continue to favour the installation of electric equipment over natural gas equipment.

FEI's per customer usage rates in the residential sector continue to fall. The persistence of declining usage rates is explained primarily by: (1) smaller and more energy efficient new single family homes; (2) more energy efficient replacement equipment in existing single family homes; and (3) the shift in the housing stock to multi-unit dwellings. FEI's estimates show that the usage rates of new residential customers is almost 50% lower than the usage rates of existing customers.

A comparison of the four provinces with large natural gas utilities shows that, in BC, natural gas has a materially smaller share of the residential market than in either Alberta or Ontario. Although BC is the second largest natural gas producing province in the country, natural gas has just under a 50% share of the residential market, compared to over 60% in Ontario, which produces relatively little natural gas. The market share of natural gas in the residential sector in Alberta, the largest natural gas producing province, is over 80%. While, in BC, electricity accounts for close to 45% of the residential market, in Alberta and Ontario, electricity has significantly smaller market shares.

Table 4

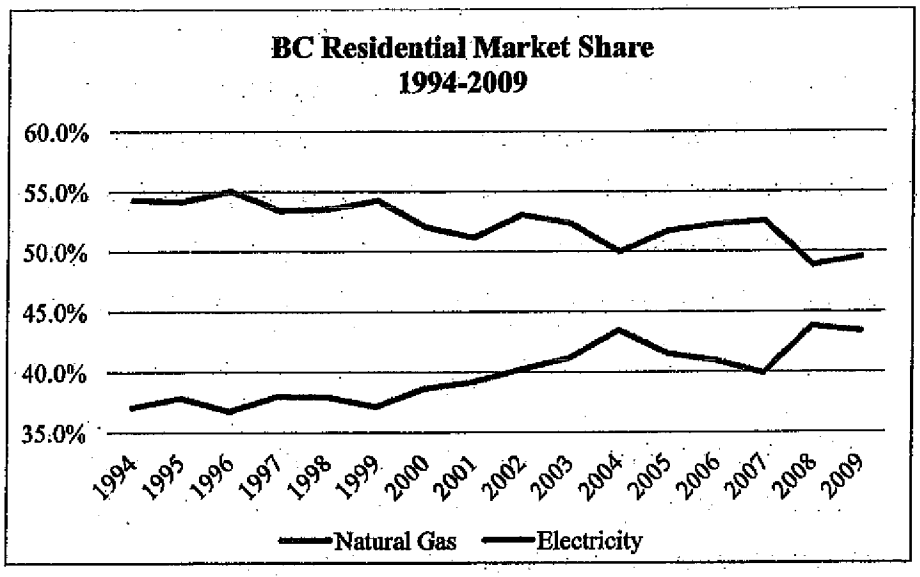
Residential Market Share
Natural Gas and Electricity
(2009)

British Columbia		Alberta		Ontario		Quebec	
Natural Gas	Electric	Natural Gas	Electric	Natural Gas	Electric	Natural Gas	Electric
49.5%	43.4%	82.1%	16.9%	62.4%	29.2%	8.2%	68.5%

Source: Natural Resources Canada, Comprehensive Energy Data Base

Over time, in BC, the market share of natural gas in the residential sector has been on a gradual downward trend, while the market share of electricity has been rising, as shown in Chart 5 below.

Chart 5



Source: Natural Resources Canada, Comprehensive Energy Data Base

The relatively high market share of electricity in BC stems from the province's abundant hydroelectric resources, which has resulted in a relatively low cost source of electric generation, similar to Québec. For perspective, hydroelectric generation accounts for over 90% of the total electricity produced in both BC and Québec, compared to less than 5% in Alberta and approximately 20% in Ontario. Low embedded costs of heritage hydroelectric generation have resulted in low electricity prices in BC, and have helped foster a marketplace in which natural gas faces strong competition from electricity for its core business. Despite both lower commodity costs since 2009 and increased electricity rates in BC, the percentage differential between the operating costs of natural gas and electricity for a typical residential customer remains materially lower in BC than it is in either Alberta or Ontario. The much higher spread between electricity and natural gas prices in Alberta and Ontario is due to the two provinces' reliance on higher cost sources of generation and the determination of the price of power by market forces rather than embedded utility costs.

Operating cost differentials, which reflect commodity or power costs plus delivery costs, do not take account of the upfront capital costs of installation. Higher upfront installation costs of natural gas equipment than electric equipment significantly narrows the gap between electricity and natural gas prices in BC.

The competitive pressures on natural gas in BC that stem from the abundance of low cost hydroelectric resources and the evolving housing composition are amplified by energy policies. Designed to fight climate change, provincial energy policies and associated regulations promote reduced and more efficient energy use, discourage the use of fossil fuels, and promote the development and use of clean energy technologies and renewable resources. By the time of the 2009 Application, the province had introduced its 2007 Energy Plan and related legislation that committed to greenhouse gas ("GHG") emission reduction targets and imposed the carbon tax on fossil fuels, including natural gas. The policies and legislation have both direct and indirect impacts on the use of natural gas. The carbon tax directly raises the commodity price of natural gas. The carbon tax on natural gas was $0.50/GJ in 2008, and reached $1.50/GJ in 2012, where it will remain, pending the government's comprehensive review of the tax.

The less direct impact relates to altered customer perceptions of various forms of energy. Consumers are more likely to have a negative perception of natural gas, a fossil fuel, and a positive opinion of electricity produced by renewable hydroelectric resources.

Since the 2009 Application, there have been several energy policy related developments, the Clean Energy Act (2010), the Greenhouse Gas Reduction Clean Energy Regulation (2012), and the province's Natural Gas Strategy (2012). Among other things, the Clean Energy Act supports maintaining low electricity rates in the province, reduction of energy demand, development of innovative technologies that support energy conservation and efficiency and the use of clean or renewable resources. All of the provisions of the Clean Energy Act reinforce the competitive challenges to natural gas in FEI's core space and water heating markets. The subsequent Greenhouse Gas Reduction Clean Energy Regulation allows utilities to provide incentives to the transportation sector to adopt natural gas as an alternative to gasoline and diesel fuel, but does not encourage natural gas use in FEI's principal markets. While the regulation offers some

upside demand potential, the transportation sector's contribution to FEI's delivery revenues over the next five years, based on the incentives available, is expected to be small. The Natural Gas Strategy released earlier this year recognizes the importance of natural gas to the BC economy, reinforces support for the use of natural gas in the transportation sector and espouses development of BC's natural gas reserves for export as LNG. The Natural Gas Strategy's support for natural gas, which the document refers to as a "transition fuel", does not extend to the use of natural gas in FEI's principal markets, space and hot water heating.

The adoption of renewable forms of energy in combination with new technologies for delivering the energy has continued to progress, not only on an individual customer basis, but also on a community basis. The increased community focus on reducing GHG emissions and energy efficiency is supporting a wider scale adoption of forms of energy and technologies that displace natural gas.

Notwithstanding the reduction in natural gas prices since 2009, the trends that have been creating downward pressure on FEI's throughput (which ultimately determines its ability to recover the invested capital) have continued. On balance, the market/demand and competitive risks to which FEI is exposed are no lower than they were in 2009.

3. Supply Risk

As noted above, supply risk entails both the physical availability of the commodity and the exposure of the utility to supply interruption. For a gas utility, the latter comprises the diversity of the infrastructure required to deliver the natural gas commodity to the load centres when it is required.

With respect to the former, the risk of insufficient physical natural gas supply has historically been low. The discovery of large shale gas reserves in northeastern BC is clearly a positive development. However, how much of that gas will flow to FEI's service area remains uncertain. Pipeline capacity from northeastern BC into Alberta, where the potential exists for significant natural gas demand, e.g., for the oil sands industry, has already been expanded. The

development of offshore markets for LNG has the potential to move northeastern BC natural gas west for export rather than to FEI markets. With respect to infrastructure, there have been no material changes in the infrastructure available to ensure reliability of supply delivery apart from the Mt. Hayes peaking facility. FEI continues to depend heavily on a single pipeline, Westcoast, and has limited access to area storage facilities. Overall, FEI's gas supply risk, which was already relatively low, is somewhat lower than in 2009.

4. Operating Risk

FEI's operating risks relate to factors that can cause outages or leaks on the distribution system, including third-party damages, both accidental and intentional, equipment failure, pipeline corrosion, severe weather and natural disasters, which could result in material service disruptions or environmental liability. In contrast to utilities that operate systems in more benign geographic regions, FEI operates facilities in remote and rugged terrain, which are subject to damage from a variety of natural events (e.g., avalanches, landslides, forest fires). Although the utility carries insurance, there is no guarantee that all costs that might be incurred will be recoverable. Similar to other long-operating utilities, FEI's infrastructure is aging, which entails ongoing replacement to ensure maintenance of safety and reliability. FEI's capital replacement program depends on external resources, both skilled labour and materials, which are likely to be in demand by other utilities with similarly aging assets, creating potential cost pressures and forecasting risk. The operating risks that FEI faces have not changed materially since 2009.

5. Political Risk

Most of the key elements of political risk to which FEI is exposed have been outlined above in the context of market/demand and competitive risk. They comprise the energy and energy-related policies, legislations, regulations and decisions at both the provincial and local government levels that support reduction in natural gas usage, either by encouraging an overall reduction in energy usage or by supporting the displacement of natural gas by alternative forms of energy.

FEI also is subject to risk arising from First Nations rights. As at the time of the 2009 Application, uncertainty regarding the extent of aboriginal rights and title in BC continues. There is still an absence of treaties with most of the large number of recognized First Nations groups in BC. The obligation to consult with, and if necessary, accommodate First Nations' interests ultimately lies with the Crown, not with the utility. The issues related to First Nations rights and claims expose FEI to operational and regulatory uncertainty and as well as the risk of litigation.

Government has played, and continues to play, a significant role in triggering and reinforcing the trends that are putting downward pressure on FEI's throughput. The level of political risk faced by FEI is no less than that faced in 2009.

6. Regulatory Risk

FEI's regulatory model is based on a forward test year and comprises a number of deferral accounts that mitigate FEI's short-term forecast risk. The principal deferral accounts are related to the recovery of gas supply costs (Commodity and Midstream Cost Reconciliation Accounts) and of the variances between forecast and actual residential and commercial usage (Revenue Stabilization Adjustment Mechanism). Neither the basic regulatory framework nor the extent to which FEI's forecast risk is mitigated through deferral mechanisms has changed materially since 2009.

The principal change that has occurred since the 2009 Application relates to increased regulatory lag and uncertainty that stem largely from the changing energy environment, particularly for natural gas. More FEI activities, focused on new initiatives, are subject to regulatory oversight, entailing more frequent, protracted, and contentious proceedings. With the requirement that the Commission consider applications in the context of the province's energy policies, in particular the 2010 Clean Energy Act, the regulatory environment has become more complex and less predictable.

On balance, the regulatory risk to which FEI is exposed is no lower, and in some ways is higher, than in 2009.

7. Business Risk of FEI Relative to 2009

Despite the shale gas boom and lower commodity prices of natural gas, the principal trends in FEI's business risk that were identified in the 2009 Application have persisted. The level of business risk, in the aggregate, to which FEI is exposed is at least as high as when it was last assessed in 2009. Consequently, in the context of the trend in business risk, FEI's deemed 40% common equity ratio remains at the lower end of a reasonable range.

E. BOND RATINGS AND CREDIT METRICS

Bond ratings or credit ratings are the credit rating agencies' opinion of the credit quality of individual debt obligations or of a debt issuer's general creditworthiness. Credit quality refers to the ability of the issuer to pay the interest and repay the principal on the loan when they are due. Bond ratings are an important determinant of the relative price (credit spread) an issuer will have to pay to obtain new debt.

Bond ratings are partly a function of credit metrics or credit ratios. Credit metrics are objective measurements of a firm's cash flows, earnings, debt leverage and interest coverage used to assess financial strength and credit risk.

For regulated utilities, the debt ratio (and its converse, the equity ratio) is, on its own, a key credit metric, and is a contributing factor to the magnitude of other critical credit ratios, as well as to the bond rating itself. An examination of debt ratings and credit metrics provides valuable insight into a utility's financial strength relative to its peers and into trends over time, and thus into the reasonableness of its capital structure.

FEI's debt is rated by DBRS and Moody's.[52] FEI's DBRS rating is A with a Stable trend; its Moody's debt rating is A3 for senior unsecured debentures with a Stable Outlook.[53] Since bond investors are more likely to focus on the lowest rating, it is appropriate to focus on the Moody's rating, which is only one notch from the Baa rating category (equivalent to the BBB category on the DBRS/S&P rating scales).[54]

In August 2009, Moody's adopted a new framework for rating electric and gas utilities world-wide.[55] The new ratings framework gives 50% weight to two factors that reflect regulatory risk, regulatory framework (25% weight) and ability to recover costs and earn returns (25% weight). The methodology also considers diversification (10% weight)[56] and financial strength and liquidity (40% weight). The financial strength and liquidity factors are divided into sub-categories with individual weights assigned to the sub-categories. The sub-categories and weights are: Liquidity (10%),[57] Cash from Operations (CFO) plus Interest/Interest, or CFO Interest Coverage (7.5%), CFO to Debt (7.5%), CFO less Dividends to Debt (7.5%) and Debt to Total Capital (7.5%).

[52] FEI's unsolicited S&P ratings were last confirmed in September 2010 and then withdrawn by S&P due to lack of market interest.

[53] FEI's senior secured rating, which applies only to $275 million of Purchase Money Mortgages that were issued over 20 years ago, is A1. The senior secured rating was raised from A2 in August 2009 as part of an industry-wide change, under which the debt rating agency widened the notching between the secured and unsecured debt ratings of investment-grade utilities to two notches. The change affected $90 billion of North American debt securities. For most utilities with senior secured securities, including FEI, the upgrades were a single notch.

[54] The Moody's Rating scale is as follows:

Rating	Rating Definition
Aaa	Highest quality with minimal credit risk
Aa	High quality with very low credit risk
A	Upper medium credit with low credit risk
Baa	Medium grade with moderate credit risk; may possess certain speculative elements
Ba	Have speculative elements and are subject to substantial credit risk
B	Speculative and subject to high credit risk
Caa	Of poor standing and subject to very high credit risk

To ratings within each major category, a modifier of 1 to 3 is appended, with 1 meaning that the obligation ranks in the upper end of its generic rating category and 3 means that the obligation ranks at the lower end of its generic rating category. Ratings of Baa3 or higher are considered investment grade.

[55] Moody's Global Infrastructure Finance, *Rating Methodology: Regulated Electric and Gas Utilities*, August 2009.

[56] For gas distribution utilities, diversification refers to market position, which reflects the diversity of markets among economic regions and regulatory regimes, the make-up of the customer base (e.g., dependence on industrial load) and growth potential. For electric utilities, the 10% weight attributed to diversification is split between market position (5%) and generation and fuel diversity (5%).

[57] Liquidity encompasses a company's ability to generate cash from internal sources, as well as the availability of external sources of financings to supplement these internal sources.

For the four credit metrics listed above, Moody's indicative ranges for A, Baa and Ba ratings based on those factors are set out in the table below:

Table 5

Metric	A	Baa	Ba
CFO Interest Coverage	4.5-6.0X	2.7-4.5X	1.5-2.7X
CFO/Debt	22-30%	13-22%	5-13%
CFO less Dividends to Debt	17-25%	9-17%	0-9%
Debt/Total Capital	35-45%	45-55%	55-65%

Each utility is assigned a rating in each of the eight categories based on the criteria applicable to the factor, using the same letter grade scale that is used to assign debt ratings. The actual rating assigned to the utility is based on the weighted average of the ratings assigned to each of the factors. Moody's first applied its new framework to FEI in its May 2010 *Credit Opinion*. The most recent *Credit Opinion* for FEI was issued in July 2011.

In the July 2011 *Credit Opinion*, Moody's assigned the following ratings to each of the eight key factors:

Table 6

Factor	Weighting	Rating
Regulatory Framework	25%	AA
Ability to Recover Costs and Earn Returns	25%	A
Diversification/Market Position	10%	A
Liquidity	10%	A
CFO Interest Coverage	7.5%	Ba1
CFO to Debt	7.5%	Ba2
CFO-Dividends to Debt	7.5%	Ba2
Debt/Capital	7.5%	Ba3
Indicated Rating from Methodology Grid		A3
Actual Rating		**A3**

Source: Moody's, *Credit Opinion: FortisBC Energy Inc.*, July 21, 2011.

Table 6 shows the FEI's ratings in four of the five Financial Strength categories are non-investment grade, i.e., lower than Baa3. On a weighted average basis, including liquidity, FEI is rated between Baa2 and Baa3 (low investment grade). Excluding liquidity, that is, based on the four quantitative credit metrics only, FEI's financial strength rating is Ba2 (or mid BB on the DBRS/S&P rating scales), i.e., non-investment grade.

Under Moody's "old" rating methodology, which also included a number of financial strength metrics, FEI was Baa-rated on Financial Strength and Flexibility.[58] Despite the increase in allowed ROE and common equity ratio in the *2009 ROE Decision*, FEI's financial strength rating has not been raised. As Moody's noted in the July 2011 *Credit Opinion* for FEI:[59]

> FEI's financial metrics are materially weaker than those of its A3 rated global gas utility peers such as Piedmont Natural Gas Company, Inc., Northwest Natural Gas Company, UGI Utilities and its sister company, FEVI. We recognize that FEI's weaker financial metrics are largely a function of the deemed equity and allowed ROE approved by the BCUC. In general, Canadian deemed equity ratios and allowed ROEs are low relative to those of other jurisdictions.

and

> Notwithstanding FEI's low risk business profile, its financial profile is considered weak at the A3, senior unsecured rating level. Accordingly, a sustained weakening of FEI's Cash Flow Interest Coverage below 2.3x and CFO pre-WC / Debt below 8% combined with a less supportive and predictable regulatory framework would likely result in a downgrade of FEI's rating. This could occur if gas were to lose its competitive advantage over electricity in British Columbia due (*sic*) Provincial policies favouring non-carbon emitting energy sources or other factors.

[58] Moody's, *Rating Methodology: North American Regulated Gas Distribution Industry (Local Distribution Companies)*, October 2006 and *Credit Opinion: Terasen Gas Inc.*, May 27, 2008.
[59] Moody's, *Credit Opinion: FortisBC Energy Inc.*, July 21, 2011.

Although the new Moody's rating methodology released in August 2009 gives weight to a different set of credit metrics than the 2006 methodology,[60] there are two metrics common to both, debt/capital and CFO-Dividends to Debt.[61] As the table below shows, Moody's has strengthened its guidelines for the debt ratio across all rating categories and for the CFO-Dividends to Debt ratio in the higher rating categories (A and above).

Table 7

	Rating Category							
	Aa		A		Baa		Ba	
Metric	2006	2009	2006	2009	2006	2009	2006	2009
Debt/ Capitalization	30-40%	25-35%	40-50%	35-45%	50-65%	45-55%	65-85%	55-65%
CFO - Dividends/ Debt	21-26%	25-35%	15-21%	17-25%	10-15%	9-17%	5-10%	0-9%

Under the 2006 methodology, the 60% debt ratio adopted in the *2009 ROE Decision* placed FEI in the investment grade category (Baa). Under the new methodology, FEI's deemed 60% debt ratio is in the Ba rating category. Moody's most recently reported CFO-Dividends to Debt Ratio (5.9% for 2010) for FEI is within the non-investment grade Ba rating category under both the 2006 and 2009 guidelines.[62]

A comparison of FEI's credit metrics to other relatively pure-play investor-owned Canadian gas and electric utilities with rated debt shows that, although FEI's credit metrics have generally strengthened since the *2009 ROE Decision*, its credit metrics remain well below the median of other relatively pure-play investor-owned Canadian utilities with rated debt.[63]

[60] The new methodology focuses on cash flow rather than earnings based ratios to reduce the impact from non-cash items such as pension expense.
[61] Referred to as Retained Cash Flow to Debt in the 2006 methodology.
[62] Based on reported financial data from FEI's 2011 Consolidated Financial Statements, I calculated the 2011 ratio at 6.6%, or still within the Ba rating category.
[63] Includes all investor-owned Canadian gas and electric utilities currently rated by DBRS.

Table 8

	2007	2008	2009	2010	2011
EBIT Coverage (X)					
FEI	2.0	1.9	2.0	2.2	2.2
Canadian Utilities (Median)	2.2	2.4	2.4	2.4	2.4
EBITDA Coverage (X)					
FEI	2.7	2.6	2.7	3.0	3.0
Canadian Utilities (Median)	3.9	3.8	3.8	3.8	4.0
Cash Flow to Total Debt (%)					
FEI	8.9	10.1	10.3	10.9	11.8
Canadian Utilities (Median)	16.8	16.2	15.0	17.4	16.5

Notes:

EBIT Coverage: Earnings before Interest and Taxes divided by Interest
EBITDA Coverage: Earnings before Interest, Taxes, Depreciation and Amortization divided by Interest
Cash Flow to Total Debt: Net Income plus Depreciation, Amortization and Deferred Taxes divided by Total Debt

Source: Schedule 7, page 2 of 2.

FEI's credit metrics (as well as those of other Canadian utilities) continue to compare unfavourably to its U.S. peers, with which it competes for capital, as summarized in the table below.

Table 9

	Equity Ratio [1/]	EBIT Coverage [2/]	EBITDA Coverage [2/]	FFO Interest Coverage [3/]	Cash Flow/Debt [2/]
FEI	40.3%	2.2X	3.0X	2.7X	11.8%
Medians:					
Canadian Utilities [4/]	40.5%	2.4X	4.0X	3.4X	16.5%
U.S. A-Rated Gas LDCs	49.2%	4.4X	5.3X	5.7X	25.9%
U.S. Proxy Utility Sample	48.7%	3.6X	5.0X	5.3X	23.4%

[1/] 2011
[2/] 2011 and 2010 respectively for Canadian and U.S. companies.
[3/] 2010
[4/] Canadian Utilities are investor-owned utilities with debt currently rated by DBRS.

Source: Schedules 5 (page 1 of 2), 6, 7, 8 and 9.

FEI's allowed return (combination of capital structure and ROE) should provide the opportunity to achieve a degree of financial strength that is comparable to that of its North American peers.

As with Canadian utilities, the actual credit metrics of U.S. utilities reflect the returns (combination of capital structure and ROE) that are awarded by regulators. From January 2010-June 2012, the median common equity ratio adopted by U.S. regulators for gas distribution utilities was 50%, with a corresponding average awarded ROE of 10.05%. For those U.S. gas distribution utilities with weather normalization clauses, decoupling or analogous mechanisms (flat monthly fee rate design), the median allowed common equity ratio was approximately 50% with a corresponding average awarded ROE of 10%.

F. CHANGES IN ALLOWED CAPITAL STRUCTURE RATIOS FOR CANADIAN UTILITIES

As discussed above, the overall return, which includes both capital structure and ROE, needs to meet the three requirements of the fair return standard. In the 2009 Application, the reasonableness of FEI's proposed 40% equity ratio was evaluated partly by reference to trends in the capital structures of its peers. Changes in the capital structure ratios of FEI's peers since the 2009 Application are also a relevant consideration to the assessment of a reasonable capital structure for FEI in this proceeding.

Since the end of the oral portion of the 2009 Application, there have been a number of increases in the deemed common equity ratios adopted for other ex-BC Canadian utilities with which FEI competes for capital.[64] The deemed common equity ratios of all but one of the Alberta utilities have increased.[65] As noted earlier, in its *Decision 2009-216*, the AUC implemented a base two percentage point across-the-board increase in common equity ratios, with some company-specific adjustments to the base increase. The increases that were approved in that decision were confirmed in *Decision 2011-474*. The base increase in 2009 reflected the following four

[64] Both Enbridge Gas and Union Gas have applied for increases to their deemed common equity ratios, from the 36% that was in place prior to the commencement of their five-year incentive regulation plans (due to expire at the end of 2012) to 40% for Union and 42% for Enbridge, compared to the 40% equity ratio that the OEB has adopted for the Ontario electricity distributors. The two proceedings are on-going.

[65] For ATCO Pipelines in *Decision 2011-474*, due to the AUC's conclusion that, due to its integration with NGTL, its business risk had declined significantly.

considerations: (1) the credit crisis warranted an increase in the equity ratios for all utilities to reflect increased risk and the re-pricing of risk; (2) lower ROEs and tax rates required an increase to maintain credit metrics at the same level as in 2004 (the previous generic cost of capital proceeding); (3) the analysis of equity ratios and credit ratings of relatively pure-play Canadian utilities did not indicate any equity ratio increase was required; and (4) the business risk analysis did not indicate major changes in the relative risks of the various utility segments; any increase in equity ratios should be relatively uniform across the utility sectors and individual utilities unless utility-specific factors require otherwise.

In addition, since the end of the oral portion of the 2009 Application, the allowed common equity ratios for a number of the NEB-regulated pipelines have increased. Foothills, NGTL, and Westcoast have since negotiated common equity ratios of 40%, or four (Foothills and Westcoast) to five (NGTL) percentage points higher than at the time of the 2009 cost of capital proceeding in BC.[66]

In isolation, the trend in the allowed equity ratios of FEI's Canadian peers since the end of the oral portion of the 2009 Application supports, at a minimum, maintaining the 40% common equity ratio adopted for FEI in the *2009 ROE Decision*.

G. REASONABLENESS OF PROPOSED CAPITAL STRUCTURE

The FBCU are proposing that the equity ratio for FEI, the proposed benchmark BC utility, be established at a minimum of 40%. I agree with this assessment. In my testimony filed with the Commission in the 2009 Application, I concluded that the 40% equity ratio proposed by FEI was within a reasonable range, albeit at the lower end. I continue to hold that opinion, for the following reasons:

[66] National Energy Board, Order TG-03-2010, June 2010, (Foothills Pipe Line Ltd., for 2010-2012); Order TG-05-2010, September 2010, (Nova Gas Transmission Ltd., for 2010-2012); Order TG-01-2011, January 2011, (Westcoast Energy Inc., for 2011-2013).

1. The level of business risk to which FEI is exposed is at least as high as when it was last assessed in 2009.

2. FEI's credit metrics remain weak for its Moody's credit rating, which is at the lower end of the A range, despite the increase in common equity ratio and ROE in 2009. Its quantitative financial strength metrics ratings are all below investment grade guidelines.

3. Moody's debt ratio guidelines have become more stringent since the 2009 Application. Whereas under Moody's old ratings methodology, the 60% debt ratio (40% equity ratio) adopted for FEI in the *2009 ROE Decision* fell into an investment grade rating category (Baa), it now falls into a non-investment grade category (Ba).

4. While FEI's current 40% deemed common equity ratio is comparable to the median (40.5%) actual common equity ratio maintained by other Canadian pure-play investor-owned gas and electric utilities, its credit metrics compare unfavourably to those utilities at the current capital structure and ROE.

5. Since the 2009 Application, common equity ratios for a number of Canadian utilities, with which FEI was compared, have been increased. The increases in the case of the Alberta utilities were not for business risk reasons, but rather for credit metrics and capital market risk reasons. The credit metrics and capital market rationale relied upon by the AUC for its base increase in equity ratios would have similarly applied to FEI.

6. Capital investment requirements for infrastructure in North America and globally have grown to unprecedented levels, which point to significant competition for capital going forward. FEI, as well as other BC utilities, should be positioned so that it can compete successfully, that is, continue to obtain capital as required on

reasonable terms and conditions. At a 40% common equity ratio (and the currently allowed ROE of 9.5%), FEI's equity ratio and credit metrics are much weaker than those of its U.S. utility peers.

The recommended ROE developed in Section VIII is premised on FEI pre-amalgamation, as the benchmark BC utility, maintaining a deemed common equity ratio of 40.0%.

VIII. FAIR ROE FOR FEI AS BENCHMARK BC UTILITY

A. IMPORTANCE OF MULTIPLE TESTS

The key to determining the fair return on equity (i.e., ensuring that all three requirements of the fair return standard are met) is reliance on multiple tests. There are three different types of tests that have traditionally been used to estimate the fair return on equity:

1. Equity Risk Premium (including, but not limited to, the Capital Asset Pricing Model),
2. Discounted Cash Flow, and
3. Comparable Earnings.

Equity risk premium tests are market-based tests premised on the basic concept of finance that the higher the risk to which an investor is exposed, the higher is the return that the investor requires. Equity risk premium tests entail estimation of the additional premium or incremental return that an equity investor requires relative to a less risky security, e.g., government bonds or corporate bonds.

Discounted cash flow models are based on the proposition that the market price of a security or value of an investment is equal to the present value of all the future expected cash flows from the security or investment, discounted at a rate that reflects the riskiness of the cash flows. If the

price of an equity share is known, and the expected cash flows can be estimated, the investor's expected rate of return can also be estimated.

The comparable earnings test is based on the proposition that capital should not be committed to a venture unless it can earn a return commensurate with that available prospectively in alternative ventures of comparable risk. The comparable earnings test estimates a fair return on equity by reference to returns achievable on the book value of companies subject to a similar level of investment risk to the regulated utility.

Each of the tests is based on different premises and brings a different perspective to the fair return on equity. None of the individual tests is, on its own, a sufficient means of ensuring that all three requirements of the fair return standard are met; each of the tests has its own strengths and weaknesses. Individually, each of the tests can be characterized as a relatively inexact instrument; no single test can pinpoint the fair return.[67] Changes to the inputs to individual tests may have different implications depending on the prevailing economic and capital market conditions.[68] These considerations emphasize the importance of reliance on multiple tests.

Each test has its own set of pros and cons. The discounted cash flow test directly measures expected utility returns by using utility-specific data only: prices, dividends and estimates of expected growth in the cash flows to investors. It is subject to an ongoing debate around the accuracy of investment analysts' forecasts as the measure of investor expectations of growth. The comparable earnings test explicitly recognizes that the objective of regulation is to emulate competition and measures returns on the same original cost basis on which utilities are regulated. It is subject to concerns around selection criteria and whether the results are representative of economic returns. The theoretical Capital Asset Pricing Model, an equity risk premium test

[67] For example, Bonbright states, "No single or group test or technique is conclusive. Therefore, it is generally accepted that commissions may apply their own judgment in arriving at their decisions." (James C. Bonbright, Albert L. Danielsen, David R. Kamerschen, *Principles of Public Utility Rates*, 2nd Ed., Arlington, VA.: Public Utility Reports, Inc., March 1988, page 317).

[68] For example, see Federal Communications Commission, Report and Order 42-43, CC Docket No. 92-133 (1995).

> Equity prices are established in highly volatile and uncertain capital markets... Different forecasting methodologies compete with each other for eminence, only to be superseded by other methodologies as conditions change... In these circumstances, we should not restrict ourselves to one methodology, or even a series of methodologies, that would be applied mechanically. Instead, we conclude that we should adopt a more accommodating and flexible position.

framed in an elegant, simple construct, has an intuitive appeal. With only three components, it appears, on the surface, easy to apply. Nevertheless, it has its own set of challenges, which are summarized below.

The focus on the challenges of the theoretical CAPM is not to suggest that other tests are necessarily superior, but because a number of Canadian regulators have, in recent years, tended to favour CAPM in their estimation of the allowed ROEs, albeit, in some circumstances, with recognition of its shortcomings and adjustments to the model that may be required. The challenges in the application of the CAPM include:

1. The CAPM attempts to measure, within the context of a diversified portfolio, what return an equity investor should require, in contrast to the return that the investor does require or what returns are actually available to investments of comparable risk.

2. The size of the market risk premium cannot be directly observed and is subject to a wide divergence of opinion. While historic risk premiums may provide a perspective on the size of the expected forward-looking market risk premium, historic results are sensitive to the country from which the data are drawn and the time period over which they are measured.

3. The market risk premium is not a fixed quantity; it changes with investor experience and expectations. It would be higher, for example, when investors perceive that the risk of the equity market has increased relative to that of the government bond market and vice versa. However, the model does not readily allow estimation of changes in the size of the market risk premium as economic or capital market conditions (e.g., interest rates) change. The typical application of the CAPM relies heavily on long-term average achieved equity risk premiums in conjunction with a current or forecast risk-free rate.[69] In other words, the typical

[69] Theoretically, an underlying premise of the CAPM is that the risk-free rate is uncorrelated with the return on the market. In other words, the assumption is that there is no relationship between the risk-free rate and the equity

application of the model captures changes in interest rates, by using a current or forecast interest rate as the risk-free rate, but the model itself does not provide any insight into how the equity market risk premium changes when interest rates change.

The need to capture and measure changes in the size of the market risk premium due to changes in the required equity market return and the relative risk of the so-called risk-free security introduces a further complication in the application of the CAPM. This obstacle is particularly problematic with current and forecast long-term Canada bond yields at historically low levels.

4. The achieved equity market risk premium in Canada has been significantly influenced by historic long-term Government of Canada bond yields and returns. The improvement in Canada's fiscal performance over the past fifteen years contributed to a steady decline in long-term Government of Canada bond yields. This secular decline, combined with recent global factors that have led to further downward movement, has resulted in a wide gap between the historical average yields which underpin the calculation of achieved market risk premiums and the prevailing and forecast yields. Since the long-term historic average long-term Government of Canada bond yield exceeds the forecast yield by a wide margin, the long-term average achieved market risk premium is unlikely to be an accurate estimate of the required market risk premium.

5. The objective of using the CAPM (as with any cost of equity model) is to estimate the returns that investors expect or require. Empirical tests of the model have shown in some cases that the model underestimates the returns for low beta stocks

market return (i.e., the risk-free rate has a zero beta). However, the application of the model frequently assumes that the equity market return is highly correlated with the risk-free rate, that is, the equity market return and the risk-free rate move in tandem. Consequently the application of the test frequently proceeds on an assumption directly in conflict with an underlying premise of the model itself.

and overestimates them for high beta stocks and in other cases that there is no relationship between beta and return.[70]

The challenges associated with the CAPM are of a sufficient magnitude to warrant the conclusion that it is not inherently superior to other approaches to the estimation of a fair return, particularly in light of the adjustments to the theoretical CAPM necessary to apply it to the utility industry.

The Commission, in the *2009 ROE Decision*, recognized the challenges of the CAPM, the need for adjustments, and the need to consider the results of multiple tests. The Commission noted (page 45):

> that CAPM is based on a theory that can neither be proved nor disproved, relies on a market risk premium which looks back over nine decades and depends on a relative risk factor or beta. The fact that the calculated beta for PNG (considered by Dr. Booth to be the most risky utility in Canada) was 0.26 in 2008 causes the Commission Panel to consider that betas conventionally calculated with reference to the S&P/TSX are distorted and require adjustment.
>
> The Commission Panel will give weight to the CAPM approach, but considers that the relative risk factor should be adjusted in a manner consistent with the practice generally followed by analysts so that it yields a result that accords with common sense and is not patently absurd.

In its *Report of the Board on the Cost of Capital for Ontario's Regulated Utilities, EB-2009-0084,* December 11, 2009, pages 45-46 ("*Report of the Board on the Cost of Capital*"), the OEB stated:

> The Board's current formulaic approach for determining ROE is a modified Capital Asset Pricing Model methodology, and in his written comments, Dr. Booth recommended that this practice be continued. Dr. Booth recommended that "the Board base its fair ROE on a risk based opportunity cost model, with overwhelming weight placed on a CAPM estimate".

[70] The beta is a statistical measure of the sensitivity of the return of a particular security or portfolio of securities to the return on the overall market portfolio. The return of a security with a beta of 0.50 will change by approximately 50% of the change in the return on the overall market portfolio, which by definition, has a beta of 1.0.

> This view was not shared by other participants in the consultation, who asserted that the Board should use a wide variety of empirical tests to determine the initial cost of equity, deriving the initial ERP [equity risk premium] directly by examining the relationship between bond yields and equity returns, and indirectly by backing out the implied ERP by deducting forward-looking bond yields from ROE estimates...
>
> The Board agrees that **the use of multiple tests to directly and indirectly estimate the ERP is a superior approach to informing its judgment than reliance on a single methodology**. In particular, the Board is concerned that CAPM, as applied by Dr. Booth, does not adequately capture the inverse relationship between the ERP and the long Canada bond yield. As such, the Board does not accept the recommendation that it place overwhelming weight on a CAPM estimate in the determination of the initial ERP.

All approaches to estimating a fair return require significant judgment in their application, the extent of which depends on the prevailing state of the capital markets. Any individual cost of equity model implicitly ascribes simplicity to a cost whose determination is inherently complex. No single model is powerful enough on its own to produce "the number" that will meet the fair return standard. Only by applying a range of tests along with informed judgment can adherence to the fair return standard be ensured.

B. DISTINCTION BETWEEN MARKET AND BOOK VALUES FOR FAIR ROE DETERMINATION

Discounted cash flow (DCF) and equity risk premium models represent conceptually different ways that investors might approach estimating the return they require on the market value of an equity investment. While the DCF and equity risk premium tests estimate the return required on the market value of common equity, regulatory convention applies that return to the book value of the assets included in rate base. The determination of a fair return on book equity needs to recognize that distinction.

In simple terms, assume that the cost of equity for a company whose stock value is $200 is 10%. That means that investors require a return, in dollar terms, of $20. If the book value of the stock is $100, and the 10% cost of equity is applied to the $100 book value rather than the $200 market value, the resulting return in dollar terms is only $10, or half that which investors require.

The proxy companies used for the purpose of estimating the cost of equity for the benchmark BC utility have market-to-book ratios of approximately 1.7X (U.S. sample) to 2.6X (Canadian sample),[71] well above the market-to-book ratio of 1.0 that conceptually would equate the return on book value (in dollar terms) to the return estimated by reference to the market-based DCF or equity risk premium tests.

When the allowed return is applied to an original cost book value, a market-derived cost of attracting capital should be converted to a fair and reasonable return on book equity so that the stream of dollar earnings on book value equates to the investors' dollar return requirements on market value. Failure to make such a conversion will produce an inadequate level of earnings which will discourage utilities from making investments in critical infrastructure.

It has been suggested that the observed market-to-book ratios of utilities are evidence that the allowed returns on equity are too high (or at least fair).[72] Such a conclusion is unwarranted.

Book values are accounting-based and reflect the historic impacts of various financial statement accounting conventions (and changes in those conventions over time) for recording such items as depreciation reserves, deferred taxes, pension assets and liabilities, unrealized gains and losses, etc. The sole impact of accounting conventions over time on the recorded amount of equity can cause the book value of equity to diverge significantly from the economic value, particularly in the presence of inflation, and as well as the going concern value of the corporation.

Market values reflect returns that investors expect to earn over the longer-term, not the returns that regulators have historically or recently allowed. Expected returns may be materially higher than allowed returns due to factors such as the anticipation of achievement of synergies among existing operations, of higher returns achieved from non-regulated operations, through performance-based regulation and/or growth in the customer or asset base, the perceived ability

[71] Based on daily average share price from March 16, 2012 to June 15, 2012 compared to fiscal year-end 2011 book value per share. Excluding Accumulated Other Comprehensive Income from equity, which reflects cumulative unrealized gains and losses, e.g., in the market value of pension assets, the median market/book ratio of the Canadian utilities is lower, at 2.3X.

[72] For example, AUC, *Decision 2009-216*, pages 77-78.

to improve shareholder returns by leveraging assets, and the ability of the firms to take advantage of growth opportunities beyond the existing asset base.

Further, investors are likely to value utility shares on a relative basis (to other equity securities) rather than on an absolute basis (relative to the utilities' own book values). Over time, the market-to-book ratios of publicly traded utilities companies have generally tracked the overall tenor or "mood" (and the market-to-book ratio) of the equity market as a whole.

Moreover, while some might contend that the market-to-book ratio of utilities should be 1.0 or close thereto, economic principles suggest otherwise. Regulation is intended to be a surrogate for competition. The competitive model indicates that equity market values tend to gravitate toward the replacement cost of the underlying assets. This is due to the economic proposition that, if the discounted present value of expected returns (market value) exceeds the cost of adding capacity, firms will expand until an equilibrium is reached, i.e., when the market value equals the replacement cost of the productive capacity of the assets. Absent inflation and technological change, the market value and replacement cost of firms operating in a competitive environment would tend to equal their book value or cost. However, the fact that inflation has occurred, and continues to occur, renders that relationship invalid. With inflation, under competition, the market value of a firm trends toward the current cost of its assets. The book value of the assets, in contrast, reflects the historic depreciated cost of the assets. Since there have been moderate to relatively high levels of inflation over the past twenty-five years, it is reasonable to expect market values to exceed the book value of those assets.[73]

C. SELECTION OF COMPARABLE UTILITIES

The estimation of the cost of equity for the benchmark BC utility, FEI, is based in large part on estimates of the cost of equity of comparable risk utilities. Comparable risk companies are used as a proxy for the benchmark BC utility to recognize that investors have alternatives for their investment capital. Rational investors will commit funds to the investments that promise the highest return for a given level of investment (business plus financial) risk. Unless the return

[73] See Appendix F for further discussion.

that can be expected on an investment in the benchmark BC utility is equal to that available from comparable risk investments, investors will direct their funds elsewhere.

The cost of equity, as estimated using tests applied to proxy companies, reflects the composite of those proxy companies' business, regulatory and financial risks. The cost of equity estimated by reference to a sample of companies is applicable to a specific utility without adjustment if the magnitude of the total risks (business plus financial) of the sample and the specific utility is comparable. In principle, given a sufficiently large universe of utilities, different samples of proxy companies can be selected, each designed to be a proxy for a specific utility. If, however, the total risk of the sample and the specific utility is not equal, the solutions include: (1) changing the specific utility's capital structure; (2) making an adjustment to the proxy companies' cost of equity to reflect the relative total risk of the specific utility; or (3) some combination of (1) and (2). To minimize the extent to which such adjustments are required, the point of departure should be the selection of companies that are of relatively similar total risk to the benchmark BC utility, FEI.

In Canada, there are only six publicly-traded Canadian companies whose operations are largely regulated.[74] These companies are relatively heterogeneous in terms of both operations[75] and size.[76] The relatively small and heterogeneous universe of publicly-traded Canadian utilities means that it is impossible to select a sample of companies that would be considered directly comparable in total risk to any specific Canadian utility.

U.S. regulated companies represent a reasonable point of departure for the selection of a sample of proxies from which to estimate the cost of equity for an average risk Canadian utility. The operating (or business) environments are similar, the regulatory model in the U.S. is similar to

[74] Canadian Utilities Limited, Emera Inc., Enbridge Inc., Fortis Inc., TransCanada Corporation and Valener Inc.
[75] Their operations span all the major utility industries, including electricity distribution, transmission and power generation, natural gas distribution and transmission, and liquids pipeline transmission, as well as unregulated activities in varying proportions of their consolidated activities.
[76] Ranging from an equity market capitalization of approximately $550 million (Valener) to $31.9 billion (Enbridge).

the Canadian model, Canadian and U.S. capital markets are significantly integrated and the cost of capital environment is similar.[77]

Equity markets are global; investors are increasingly committing equity funds beyond domestic borders. Canadian investors looking to commit funds to utility equity shares will compare returns available from Canadian utilities to returns available from utility shares globally, including returns from U.S. utilities (both market and allowed). A review of the major Canadian public sector defined benefit pension funds which list all their equity holdings individually shows that the funds have invested in a significant number of U.S. utilities.

While market data for the Canadian utilities provide some perspective on the fair return for FEI as the benchmark BC utility, a more accurate assessment can be made by reliance on a sample of U.S. utilities drawn from a much broader universe. Nevertheless, not all utilities in the U.S. would be considered of similar risk to the benchmark BC utility, FEI, just as not all utilities in the U.S. would be similar to each other. Consequently, the sample of U.S. utilities which serve as a proxy for the benchmark BC utility was selected according to criteria designed to (1) identify companies that are of relatively similar total risk to the benchmark BC utility (FEI) and (2) produce a large enough sample of companies to ensure reliable cost of equity test results.

[77] The OEB's *Report of the Board on the Cost of Capital*, pages 21-22, stated, "Second, there was a general presumption held by participants representing ratepayer groups in the consultation that Canadian and U.S. utilities are not comparators, due to differences in the "time value of money, the risk value of money and the tax value of money." [fn] In other words, because of these differences, Canadian and U.S. utilities cannot be comparators. The Board disagrees and is of the view that they are indeed comparable, and that only an analytical framework in which to apply judgment and a system of weighting are needed."

The NEB's *Reasons for Decision, Trans Québec and Maritimes Pipelines Inc., RH-1-2008*, page 71, concluded that "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."

The Commission's *2009 ROE Decision*, page 16, found that, "In addition, the Commission Panel continues to be prepared to accept the use of historical and forecast data of US utilities when applied: as a check to Canadian data, as a substitute for Canadian data when Canadian data do not exist in significant quantity or quality, or as a supplement to Canadian data when Canadian data gives unreliable results. Given the paucity of relevant Canadian data, the Commission Panel considers that natural gas distribution companies operating in the US have the potential to act as a useful proxy in determining TGI's capital structure, ROE, and credit metrics."

To ensure comparability with the benchmark BC utility, only relatively pure-play U.S. utilities were selected. The selected utilities are rated no lower than BBB+/Baa1 by both Standard & Poor's and Moody's. The median S&P debt rating of the U.S. utility sample is A-, identical to the A- rating accorded on average to the universe of Canadian utilities rated by S&P. All of the companies in the sample are assigned an "Excellent" business risk ranking, the same as the ranking assigned to the majority of Canadian utilities rated by S&P.[78] The median Moody's rating for the U.S. utility sample is Baa1 (Schedule 15, page 1 of 2), equal to the median of the ratings that Moody's has assigned to Canadian gas and electric utilities.[79] The average and median *Value Line* Safety ranks of the U.S. utility sample are 1.5 (Schedule 15, page 1 of 2); the Safety ranks of the two Canadian regulated companies covered by *Value Line* (Enbridge Inc. and TransCanada Corp.) are 1 and 2 respectively.[80] The average difference in the adjusted monthly betas of publicly-traded Canadian utilities and U.S. utility sample for five-year periods ending 1993-2011 has been minor (Schedule 14). Even if equity investors viewed the U.S. utility sample as facing higher business (combined operating and regulatory) risk than the benchmark BC utility (FEI), the U.S. utility sample has higher common equity ratios (lower financial risk). The average common equity ratio of the sample of U.S. utilities is approximately 49% (Schedule 6), compared to FEI's 40% deemed common equity ratio and the median 40% actual common equity ratio of investor-owned Canadian utilities with rated debt (Schedule 5).[81]

[78] Standard & Poor's assigns a business risk ranking to each of the companies it rates. There are six business risk categories, ranging from "Excellent" to "Vulnerable".

[79] Including FEI (A3), FEVI (A3), FortisAlberta (Baa1), FortisBC Inc. (Baa1), Hydro One (Baa1 on a stand-alone basis), Newfoundland Power (Baa1), and Nova Scotia Power (Baa1).

[80] The Safety rank represents *Value Line's* assessment of the relative total risk of the stocks. The ranks range from "1" to "5", with stocks ranked "1" and "2" most suitable for conservative investors. The most important influences on the Safety rank are the company's financial strength, as measured by balance sheet and financial ratios, and the stability of its price over the past five years.

[81] Appendix B provides both details of the selection criteria and information on the selected U.S. utilities' operations and regulation, including for each a list of the regulatory mechanisms that have been adopted. Schedule 15, page 1 of 2 provides additional quantitative and qualitative data for the selected U.S. utilities. The most recently allowed ROEs and capital structures for the operating companies are found on Schedule 15, page 2 of 2.

D. EQUITY RISK PREMIUM TESTS

1. Conceptual Underpinnings

Equity risk premium tests are premised on the basic concept of finance that the higher the risk to which an investor is exposed, the higher is the return that the investor requires. Since an investor in common equity takes greater risk than an investor in bonds, the former requires a premium above bond yields in compensation for the greater risk. Equity risk premium tests are a measure of the market-related cost of attracting capital, i.e., a return on the market value of the common stock, not the book value.

Equity risk premium tests, similar to the other tests used to arrive at a fair return, are forward-looking, that is, they are intended to estimate investors' future equity return requirements. The magnitude of the differential between the required/expected return on equities and the risk-free rate is a function of investors' willingness to take risks and their views of such key factors as inflation, productivity and profitability. Because equity risk premium tests are forward-looking, historic risk premium data need to be evaluated in light of prevailing economic/capital market conditions. If available, direct estimates of the forward-looking risk premium should supplement estimates of the risk premium made using historic data as the point of departure. An equity risk premium can be estimated relative to a risk-free rate, for which a government bond yield is typically the proxy, as well as relative to utility bond yields, depending on the type of equity risk premium test being conducted.

Three equity risk premium tests were used to estimate the utility cost of equity:

1. Risk-Adjusted Equity Market Risk Premium Test
2. DCF-Based Equity Risk Premium Test
3. Historic Utility Equity Risk Premium Test

2. Risk-Free Rate

The application of equity risk premium tests in relation to a risk-free rate requires a forecast of the risk-free rate to which the equity risk premium is applied. A forecast long-term (30-year) Government of Canada bond yield is most widely used as the risk-free rate, although long-term Government of Canada bond yields are not risk-free. They are considered to be free of default risk, but are subject to interest rate risk.[82] Use of the long-term government bond yield recognizes (1) the administered nature (determined by monetary policy) of short-term rates; and (2) the long-term nature of the assets to which the utility equity return is applicable.

For 2012, the long-term (30-year) Government of Canada bond yield, based on the actual yields through the end of May 2012 and forecasts[83] for the remainder of the year is 2.6%. For the three-year period 2013-2015, based on the available forecasts, the 30-year Canada bond is expected to yield approximately 4.0%.[84]

Although the 30-year Government of Canada bond yield is expected to rise from its current historically and abnormally low levels over the next three years, it is still anticipated to average well below levels expected to prevail over the longer-term. Over the longer-term (2016-2022), Consensus Economics' survey of economists anticipates that the 10-year Canada bond yield will average close to 4.7%.[85] The corresponding 30-year Canada bond yield, assuming the historical long-term average spread between 30-year and 10-year Canada bonds of 35 basis points prevails, would be approximately 5.0%. The relatively low expected level of the risk-free rate needs to be

[82] If interest rates rise, the value of the bond will decline.

[83] Forecasts provided by BMO Capital Markets, CIBC World Markets, Desjardins Economic Studies, National Bank Economy and Strategy Group, RBC Economics, ScotiaBank Group and TD Securities. All of these institutions contribute to Consensus Economics, *Consensus Forecasts*, which only publishes a consensus forecast for 10-year Government of Canada bond yields.

[84] Comprised of a forecast yield of 3.2% for 2013, based on the forecasts of BMO Capital Markets, CIBC World Markets, Desjardins Economic Studies, RBC Economics, ScotiaBank Group and TD Securities, and forecast yields of 3.2%, and of 4.0% and 4.6% for 2014 and 2015 respectively, based on Consensus Economics, *Consensus Forecasts*, April 2012. Consensus Economics publishes a long-term forecast twice annually, in April and October. Consensus Economics' April 2012 forecasts for the 10-year Government of Canada bond yield were 3.6% and 4.2% for 2014 and 2015 respectively. A spread of 35 basis points (long-term average) to 60 basis points (June 2012) was added to the 10-year Government of Canada bond yield forecasts to arrive at the 30-year Government of Canada bond yield forecasts for 2014 and 2015.

[85] Consensus Economics, *Consensus Forecasts*, April 2012.

1998 expressly recognized in the estimation of the magnitude of market and utility equity risk
1999 premiums.[86, 87]
2000
2001 **3. Risk-Adjusted Equity Market Risk Premium Test**
2002
2003 3.a. Conceptual and Empirical Considerations
2004
2005 The risk-adjusted equity market risk premium approach to estimating the required equity market
2006 risk premium for a utility entails (1) estimating the equity risk premium for the equity market as
2007 a whole; (2) estimating the relative risk adjustment; and (3) applying the relative risk adjustment
2008 to the equity market risk premium, to arrive at the required utility equity market risk premium.
2009 The cost of equity is thus estimated as:
2010

$$\text{Risk-Free Rate} + \left\{ \text{Relative Risk Adjustment} \times \text{Market Risk Premium} \right\}$$

2011
2012 The risk-adjusted equity market risk premium test is a variant of the Capital Asset Pricing Model
2013 (CAPM). The CAPM attempts to measure, within the context of a diversified portfolio, what
2014 return an equity investor should require (in contrast to what the investor does require). Its focus
2015 is on the minimum return that will allow a company to attract equity capital.
2016

[86] In AUC, *Decision 2011-474*, the Commission concluded "it does not appear that the market equity risk premium is constant or independent of the level of interest rates, which is what is implied when an historic equity risk premium is applied to today's low interest rates. This calls into question the use of long-term historic market equity risk premiums without regard to the current level of interest rates." (paragraph 56) Further, it considered that "it would not be correct to assume that the currently expected market equity risk premium is necessarily equal to its long-term average value" (paragraph 57) concluding " that the expected market equity risk premium today may be higher than its' historic average, due to today's low interest rates." (paragraph 58)

[87] In its March 2012 *Equity Gilt Study*, Barclays Capital stated:

> Our analysis suggests that current equity prices are consistent with future returns that are not far from historic norms. By contrast, rates of returns on risk-free assets stand out as abnormally low, as they are currently negative on an inflation adjusted basis in nearly all cases. An important reason for these low yields is the structural decrease in the supply of risk-free assets that is not likely to be corrected in the next few years. The implication is that equity risk premia - the difference between the expected yields on equities and risk free assets - are likely to remain historically high even if cyclical factors could lead them to reverse somewhat over the next few years. (page 4)

Barclays' concluded that equity risk premia "are meaningfully higher than historical experience." (page 6)

In the CAPM, risk is measured using the beta. Theoretically, the beta is a forward looking estimate of the contribution of a particular stock to the overall risk of a portfolio. In practice, the beta is a calculation of the historical correlation between the overall equity market returns, as proxied in Canada by the returns on the S&P/TSX Composite, and the returns on individual stocks or portfolios of stocks.

3.b. Equity Market Risk Premium

3.b.(i) Overview

The estimation of the expected/required market risk premium from achieved market risk premiums is premised on the notion that investors' return expectations and requirements are linked to their past experience. Basing calculations of achieved risk premiums on the longest periods available reflects the notion that it is necessary to reflect as broad a range of event types as possible to avoid overweighting periods that represent "unusual" circumstances. On the other hand, the objective of the analysis is to assess investor expectations in the current economic and capital market environment. Consequently, the analysis of historic returns and risk premiums focused on both the post-World War II period (1947-2011)[88] and on longer periods. My analysis of historic returns and risk premiums was based on the Canadian experience as well as on the U.S. experience as a relevant benchmark for estimating the equity risk premium from the perspective of Canadian investors. The U.S. experience is relevant given the close relationship between the two economies, the fact that the U.S. has historically been the single largest alternative destination for Canadian portfolio investment (See Appendix A, page A-15) and the similarity between historical Canadian and U.S. equity market returns and equity return volatility.

[88] Key structural economic changes have occurred since the end of World War II, including:
1. The globalization of the North American economies, which has been facilitated by the reduction in trade barriers of which GATT (1947) was a key driver;
2. Demographic changes, specifically suburbanization and the rise of the middle class, which have impacted on the patterns of consumption;
3. Transition from a resource-oriented/manufacturing economy to a service-oriented economy; and
4. Technological change, particularly in the areas of telecommunications and computerization, which have facilitated both market globalization and rising productivity.

3.b.(ii) Historic Returns and Risk Premiums

Table 10 below summarizes the achieved equity and government bond returns and the corresponding experienced risk premiums for Canada and the U.S.[89]

Table 10

Period	Stock Return	Bond Total Returns	Bond Income Returns	Risk Premium Over Bond Total Returns	Risk Premium Over Bond Income Returns
Canada					
1924-2011	11.4%	6.6%	6.0%	4.8%	5.4%
1947-2011	11.8%	7.1%	6.7%	4.7%	5.0%
U.S.					
1926-2011	11.8%	6.1%	5.2%	5.6%	6.6%
1947-2011	12.3%	6.6%	5.9%	5.7%	6.4%

Source: Schedule 10.

The raw data in Table 10 show that, on average, equity returns in Canada have averaged approximately 11.5% to 11.75%, compared to average bond income[90] returns of approximately 6.0% to 7.0%, resulting in average achieved risk premiums relative to bond income returns in the range of approximately 5.0% to 5.5%.[91] The slightly lower achieved equity risk premium relative to bond income returns achieved during the post-World War II period reflects a slightly higher average equity return relative to the longer period, which was more than offset by higher bond income returns.

The corresponding raw data for the U.S. indicate average equity market returns of approximately 11.75% to 12.25%, corresponding to average bond income returns of approximately 5.25% to 6.0%, resulting in an average achieved equity risk premium of approximately 6.5% relative to bond income returns.

[89] The equity and bond market returns in Table 10 represent arithmetic averages of historical returns. Appendix A explains the rationale for using arithmetic, rather than compound (geometric) averages for the purpose of estimating the expected return from historic returns.

[90] The bond income return reflects only the coupon payment portion of the total bond return. As such, the income return represents the riskless component of the total government bond return. The bond income return is similar to the bond yield. The bond total return includes annual capital gains or losses and reinvestment of the bond coupons. In principle, using the bond income return in the calculation of historical risk premiums more accurately measures the historical equity risk premium above a true risk-free rate.

[91] The median risk premiums over the periods 1924-2011 and 1947-2011 were somewhat higher, 6.2% and 5.5%, respectively, relative to bond income returns.

3.b.(iii) Canadian Equity and Government Bond Returns

To assess whether there has been a trend in the underlying returns which generate the achieved risk premiums, the returns and risk premiums for each decade over the period 1932 to 2011 were examined and are presented in Table 11 below.

Table 11

10-YEAR AVERAGE CANADIAN MARKET RETURNS					
	Canadian Stock Returns	**Canadian Bond Total Returns**	**Canadian Risk Premium Over Bond Total Returns**	**Canadian Bond Income Returns**	**Canadian Risk Premium Over Bond Income Returns**
1932-1941	9.1%	6.6%	2.5%	3.6%	5.5%
1942-1951	18.9%	2.4%	16.6%	2.9%	16.0%
1952-1961	13.2%	2.4%	10.7%	4.1%	9.1%
1962-1971	7.8%	4.5%	3.2%	6.1%	1.7%
1972-1981	13.6%	2.7%	11.0%	9.7%	3.9%
1982-1991	10.8%	16.5%	-5.7%	11.1%	-0.2%
1992-2001	11.4%	10.8%	0.6%	7.1%	4.3%
2002-2011	9.1%	8.8%	0.3%	4.4%	4.7%

Source: www.bankofcanada.ca, Canadian Institute of Actuaries, *Report on Canadian Economic Statistics 1924-2011.*

Table 11 indicates a clear pattern in bond returns, reflecting:

1. rising bond yields in the 1950s through the early 1980s, which produced capital losses on bonds and low bond total returns;

2. high total bond returns and yields in the 1980s, reflecting the high rates of inflation; and,

3. high bond total returns in the 1990s and the 2000s, relative to income returns, reflecting the secular decline in long-term government bond yields, which

resulted in capital gains and total bond returns, well in excess of the concurrent bond yields.[92]

In contrast to the pattern in bond returns, Table 11 does not indicate a discernible pattern in equity market returns.[93]

However, further analysis of the historical data indicates, as shown in Table 12 below, that, historically, lower bond income returns have been associated with higher achieved risk premiums.

Table 12

Bond Income Returns:	Averages for the Period: 1924-2011			Averages for the Period: 1947-2011		
	Equity Returns	Bond Income Returns	Risk Premium	Equity Returns	Bond Income Returns	Risk Premium
Below 4%	13.9%	3.2%	10.7%	17.9%	3.3%	14.7%
Below 5%	12.6%	3.7%	8.9%	13.8%	3.6%	10.2%
Below 6%	11.1%	4.2%	7.0%	11.6%	4.4%	7.2%
Below 7%	11.3%	4.3%	7.0%	11.9%	4.6%	7.3%
Below 8%	11.8%	4.6%	7.3%	12.6%	4.9%	7.6%
Below 9%	10.9%	4.9%	5.9%	11.0%	5.4%	5.6%
All Observations	11.4%	6.0%	5.4%	11.8%	6.7%	5.0%

Source: www.bankofcanada.ca, Canadian Institute of Actuaries, *Report on Canadian Economic Statistics 1924-2011.*

Table 12 above indicates that, except at the lowest levels of long-term Government of Canada bond income returns, average equity returns have been broadly in the range of approximately 11.0% to 12.5% during the two periods. At bond income returns below 8% (average of 4.5% to 5.0%), the corresponding equity risk premium averaged approximately 7.25% to 7.5%. Only when the highest levels of bond income returns are included do the average achieved equity risk premiums drop to approximately 5.5% to 6.0% and then to approximately 5.0% to 5.5%. In

[92] The long-term Government of Canada bond yield is equivalent to an estimate of the expected return on the bond.
[93] Slope coefficients of trend lines fitted to the annual equity return data for the periods 1924-2011 and 1947-2011 are estimated at 0.00 for both periods.

other words, the historical data indicate that the equity risk premium has varied with bond yields, i.e., higher risk premiums at lower levels of bond yields and vice versa.

The forecast 4.0% 30-year Government of Canada bond yield for 2013-2015 is 2.0 percentage points lower than the long-term average bond income return (6.0%) and 2.7 percentage points lower than the post-World War II average bond income return (6.7%). The 2013-2015 forecast long-term Government of Canada bond yield of 4.0% suggests an equity risk premium, based on historical risk premiums at similar levels of interest rates, of approximately 7.25% to 7.5%.

3.b.(iv) Impact of Inflation on Equity Market Returns[94]

Theoretically, the expected return on equity should be equal to the sum of the real risk-free cost of capital, the expected rate of inflation and an equity risk premium. Thus, the question arises whether the forward-looking equity nominal (inclusive of inflation expectations) market return should differ from the historic nominal returns due to differences in the historic versus expected rates of inflation. On average, historically, the actual rate of consumer price (CPI) inflation in Canada was higher than the rate of inflation currently forecast to prevail over the longer term. The arithmetic average CPI rate of inflation from 1926-2011 in Canada was 3.0%; the most recent consensus long-term (2013-2022) forecast of CPI inflation is 2.0%.[95] The lower forecast rate of inflation compared to the historical rate of inflation might suggest that expected nominal equity returns would be lower than they have been historically. However, an analysis of nominal equity returns, rates of inflation and real returns on equity shows that real equity returns have generally been higher when inflation was lower. Table 13 below summarizes the nominal and real rates of equity market returns historically at different levels of CPI inflation.

[94] The 1998-2002 equity market "bubble and bust" spawned a number of studies of the equity market risk premium that have speculated that the U.S. market risk premium will be lower in the future than in the past. The speculation stems in part from the hypothesis that the magnitude of the achieved risk premiums is due to an increase in price/earnings (P/E) ratios. That is, the historic U.S. equity market returns reflect appreciation in the value of stocks in excess of that supported by the underlying growth in earnings or dividends. The increase in P/E ratios, it has been argued, reflects a decline in the rate at which investors are discounting future earnings, i.e., a lower cost of capital. I analyzed the trends in P/E ratios and equity market returns and determined that there is no indication that rising P/E ratios during the bull market of the 1990s resulted in average equity market returns that are unsustainable going forward. The analysis is summarized in Appendix A.

[95] Consensus Economics, *Consensus Forecasts*, April 2012.

Table 13

Inflation Range	Nominal Equity Return	Average Rate of Inflation	Real Equity Return
Less than 1%	15.7%	-1.4%	17.0%
1-3%	12.4%	1.9%	10.4%
3-5%	4.8%	4.1%	0.7%
Over 5%	12.5%	9.2%	3.3%
Avg. 1924-2011	11.4%	3.0%	8.4%

Source: Canadian Institute of Actuaries, *Report on Canadian Economic Statistics 1924-2011;* www.statscan.ca.

The observed negative relationship between the real equity return and the rate of inflation does not support a reduction to the historic nominal equity rates of return for expected lower inflation for the purpose of estimating the future equity risk premium. The average nominal equity returns in Canada were approximately 11.4% over the longer-term and 11.8% since the end of World War II, or approximately 11.5% to 11.75%.

It also bears noting that, while the average real equity return in Canada over the longer period was 8.4%, the average is materially affected by the inclusion of high inflation years. When years in which inflation exceeded 10% are excluded (seven of 88 observations), the average real equity return is a full percentage point higher, i.e., 9.4%. The corresponding average rate of CPI inflation was 2.3%, similar to the forecast rate of inflation. The average real equity return is similar, at approximately 9.5%, when the years in which inflation exceeded 10% and the same number of abnormally low inflation years (average of -4.1%) are removed. At a real equity return of 9.5% and an inflation rate of 2.0%, the indicated nominal equity return is approximately 11.5%. At a nominal equity return of 11.5%, the market equity risk premium at the forecast long-term Canada bond yield of 4.0% is 7.5%.

3.b.(v) Comparison of Canadian and U.S. Returns and Risk Premiums

A comparison of the returns in Canada and the U.S. over the longer-term and the post-World War II period shows that the equity market returns in the two countries have been similar. On average the achieved equity market returns in the two countries have been in the approximate range of 11.5% to 12.25% (see Table 10 above).

Despite relatively similar equity market returns, the achieved risk premium (equity market returns less bond income returns) in Canada has been approximately 1.2% to 1.4% lower than in the U.S. The difference in the equity market returns accounts for 0.4% to 0.5% of the difference in the observed risk premiums. Approximately two-thirds of the difference is attributable to higher bond yields historically in Canada. Over the period 1926-1997, the difference between long-term government bond yields in Canada and the U.S. averaged close to 100 basis points.

With the vastly improved economic fundamentals in Canada (e.g., lower inflation, balanced budgets), the risk of investing in Canadian government bonds (relative to equities) declined and the differential between Canadian and U.S. government bond yields that existed historically fell. Between 1998 and 2011, the average yield on 10-year Government of Canada bonds was only slightly higher (+6 basis points) than the corresponding average yield on 10-year U.S. Treasury bonds. The corresponding differential between the yields on the long-term (30-year) government bonds was -16 basis points.

With respect to the relative risk of the two equity markets, the historic annual volatility in the two markets over the longer-term has been quite similar. The table below compares the average arithmetic equity market returns and the corresponding standard deviations, as well as the compound (geometric) average returns from 1926-2011 and post-World War II (1947-2011) for the two countries.

Table 14

	Canada			United States		
	Arithmetic Average	**Standard Deviation**	**Compound Average**	**Arithmetic Average**	**Standard Deviation**	**Compound Average**
1926-2011	11.2%	18.9%	9.6%	11.8%	20.3%	9.8%
1947-2011	11.8%	17.1%	10.4%	12.3%	17.4%	10.9%

Source: Canadian Institute of Actuaries, *Report on Canadian Economic Statistics 1924-2011*, Ibbotson Associates, *Stocks, Bonds, Bills and Inflation: 2012 Yearbook.*

To put the differences in the relative risk of the two markets in perspective over these two time periods, it is useful to compare the differences between the arithmetic and compound average

returns in the two markets. The difference between the arithmetic and compound average returns is approximately equal to one-half of the variance in the annual returns. The variance in the arithmetic average returns in turn is equal to the standard deviation squared. The larger the difference between the arithmetic and compound averages, the more volatility there has been in the annual returns.

For the longer period, 1926-2011, the difference in the arithmetic and compound average returns in Canada was 1.7%; the corresponding difference in the U.S. was 2.0%, a difference between the two of approximately 0.3%. During the post-World War II period, the difference in both Canada and the U.S. was approximately 1.4%. The two differentials between the Canadian and U.S. arithmetic and compound average returns can be interpreted as the difference in equity return required for the difference in volatility between the two markets. In other words, based on the longer period, the equity market return required would be 0.30% higher in the U.S. than in Canada and based on the post-World War II period, the equity market return required would be the same in the U.S. and in Canada. In sum, the differences are *de minimus*.[96]

With similar government bond yields in the two countries for more than a decade, U.S. historical equity market risk premiums are a relevant benchmark for the estimation of the forward-looking equity market risk premium for Canadian investors. As shown in Table 10 above, the average achieved equity risk premium relative to bond income returns in the U.S. has been approximately 6.5%. Similar to Canada, however, as demonstrated in Table 15 below, higher risk premiums have been associated with lower bond income returns.

[96] Since the onset of the financial crisis (August 2007) to the end of May 2012, the two markets have exhibited similar volatility; the standard deviations of weekly price changes in the S&P/TSX Composite (Canada) and the S&P 500 (United States) have been virtually identical.

2204

2205 **Table 15**

Bond Income Returns:	Averages for the Period: 1926-2011			Averages for the Period: 1947-2011		
	Equity Returns	Bond Income Returns	Risk Premium	Equity Returns	Bond Income Returns	Risk Premium
Below 4%	13.9%	2.9%	11.0%	19.0%	2.9%	16.1%
Below 5%	11.9%	3.3%	8.6%	13.2%	3.6%	9.6%
Below 6%	11.1%	3.6%	7.5%	11.7%	4.0%	7.6%
Below 7%	10.7%	3.9%	6.8%	11.0%	4.4%	6.6%
Below 8%	10.7%	4.4%	6.3%	10.9%	5.0%	6.0%
Below 9%	11.3%	4.7%	6.6%	11.7%	5.3%	6.4%
All Observations	11.8%	5.2%	6.6%	12.3%	5.9%	6.4%

2206 Source: Ibbotson Associates, *Stocks, Bonds, Bills and Inflation: 2012 Yearbook.*

2207

2208 As Table 15 shows, the 6.6% average historical equity risk premium corresponds to an average
2209 bond income return of 5.2%, approximately 1.2 percentage points higher than the 2013-2015
2210 forecast 4.0% 30-year Canada bond yield. The experienced equity risk premium at levels of
2211 bond income returns similar to the 2013-2015 forecast 30-year Canada bond yield was in the
2212 range of approximately 6.75% to 7.5%.

2213

2214 3.b.(vi) Equity Market Risk Premium

2215

2216 Given the absence of any material upward or downward trend in the nominal historic equity
2217 market returns over the longer-term, the P/E ratio analysis, and the observed negative
2218 relationship between real equity returns and inflation, a reasonable estimate of the expected value
2219 of the nominal equity market return is approximately 11.5%, based on Canadian equity market
2220 returns and supported by U.S. equity market returns. At the forecast 4.0% 30-year Government
2221 of Canada bond yield, the corresponding equity market risk premium is 7.5%. The analysis of
2222 Canadian equity risk premiums in conjunction with bond income returns supports a market
2223 equity risk premium of 7.25% to 7.5% at the forecast 4.0% 30-year Government of Canada bond
2224 yield. Based on U.S. data, a similar analysis supports an equity risk premium of 6.75% to 7.5%.
2225 With preponderant weight given to the Canadian data, the indicated equity market risk premium

at the forecast 4.0% 30-year Government of Canada bond yield is in the range of 7.25% to 7.50%.

3.c. Relative Risk Adjustment

3.c.(i) Overview

The market risk premium result needs to be adjusted to recognize the relative risk of the benchmark BC utility, FEI. The theoretical CAPM holds that equity investors only require compensation for risk that they cannot diversify by holding a portfolio of investments. In the simple, one risk variable CAPM, the non-diversifiable risk is captured in beta.

Impediments to reliance on the equity beta as the sole relative risk measure include:

1. The assumption that all risk for which investors require compensation can be captured and expressed in a single risk variable. The determination of the return on equity that investors require for bearing the risk of a particular investment is more complex than the single risk variable, beta, implies.

2. The only risk for which investors expect compensation is non-diversifiable equity market risk; no other risk is considered (and priced) by investors. This premise erroneously implies that investors are only concerned with the price volatility of their equity investments, not the underlying fundamental risks that may lead to loss of earning power and ultimately a failure to recover their invested capital.

3. The assumption that the observed calculated betas (which are simply a calculation of how closely a stock's or portfolio's price changes have mirrored those of the overall equity market) are a good measure of the relative return requirement. Empirical tests of the CAPM and experienced returns undermine the validity of that assumption.

4. Use of beta as the relative risk adjustment allows for the conclusion that the cost of equity capital for a firm can be lower than the risk-free rate, since stocks that move counter to the rest of the equity market could be expected to have betas that are negative. In that case, the CAPM would posit that the cost of equity capital for would be less than the risk-free rate, despite the fact that, on a total risk basis, the company's stock could be very volatile. The proposition that a firm's cost of equity could be lower, not only than its own cost of debt, but than the risk-free rate is dubious at best.

5. Utilities are not investing in a portfolio of securities. They are committing capital to long-term assets. Once the capital is committed, it cannot be withdrawn and redeployed elsewhere. The CAPM does not capture that reality.

Thus, a risk measurement that reflects those considerations is relevant for estimating the equity risk premium applicable to an average risk Canadian utility.

3.c.(ii) Total Market Risk

These considerations support focusing on total market risk, as well as on beta, to estimate the relative risk adjustment for a utility. The absence of an observable relationship between "raw"[97] betas and the achieved market returns on equity in the Canadian market[98] provides further support for reliance on total market risk to estimate the relative risk adjustment.

The standard deviation of market returns is the principal measurement of total market risk. To estimate the relative total risk of the benchmark BC utility, the S&P/TSX Utilities Index was used as a proxy. The standard deviations of monthly total market returns for each of the 10 major Sectors of the S&P/TSX Index, including the Utilities Index, were calculated over five-year periods ending 1997 through 2011 (Schedule 11).

[97] The term "raw" means that the beta is solely a statistical calculation of the historical relationship between the price movements of a stock and the corresponding price movements of the market portfolio.
[98] See Appendix A, pages A-21 to A-22.

To translate the standard deviation of market returns into a relative risk adjustment, utility standard deviations must be related to those of the overall market. The relative market volatility of Canadian utility stocks was measured by comparing the standard deviations of the Utilities Index to the simple mean and median of the standard deviations of the 10 Sectors. Schedule 11 shows the ratios of the standard deviations of the Utilities Index to those of the 10 S&P/TSX Sectors. The ratio of the standard deviation of the Utilities Index to the mean and median standard deviations of the 10 major Sector Indices suggests a relative risk adjustment for an average risk Canadian utility in the range of 0.55-0.85, with a central tendency of approximately 0.65-0.70.

3.c.(iii) Historical "Raw" Betas of Canadian Utilities

Schedule 14, pages 1 to 3 summarizes "raw" betas calculated using monthly and weekly price changes[99] for the five major publicly-traded Canadian utilities, the TSE Gas/Electric Index, and the S&P/TSX Utilities Sector.[100]

As Schedule 14, page 1 indicates, there was a significant decline in the calculated "raw" monthly five-year betas of the individual Canadian regulated utilities between 1994-1998 and 1999-2005 (from approximately 0.50 to 0.0 and slightly negative). Following an increase in 2007 to slightly above 0.50, the "raw" monthly betas for the individual Canadian regulated utilities again declined in 2008 to approximately 0.20 and have remained at a similar level through the end of 2011.

The observed levels and pattern of the calculated "raw" utility betas in 1999-2011 can be traced to four factors: (1) the technology sector bubble and subsequent bust; (2) the dominance in the TSE 300 of two firms during the early part of the "bubble and bust" period, Nortel Networks and BCE; (3) the greater sensitivity of utility stock prices than the equity market composite to rising

[99] The use of price betas for utilities has been criticized on the grounds that the exclusion of dividends from the calculated betas overestimates the betas. A comparison of price and total return (including dividends) betas for Canadian utilities showed that there was no material difference between the two.

[100] The S&P/TSX Utilities Sector was created in 2002 (with historic data calculated from year-end 1987), when the TSE 300 was revamped to create the S&P/TSX Composite. The Utilities Sector was essentially an amalgamation of the former TSE 300 Gas/Electric and Pipeline sub-indices. In May 2004, the pipelines were moved to the Energy Sector.

and falling interest rates (e.g., during the equity market "bubble" of 1999 and early 2000 and during the first half of 2006); and (4) the more extreme price changes of the market as a whole during the financial crisis and the subsequent market recovery.[101]

There can be significant differences in measured "raw" betas depending on the interval over which the change in share price is calculated. Betas calculated using monthly changes in price can differ systematically from betas calculated using weekly changes in prices.[102] Table 16 below shows that, for the five large Canadian utilities whose shares are regularly traded, the mean and median five-year "raw" betas ending December 2008 to December 2011 calculated using weekly price changes were twice as high as the corresponding mean and median betas calculated using monthly price changes.[103] These large differences due solely to the choice of interval cast significant doubt on how meaningful calculated betas are as a measure of relative risk.

[101] Schedule 12 shows that utilities were not the only companies whose betas were negatively impacted by the technology sector bubble and subsequent market decline. To illustrate, the five-year monthly beta ending 1997 of the Consumer Staples Sector was 0.62; the corresponding betas ending 2003 and 2004 were -0.08 and -0.07 respectively. In contrast, over the same periods, the beta of the Information Technology Sector rose from 1.57 to 2.87. Schedule 12 also demonstrates how variable betas are generally. For example, between 2002 and 2011, the five-year monthly betas for the energy sector ranged from 0.17 to 1.44.

[102] There is no theoretically correct time interval for calculations of betas. Betas are frequently, but not exclusively, measured over five years using monthly price change intervals (60 observations). For example, Bloomberg calculates betas over three-year periods using weekly price change intervals (156 observations) whereas *Value Line*, which also utilizes weekly prices, estimates the beta over a period of 2.5 to 5 years (over 250 observations). The measurement of betas over a five-year period is simply a convention. In *Modern Portfolio Theory, The Capital Asset Pricing Model & Arbitrage Pricing Theory: A User's Guide*, 2nd Ed., Englewood Cliffs, New Jersey: Prentice-Hall, 1987, page 114, the author, Dr. Diana Harrington, noted that the CAPM itself provides no guidance with respect to the choice of a measurement horizon; the five-year estimation period (i.e., 60 monthly observations) became widely used because of the availability of monthly data in computer-readable form, and the need for a reasonably sized sample.

[103] A similar pattern can be observed for the proxy sample of U.S. utilities.

	Weekly Data		Monthly Data	
	Mean	Median	Mean	Median
2008	0.60	0.61	0.37	0.37
2009	0.60	0.61	0.40	0.38
2010	0.61	0.61	0.43	0.40
2011	0.59	0.62	0.42	0.37

Table 16

	Weekly Data		Monthly Data	
	Mean	Median	Mean	Median
2008	0.46	0.45	0.25	0.21
2009	0.43	0.44	0.22	0.2
2010	0.44	0.44	0.23	0.21
2011	0.45	0.44	0.21	0.21

3.c.(iv) Canadian Regulated Company Returns and "Raw" Betas

The equity betas of traded Canadian utility company shares and of the S&P/TSX Utilities Index explain a relatively small percentage of the actual achieved market returns over time. The following analysis 1) estimates how much of the historical utility market returns can be explained by the equity market, long-term Government of Canada bonds and other factors and 2) uses these relationships to assist in the determination of an appropriate estimate of the required relative risk adjustment.

In the context of the CAPM, the utility return should equal:

Risk-Free Rate + Beta X (Equity Market Return – Risk-Free Rate)

A regression of the monthly returns on the TSX Utilities Index against the market risk premium measured as the return on the TSX Composite less the risk-free rate as proxied by 90-day Treasury bill returns over the period 1970-2011[104] shows the following:

Table 17

Monthly TSX Utilities Index Return	=	0.009 +	0.465	{ Monthly TSX Composite Excess Return }
t-statistics	=	5.4	13.8	
R^2	=	28%		

[104] The Monthly TSX Utilities Index Returns are comprised of the monthly returns on the TSE Gas & Electric Index for the period January 1970 to April 2003 and the monthly returns on the S&P/TSX Utilities Index for the period May 2003 to December 2011.

The relationship quantified in the above equation suggests a long-term utility beta of 0.465. However, the R^2, which measures how much of the variability in utility returns is explained by variability in the returns of the equity market as a whole, is only 28%. That means 72% of the monthly volatility in utility returns remains unexplained.[105] The intercept in the equation should, in principle, represent the risk-free rate. Over the entire 1970-2011 period, the average annual return on Treasury bills was 7.0%; the corresponding intercept in the equation above is 10.85%, when expressed on an annualized basis.[106] The difference between the calculated intercept and the average 90-day Treasury bill return of approximately 3.9% represents the component of the utility return incremental to what the CAPM would predict.

Since utility shares are interest sensitive, the regression was expanded to capture the impact of movements in long-term Canada bond prices on utility returns. The addition of monthly excess long-term Canada bond returns to the analysis indicates the following:

Table 18

Monthly TSX Utilities Index Return	= 0.0075 + .40	{	Monthly TSE Composite Excess Return over T-bills	}	+ .46	{	Monthly Excess Long Canada Bond Return over T-bills	}
t-statistics	= 5.0	12.4			8.6			
R^2	= 37%							

When government bond returns are added as a further explanatory variable, somewhat more of the observed volatility in utility stock prices is explained (37% versus 28%). The second regression equation suggests that utility returns have had approximately 40% of the volatility of equity market returns and approximately 46% of the volatility of government bond market returns, the latter consistent with utility common stocks' interest sensitivity. Nevertheless, the equation still leaves more than half of the utility return volatility unexplained.

[105] As shown in Schedule 14, page 2 of 6, the R^2s of the monthly betas for individual Canadian utilities calculated over five-year periods ending 2004 to 2011 have been extremely low, averaging less than 10%. The low R^2s indicate that very little of the volatility in the utility share prices is explained by the volatility in the equity market composite. It bears noting that, while the five-year "raw" monthly and weekly betas ending December 2011 of Canadian Utilities Limited, at 0.03 and 0.38 respectively, are the lowest of the individual Canadian utilities, its absolute price volatility, measured by the standard deviation of monthly price changes, was the highest of the group.

[106] The regression was performed using monthly data, so the intercept of 0.009 is equal to the monthly return on 90-day Treasury bills. The annualized return is equal to $(1+.009)^{12}-1.0 = 0.1085 = 10.85\%$.

In this equation, the market equity risk premium is equal to the return on the equity market composite less the Treasury bill return and the long-term Canada bond risk premium, or maturity premium, is equal to the return on the long-term Canada bond less the Treasury bill return. The intercept in the equation in Table 18, as was the case in Table 17, is the sum of the risk-free rate, as proxied by the 90-day Treasury bill return, and the component of the return which differs from what the CAPM would have predicted. As in Table 17, the equation intercept is a monthly number. When annualized, the intercept equals approximately 9.4%.[107] Since the average annualized Treasury bill return over the 1970-2011 period of analysis was 7.0%, the indicated utility return was 2.5% higher than predicted by the two variable model.

To assess whether this unexplained component of the utility returns arises from a downward trend in utility risk over the period 1970-2011, I analyzed the trend in the relative total volatility of the S&P/TSX Utilities Index, measured by the ratio of five-year monthly standard deviations of the total market returns of the Utilities Index to those of Composite. The results of the analysis indicated that, although the relative volatility was not constant throughout the period, there has not been a statistically significant trend up or down in the relative total risk of the Utilities Index compared to the Composite over the period 1970-2011.

The objective of the relative risk adjustment is to predict the investors' required or expected return. To do so, the persistent large component of the achieved utility return, as reflected in the equations' intercepts, which is above what the CAPM or the two variable model would have predicted, should be explicitly accounted for. The use of the calculated "raw" Canadian betas alone as an estimate of the relative risk adjustment, without consideration of the extent to which the two models have underestimated the utility return, will result in the underestimation of expected utility returns.[108]

[107] $(1.0 + 0.0075)^{12} - 1.0 = .0944 = 9.44\%$.

[108] The explicit recognition of the unexplained component of the return is consistent with the empirical observation that low beta stocks, including, but not limited to, utilities have historically earned returns higher than the CAPM predicts, with the converse observed for high beta stocks.

The equations in Tables 17 and 18 above can be solved in order to estimate a reasonable utility relative risk adjustment. To do so, values for the three independent variables (TSX equity market return, long-term Canada bond return and Treasury bill return) must be specified. For the TSX, the estimated equity market return of 11.5% developed above was used. For the long-term Canada bond return, the 4.0% yield forecast for 2013-2015 was used as a proxy. As regards the Treasury bill return, a normalized yield of 2.75% was used, reflecting the historical average yield spread between 30-year Government of Canada bonds and 90-day Treasury bills of approximately 1.25% (4.0% - 1.25% = 2.75%). In addition, estimates of the incremental utility return (i.e., the component of the return not captured by the models) are required. These estimates were based on two alternative assumptions: (1) the incremental expected utility return is the same in absolute terms as it was historically; and (2) the incremental expected utility return is in the same proportion to the total utility return as was the case historically.

Under the first assumption, the single and two variable models and the resulting indicated relative risk adjustments are as follows:

Table 19

Equity Market Return (EMR):	11.50%
Risk Free Rate (RF = T-Bill Yield):	2.75%
Equity Market Risk Premium (MRP = 11.5% - 2.75%):	8.75%

Model	Utility Equity Beta	Utility Bond Beta	Incremental Utility Return	Utility Return	Utility Risk Premium	Relative Risk Adjustment
	(1)	(2)	(3)	(4)	(5)= (4)-RF	(6) = (5)/MRP
Single Variable	0.465	N/A	3.90%	10.70%[1/]	7.95%	0.91
Two Variable	0.400	0.46	2.50%	9.32%[2/]	6.57%	0.75

[1/] 10.7% = 3.9% + 2.75% + 0.465*MRP

[2/] 9.32% = 2.5% + 2.75% +0.40*MRP + 0.46*(1.25%), where 1.25% is the maturity risk premium.

In the alternative, as noted above, the prospective incremental component of the utility return can be estimated to be in the same proportion to the total utility return as was the case historically. These proportions are approximately 30%[109] in the case of the single variable model and 20%[110]

[109] 3.9%/12.7% ≈ 30%.

[110] 2.5%/12.7% ≈ 20%.

in the case of the two variable model. In these two cases, the expected utility returns are 9.8% (single variable) and 8.5% (two variable) respectively.[111] The indicated utility risk premiums above the Treasury bill yield are 7.1% and 5.75%, corresponding to relative risk adjustments of 0.81 and 0.66, or a mid-point close to 0.75.[112]

Based on all four approaches, the indicated relative risk adjustment is in the range of 0.66 to 0.91 (mid-point of 0.78).

3.c.(v) Use of Adjusted Betas

From the calculated "raw" betas, the inference can readily be made that regulated companies are less risky than the equity market composite, which by construction has a beta of 1.0. The more difficult task is determining how the "raw" beta translates into a relative risk adjustment that captures utility investors' return requirements. In order to arrive at a reasonable relative risk adjustment, the normative ("what should happen") CAPM needs to be integrated with what has been empirically observed ("what does or has happened"). Empirical studies have shown that stocks with low betas (less than the equity market beta of 1.0) have achieved returns higher than predicted by the single variable (i.e., equity beta) CAPM. Conversely, stocks with betas higher than the equity market beta of 1.0 have achieved lower returns than the model predicts.[113]

The use of betas that are adjusted toward the equity market beta of 1.0, rather than the calculated "raw" betas, is a partial recognition of the observed tendency of low (high) beta stocks to achieve higher (lower) returns than predicted by the simple CAPM. Adjusted historical betas are a standard means of estimating expected betas, and are widely disseminated to investors by investment research firms, including Bloomberg, *Value Line* and Merrill Lynch. All three of these firms use a similar methodology to adjust "raw" betas toward the equity market beta of 1.0. Their methodologies give approximately 2/3 weight to the calculated "raw" beta and 1/3 weight to the equity market beta of 1.0. While the rationale for the specific adjustment formula reflects

[111] 9.8% = (2.75% + 0.465*8.75%)/(1-30%); 8.5% = (2.75% + (0.40*8.75%) + (0.46*1.25%))/(1-20%).

[112] $\frac{9.8\%-2.75\%}{11.5\%-2.75\%} = 0.81$; $\frac{8.5\%-2.75\%}{11.5\%-2.75\%} = 0.66$.

[113] See Appendix A, page A-18.

the tendency for betas in general to drift toward the market mean beta of 1.0, the adjustment is also justified on the grounds that the adjusted betas are better predictors of returns than "raw" betas.[114]

The following table presents recent reported Bloomberg adjusted betas for the five major Canadian utilities. Based solely on the recent Bloomberg betas, the relative risk adjustment would be approximately 0.62 to 0.64. The application of the same adjustment formula used by Bloomberg to the long-term calculated "raw" beta of 0.46 for the TSX Utilities Index shown in Table 17 above results in a relative risk adjustment of close to 0.65.[115]

Table 20

Company	Bloomberg Beta
Canadian Utilities Ltd.	0.52
Emera Inc.	0.71
Enbridge Inc.	0.62
Fortis Inc.	0.75
TransCanada Corp.	0.58
Average	**0.64**
Median	**0.62**

Source: Bloomberg.

The widely disseminated *Value Line* adjusted betas (based on weekly price change intervals) for the comparable U.S. utility sample provide a further indicator of the relevant risk adjustment for the benchmark BC utility. As summarized on Schedule 14, page 6 of 6, the reported *Value Line* betas for the sample of U.S. utilities have been approximately 0.675 on average for the five year periods ending 1996-2011, identical to the recent level (median of 0.675).

[114] Pablo Fernandez and Vicente Bermejo, in an article entitled *β = 1 Does a Better Job than Calculated Betas,* May 19, 2009, find that adjusted betas (0.67 X calculated beta + 0.33 X Market Beta of 1.0) do a better job of predicting returns than the calculated beta. They also find that assuming a beta of 1.0 (i.e., the market beta) does a better job than the adjusted beta.

[115] Adjusted beta = 0.67 x "Raw" Beta + 0.33 x Market Beta of 1.0.

3.c.(vi) Relative Risk Adjustment

A summary of the results of the preceding analysis is set out in the table below:

Table 21

Relative Risk Indicator	Relative Risk Factor
Total Market Risk (Standard Deviations)	0.65-0.70
Relative Historic Returns and Betas: Canadian Utilities	0.75-0.78
Recent Bloomberg Adjusted Beta: Canadian Utilities	0.62-0.64
Long-term Adjusted Beta: Canadian Utilities Index	0.65
Value Line Betas: U.S. Utility Sample	0.675

These results support a relative risk adjustment for the benchmark BC utility in the approximate range of 0.65-0.70.

3.d. Risk-Adjusted Equity Market Risk Premium Test Results

The equity market risk premium was previously estimated to be 7.25% to 7.5% at the forecast 4.0% 30-year Government of Canada bond yield. At an equity market risk premium of 7.25% to 7.5% and a relative risk adjustment of 0.65-0.70, the indicated equity risk premium for the benchmark BC utility i.e., FEI, is in the range of approximately 5.2% to 5.6%. Based on the risk-adjusted equity market risk premium test, the corresponding cost of equity is in the range of approximately 8.9% to 9.1% (mid-point of 9.0%).

4. DCF-Based Equity Risk Premium Test

4.a. Overview

The Discounted Cash Flow-Based (DCF-Based) Equity Risk Premium Test estimates the utility equity risk premium as the difference between the DCF cost of equity and yields on long-term government bonds.

The DCF-based equity risk premium test estimates the equity risk premium directly for regulated companies by explicitly analyzing regulated company equity return data. In contrast, the risk-adjusted equity market risk premium test discussed above estimates the required utility equity

risk premium indirectly, that is, it focuses on the risk-free rate and returns at the overall market level. Of the components of that test, only the relative risk adjustment is derived directly from utility-specific data.

The DCF-based equity risk premium test was applied to a sample of U.S. utilities.[116] The DCF-based equity risk premium test was applied only to the sample of U.S. utilities, because its application requires a history of consensus long-term earnings growth rate forecasts, which is not available for Canadian utilities.[117]

A key advantage of the DCF-based equity risk premium test relative to the other equity risk premium tests is that it can be used to test the relationship between the cost of equity (or risk premiums) and interest rates (and/or other variables).[118] In the application of this test, relationships between utility risk premiums, long-term government bond yields, the spread between the yields on long-term utility and government bond yields and utility bond yields were examined.

4.b. Constant Growth DCF-Based Equity Risk Premium Test

The constant growth DCF model was used to construct a monthly series of expected utility returns for each of the U.S. utilities in the sample from 1998-2012Q1.[119] The construction of the monthly constant growth DCF costs of equity and the corresponding equity risk premiums is described in Appendix D.

[116] The selection criteria for the sample of U.S. utilities to which the DCF-Based Equity Risk Premium Test was applied are found in Appendix B.

[117] Analysts' forecasts of long-term earnings growth for Canadian utilities are currently accessible, which permits the application of the DCF test to Canadian utilities. However, there is no readily accessible history of those forecasts which would permit the application of the DCF-based equity risk premium test to a sample of Canadian utilities.

[118] Of the three equity risk premium tests conducted, the DCF-based equity risk premium test is the only one that lends itself to explicitly estimating the relationship between utility equity risk premiums (or the utility cost of equity) and interest rates.

[119] The choice of period 1998-2012Q1 reflects the years during which long-term Canada and U. S. Treasury bond yields have been broadly similar. It is also intended to balance the exclusion of periods that are dissimilar to current relationships between equity costs and government bond yields and the inclusion of sufficient observations to construct a reliable analysis.

For the sample of U.S. utilities, the constant growth DCF-based equity risk premium test indicates that the average 1998-2012Q1 utility risk premium was 5.0%, corresponding to an average long-term government bond yield of 4.9%. The data also show that the risk premium averaged 4.6% when long-term government bond yields were 6.0% or higher and 6.5% when long-term government bond yields were below 4.0%.

The table below sets out the observed utility equity risk premium at various levels of long-term government bond yields based on the results of the 1998-2012Q1 constant growth analysis.

Table 22

Government Bond Yield	Below 4.0%	4.0%-5.0%	5.0%-6.0%	Above 6.0%
Utility Equity Risk Premium	6.5%	5.1%	4.6%	4.6%

Source: Schedule 16, page 1 of 4.

The data indicate that the utility equity risk premium is higher at lower levels of interest rates than it is at higher levels of interest rates, i.e., there is an inverse relationship between long-term government bond yields and the utility equity risk premium.

4.c. Three-Stage DCF-Based Equity Risk Premium Test

The DCF-based risk premium test was also applied using a three-stage DCF model. The construction of the monthly three-stage DCF cost of equity estimates is described in Appendix D. The use of the three-stage model, which assumes that, in the long run, earnings growth for the utility sample will converge to the long-term rate of growth in the economy, effectively lessens the volatility of the monthly growth rates utilized in the constant growth analysis.[120] Based on the three stage growth model, the average utility equity risk premium was 5.2% at an average 30-year government bond yield of 4.9%. The table below sets out the observed utility

[120] The standard deviation of the monthly sample I/B/E/S growth rates is approximately 0.5; the standard deviation of the monthly implied growth rates utilized in the three-stage DCF-based risk premium analysis is approximately 0.3.

equity risk premium at various levels of long-term government bond yields based on the results of the 1998-2012Q1 three-stage growth analysis.

Table 23

Government Bond Yield	Below 4.0%	4.0%-5.0%	5.0%-6.0%	Above 6.0%
Utility Equity Risk Premium	6.4%	5.3%	4.8%	4.5%

Source: Schedule 16, page 3 of 4.

4.d. Relationships between Equity Risk Premiums and Interest Rates

Using the constant growth and three-stage growth DCF models, the relationship between 30-year government bond yields (independent variable) and the corresponding utility equity risk premiums (dependent variable) was tested. The analysis indicated that, based on the constant growth model, over the 1998-2012Q1 period, on average, for each 100 basis point change in the long-term government bond yield, the utility equity risk premium moved in the opposite direction by approximately 77 basis points. The results using the three-stage model showed a 65 basis point increase (decrease) in the utility equity risk premium for every 100 basis point decrease (increase) in the long-term government bond yield. [121]

The table below sets out the utility equity risk premium at various levels of long-term government bond yields based on the regressions using long-term government bond yields as the sole independent variable.

Table 24

Government Bond Yield	3.0%	4.0%	5.0%	6.0%	7.0%
Utility Equity Risk Premium:					
Constant Growth	6.5%	5.7%	4.9%	4.2%	3.4%
Three-stage Growth	6.4%	5.8%	5.1%	4.5%	3.8%

Source: Schedule 16, pages 2 and 4 of 4.

[121] Expressed in terms of cost of equity, the cost of equity, as measured by the constant growth and three-stage DCF-based equity risk premium tests, increases (decreases) by approximately 25 to 35 basis points for every one percentage point increase (decrease) in the long-term government bond yield.

The analysis demonstrates that the utility equity risk premium is higher at lower levels of interest rates than it is at higher levels of interest rates, i.e., there is an inverse relationship between long-term government bond yields and the utility equity risk premium.

However, this specific analysis indicates that utility equity risk premiums are much more sensitive to, and the corresponding utility cost of equity much less sensitive to, long-term government bond yields than was assumed by the automatic ROE adjustment formula adopted by the BCUC in 2006 and terminated in 2009. That formula assumes that the utility equity risk premium increases/decreases by 25 basis points for every one percentage decrease/increase in the long-term Government of Canada bond yield.

The single independent variable analysis reflects only the relationship between the equity risk premium and government bond yields to the exclusion of other factors which impact on the cost of equity.

To capture the impact of other factors, corporate bond yield spreads were incorporated into the analysis. The magnitude of the spread between corporate bond yields and government bond yields is frequently used as a proxy for changes in investors' risk perception or willingness to take risk. Various empirical studies have shown that there is a positive correlation between corporate yield spreads and the equity risk premium.[122] In the two independent variable regression analysis, government bond yields and the spread between long-term A-rated utility and government bond yields were both used as independent variables and the utility equity risk premium was the dependent variable. The two independent variable analysis indicates that, while the utility risk premium has been negatively related to the level of government bond yields, it has been positively related to the spread between utility bond yields and government bond yields.

[122] Examples include: N.F. Chen, R. Roll, and S. A. Ross, "Economic Forces and the Stock Market", *Journal of Business*, Vol. 59, No. 3, July 1986, pages 383-403 and R.S. Harris and F.C. Marston, "Estimating Shareholder Risk Premia Using Analysts' Growth Forecasts, *Financial Management*, Summer 1992, pages 63-70.

Specifically, over the 1998-2012Q1 period, the constant growth analysis showed that the utility equity risk premium increased or decreased by approximately 86 basis points when the government bond yield decreased or increased by 100 basis points and increased or decreased by approximately eleven basis points for every ten basis point increase or decrease in the utility/government bond yield spread (Schedule 16, page 2 of 4). The three-stage growth DCF model indicates that the utility equity risk premium increased or decreased by approximately 70 basis points when the government bond yield decreased or increased by 100 basis points and increased or decreased by approximately seven basis points for every ten basis point increase or decrease in the utility/government bond yield spread (Schedule 16, page 4 of 4).

The two independent variables (long-term government bond yields and the long-term A- rated utility bond/government bond yield spread) can be collapsed into a single independent variable, the long-term A-rated utility bond yield. That analysis shows the utility equity risk premium rising and falling by approximately 55% to 60% of the change in the A-rated utility bond yield using the constant growth and three-stage growth models (Schedule 16, pages 2 and 4 of 4).

To further test the sensitivity of the utility cost of equity to changes in long-term government bond yields and utility/government bond yield spreads, quarterly ROEs allowed for U.S. utilities[123] were used as a proxy for the utility cost of equity. The average allowed ROEs can be viewed as a measure of the utility cost of equity as they represent the outcomes of multiple rate proceedings across multiple jurisdictions, which in turn reflect the application of various cost of equity tests by parties representing both the utility and ratepayers.

Initially, the risk premiums indicated by the quarterly allowed ROEs from 1998 to 2012Q1 were regressed against long-term Treasury bond yields lagged by six months.[124] The result indicated that the utility equity risk premium increased or decreased by approximately 45 basis points for every one percentage point decrease or increase in long-term government bond yields.

[123] The analysis was not performed for Canadian utilities due to the widespread use of formulas over an extended period that specified the relationship between government bond yields and allowed ROEs. Thus, the analysis would provide no independent estimate of the relationship.

[124] The government bond yields and the spread variables were lagged by six months behind the quarter of the ROE decisions to take account of the fact that the dates of the decisions will lag the period covered by the market data on which the ROE decisions would have been based.

When long-term A-rated utility/government bond yield spreads were added as a second independent variable, the analysis indicated that (1) the utility equity risk premium increased (decreased) by approximately 47 basis points for every one percentage point decrease or increase in long-term government bond yields; and (2) the utility risk premiums increased or decreased by approximately 27 basis points for every one percentage point increase or decrease in the long-term A-rated utility/government bond yield spread.

Collapsing the two independent variables into a single variable, long-term A-rated bond yields, and regressing those yields against the corresponding utility risk premiums (measured as the allowed ROE minus the Moody's long-term A-rated utility bond yield lagged six months), the analysis indicated that the utility risk premiums have decreased (increased) by just over 55 basis points for every one percentage point increase (decrease) in the A-rated utility bond yield.[125]

4.e. DCF-Based Equity Risk Premium Test Results

The regressions were solved using the forecast 4.0% 30-year Canada bond yield. For the 30-year A-rated utility/Government of Canada bond yield spread, a spread of 135 basis points was used.[126]

The table below summarizes the estimated relationships among equity risk premiums, long-term government bond yields and utility/government bond yield spreads applying the various models to the U.S. utility sample over the 1998-2012Q1 period and the resulting equity risk premiums and costs of equity at a forecast 4.0% long-term Canada bond yield and a long-term A rated utility/government bond yield spread of 135 basis points.

[125] Details of all the regressions are found in Schedules 16 and 17. The greater sensitivity to interest rates indicated by the regressions using allowed ROEs as a proxy for the utility cost of equity compared to those using DCF costs of equity most likely reflects other models, in addition to the DCF, used by regulators in arriving at the allowed ROE. These models include risk premium models such as the CAPM, ECAPM, *ex ante* and *ex post* risk premium models, which are explicitly tied to interest rates. While the DCF cost of equity is sensitive to bond yields, it is also a function of factors unique to the equity market.

[126] Represents expectation that the spread between the yield on long-term A rated Canadian utility bonds and Government of Canada bonds will contract from recent levels (approximately 160 basis points at the end of June 2012) as measured by the spread between the yield on the Bloomberg A-rated Canadian Utility 30 Year Index and the benchmark long-term Government of Canada bond) as yields on long-term Government of Canada bonds rise.

Table 25

	Coefficients		Equity Risk Premium	Cost of Equity
	Government Bond	Bond Yield Spread		
Constant Growth				
Single Variable	-0.77	n/a	5.7%	9.7%
Two Variable	-0.86	1.06	5.5%	9.5%
Three-Stage Growth				
Single Variable	-0.65	n/a	5.7%	9.7%
Two Variable	-0.71	0.68	5.6%	9.6%
Allowed ROEs				
Single Variable	-0.46	n/a	6.2%	10.2%
Two Variable	-0.47	0.27	6.1%	10.1%

Note: "Single Variable" refers to the regression analysis applied only to the long-term government bond yield and "Two Variable" refers to the addition of the spread variable to the regression analysis.

Sources: Schedules 16 and 17.

While the indicated sensitivities of the models to changes in long-term government bond yields vary, they support the conclusion that the utility cost of equity does not vary with (or track) long-term government bond yields to the extent that has frequently been assumed.

Table 26 below summarizes the regression results using an A-rated bond yield of 5.35% (equal to the forecast 4.0% 30-year Canada bond yield plus a spread of 135 basis points):

Table 26

Model	Coefficient	Risk Premium over A-Rated Bond Yield	Cost of Equity
Constant Growth DCF	-0.43	4.0%	9.4%
Three-Stage DCF	-0.57	4.2%	9.6%
Allowed ROEs	-0.57	4.8%	10.2%

I have not given any weight to the results of the allowed ROE analysis in deriving an estimate of the utility cost of equity from the DCF-based risk premium test, as the allowed ROEs do not represent my own estimates of the cost of equity. Nevertheless, the relationships among utility equity risks premiums and bond yields established by that analysis provide further support for the conclusion that the utility cost of equity does not track government bond yields nearly to the

extent that has been embedded in most of the automatic adjustment formulas that have been used in Canada.

Based on the DCF-based regression analyses, at the forecast 30-year Canada and A-rated utility bond yields, the indicated utility cost of equity is in the range of approximately 9.4% to 9.7%, and approximately 9.6% based on all the DCF-based risk premium models.

5. Historic Utility Equity Risk Premium Test

5.a. Overview

The historic experienced market returns for utilities provide an additional perspective on a reasonable expectation for the forward-looking utility equity risk premium. Similar to the DCF-based equity risk premium test, this test estimates the cost of equity for regulated companies directly by reference to return data for regulated companies. Reliance on achieved equity risk premiums for utilities as an indicator of what investors expect for the future is based on the proposition that over the longer term, investors' expectations and experience converge. The more stable an industry, the more likely it is that this convergence will occur.

5.b. Historic Returns and Risk Premiums

As shown in Table 27 below, over the longest term available (1956-2011),[127] the average achieved utility (gas and electric combined) equity risk premiums in Canada were 4.2% and 4.8% in relation to total and income returns for long-term Government of Canada bonds respectively.[128] For U.S. gas utilities, the average historic utility equity risk premiums in relation to total and income returns on bonds over the entire post-World War II period (1947-2011) were 5.3% and 6.0% respectively. For U.S. electric utilities, the corresponding average historic utility equity risk premiums in relation to total and income returns on bonds were 4.4% and 5.1%.

[127] The longest period for which Canadian utility index data are available from the Toronto Stock Exchange.
[128] Based on the Gas/Electric Index of the TSE 300 from 1956 to 1987 and on the S&P/TSX Utilities Index from 1988-2011.

Table 27

	Utility Equity Returns	Bond Total Returns	Bond Income Returns	Utility Risk Premium Relative To: Bond Total Returns	Utility Risk Premium Relative To: Bond Income Returns
Canadian Utilities	12.1%	7.9%	7.3%	4.2%	4.8%
U.S. Gas Utilities	11.9%	6.6%	5.9%	5.3%	6.0%
U.S. Electric Utilities	11.0%	6.6%	5.9%	4.4%	5.1%

Source: Schedule 18.

5.c. Trends in Equity Returns and Bond Returns

Similar to the risk premiums for the market composite, the magnitude of achieved utility equity risk premiums is a function of both the equity returns and the bond returns. An analysis of the underlying data indicates there has been no secular upward or downward trend in the utility equity returns. Trend lines fitted to the historic utility equity returns for each of the three utility indices are flat (Schedule 18, pages 2 and 3 of 3). The historical average utility returns in both Canada and the U.S. have clustered in the range of 11.0-12.0%. However, the achieved government bond returns (total and income) in Canada over the period of analysis, at 7.3% to 7.9%, were materially higher than the 4.0% forecast yield on 30-year Government of Canada bonds.

A reasonable approach to interpreting the historical utility equity market return data is the recognition of the inverse relationship between utility equity risk premiums and government bond yields. Table 28 derives estimates of the utility equity risk premium for the longer term from the historical average risk premiums by applying a 50% sensitivity factor to the difference between the historical average bond income returns and the forecast Government of Canada bond yield forecast. A 50% sensitivity factor comports with the lower end of the range of the sensitivities of utility equity risk premiums to government bond yield changes estimated in Section VIII.D.3.c above.

Table 28

		Canadian Utilities	U.S Gas Utilities	U.S. Electric Utilities
Equity Returns	(1)	12.1%	11.9%	11.0%
Bond Income Returns	(2)	7.3%	5.9%	5.9%
Utility Risk Premium (RP)	(3) = (1) – (2)	4.8%	6.0%	5.1%
Forecast 30-Year Canada Bond Yield (LCBY)	(4)	4.0%	4.0%	4.0%
Change in Bond Yield/Return	(5) = (4) – (2)	-3.3%	-1.9%	-1.9%
Change in Utility Equity RP	(6) = – (5) X 50%	+1.6%	+1.0%	+1.0%
Utility Equity Risk Premium at 4.0% LCBY	(7) = (3) + (6)	6.4%	7.0%	6.2%

Source: Schedule 18, page 1 of 3.

At the forecast 4.0% 30-year Government of Canada bond yield and a 50% sensitivity factor between utility equity risk premiums and long-term government bond yields, the indicated utility equity risk premium derived from historical averages is in the approximate range of 6.25% to 7.5% (mid-point of estimates of approximately 6.5%).

5.d. Historic Utility Equity Risk Premium Test Results

Recognizing the inverse relationship between utility equity risk premiums and long-term government bond yields, the historic utility equity risk premium approach indicates a utility equity risk premium of approximately 6.5% at the forecast 4.0% 30-year Government of Canada bond yield. The corresponding utility cost of equity is approximately 10.5%.

6. Cost of Equity Based on Equity Risk Premium Tests

The estimated utility costs of equity based on the three equity risk premium methodologies are summarized below:

Table 29

Risk Premium Test	Cost of Equity
Risk-Adjusted Equity Market	9.0%
DCF-Based	9.6%
Historic Utility	10.5%

None of the individual tests, as performed, yields an inherently superior estimate of the returns that an investor expects or requires. Thus, each of the methods was accorded equal weight in the estimation of the cost of equity for the benchmark BC utility, i.e., FEI.

E. DISCOUNTED CASH FLOW TEST[129]

1. Conceptual Underpinnings

The discounted cash flow approach proceeds from the proposition that the price of a common stock is the present value of the future expected cash flows to the investor, discounted at a rate that reflects the risk of those cash flows. This proposition is based, in turn, on the efficient markets hypothesis, which states that the price of a stock today is determined by all of the available information about the stock. While the Dividend Discount Model, as it is now formally called, was not so named until the latter half of the twentieth century,[130] the concept of the discounted cash flow approach was first expressed in the early 20th century by Irving Fisher and later expanded on by J.B. Williams in his classic book, *The Theory of Investment Value* (Cambridge, Mass.: Harvard University Press, 1938) in which he stated:

> A stock is worth the present value of all the dividends ever to be paid upon it, no more, no less ... Present earnings, outlook, financial condition, and capitalization should bear upon the price of a stock only as they assist buyers and sellers in estimating future dividends.

The DCF test allows the analyst to directly estimate the utility cost of equity, in contrast to the Capital Asset Pricing Model (CAPM), which estimates the cost of equity indirectly. The DCF

[129] See Appendix C for a more detailed discussion.
[130] Myron Gordon, *The Investment, Financing and Valuation of the Corporation*, Homewood, Illinois: Irwin, 1962.

model is widely used to estimate the utility cost of equity for the purpose of establishing the allowed ROE.[131]

In simplest terms, the DCF cost of equity model is expressed as follows:

$$\text{Cost of Equity (k)} = \frac{D_1}{P_0} + g,$$

where,

D_1 = next expected dividend[132]
P_0 = current price
g = expected growth in dividends

There are multiple versions of the discounted cash flow model available to estimate the investor's required return on equity, including the constant growth model and multiple period models to estimate the cost of equity. The constant growth model rests on the assumption that investors expect cash flows to grow at a constant rate throughout the life of the stock. Similarly, a multiple period model rests on the assumption that growth rates will change over the life of the stock.

2. Application of the DCF Test

2.a. DCF Models

To estimate the DCF cost of equity, both the constant growth model and a multiple stage (three-stage) model were used. In both cases, the discounted cash flow test was applied to the sample of U.S. gas and electric utilities selected to serve as a proxy for the benchmark BC utility (the same sample used in the DCF-based equity risk premium test), as well as to a sample of Canadian utilities.

[131] The Commission noted in the *2009 ROE Decision*, page 45, "As for the two most commonly used approaches, the Commission Panel finds that the DCF approach has the more appeal in that it is based on a sound theoretical base, it is forward looking and can be utility specific."
[132] Alternatively expressed as $D_0 (1 + g)$, where D_0 is the most recently paid dividend.

2795 2.b. Growth Estimates

2796

2797 The growth component of the DCF model is an estimate of what investors expect over the
2798 longer-term. For a regulated utility, whose growth prospects are tied to allowed returns, the
2799 estimate of growth expectations is subject to circularity because the analyst is, in some measure,
2800 attempting to project what returns the regulator will allow, and the extent to which the utilities
2801 will exceed or fall short of those returns. To mitigate that circularity, it is important to rely on a
2802 sample of proxies, rather than the subject company. When the subject company does not have
2803 traded shares, a sample of proxies is required.[133]

2804

2805 Further, to the extent feasible, one should rely on estimates of longer-term growth readily
2806 available to investors, rather than superimpose on the analysis one's own view of what growth
2807 should be. The constant growth model was applied to the U.S. sample using two estimates of
2808 long-term growth. The first estimate reflects the consensus of investment analysts' long-term
2809 earnings growth forecasts drawn from four sources: Bloomberg, Reuters, *Value Line* and Zacks.
2810 The second is an estimate of sustainable growth. The sustainable growth rate represents the
2811 growth in earnings that a utility can expect to achieve as a result of the ROE it is expected to earn
2812 and the proportion of the ROE it reinvests plus incremental earnings growth achievable as a
2813 result of external equity financing. The development of the sustainable growth rates is explained
2814 in detail in Appendix C.

2815

2816 In the application of the DCF test, the reliability of the analysts' earnings growth forecasts as a
2817 measure of investor expectations has been questioned by some Canadian regulators, as some
2818 studies have concluded that analysts' earnings growth forecasts are optimistic. However, as long
2819 as investors have believed the forecasts, and have priced the securities accordingly, the resulting
2820 DCF costs of equity are an unbiased estimate of investors' expected returns. That proposition
2821 can be tested indirectly. Three such tests are described in Appendix C. These tests indicate that
2822 the consensus of analysts' long-term earnings growth forecasts is not an upwardly biased
2823 estimate of investor expectations.

[133] In addition, any cost of equity estimate that relies on data for only a single company is subject to measurement error.

3. Results of the DCF Models

3.a. Results for the Sample of U.S. Utilities

The constant growth model applied to the U.S. utility sample using the consensus of analysts' long-term earnings growth forecasts indicates a cost of equity of approximately 9.3% (Schedule 19). The utility cost of equity based on the sustainable growth model is approximately 8.7% (Schedule 20).

The three-stage model is based on the premise that investors expect the growth rate for the utilities to be equal to the analysts' forecasts (which are five year projections) for the first five years, but, in the longer-term to migrate to the expected long-run rate of nominal growth in the economy.[134] The three-stage DCF model is fully described in Appendix C. The three-stage model applied to the sample of U.S. utilities indicates a cost of equity of approximately 9.2% (Schedule 21).

3.b. Results for the Sample of Canadian Utilities

The constant growth and three-stage DCF models were also applied to the five major publicly-traded Canadian utilities.[135] The application of the constant growth model to the Canadian utilities indicated a cost of equity of approximately 11.0%; see Schedule 22. The cost of equity developed using the three-stage model indicates a cost of equity of approximately 8.6%; see Schedule 23.

[134] A three-stage, rather than two-stage, model was used, as the former incorporates the more likely assumption that investors would anticipate a gradual transition, rather than immediate shift, to the long-term perpetual growth rate.
[135] For the five major publicly-traded Canadian utilities, the consensus long-term earnings growth forecasts were obtained from Reuters, as it provided the highest number of analysts' forecasts for each company. There are no widely available estimates of long-term expected returns on equity and earnings retention rates from which to make forecasts of sustainable growth.

3.c. DCF Cost of Equity

The table below summarizes the results of the DCF models applied to both the U.S. and Canadian utility samples.

Table 30

	Constant Growth		
	Analysts' EPS Forecasts	**Sustainable Growth**	**Three-Stage Model**
U.S. Utilities	9.3%	8.7%	9.2%
Canadian Utilities	11.0%	N/A	8.6%

Source: Schedules 19-23.

The constant growth and three-stage DCF models applied to the U.S. sample indicate a utility cost of equity of approximately 9.0%. For the Canadian utilities, the higher long-term earnings growth forecasts in conjunction with lower dividend yields lead to a wider range of DCF test results than for the U.S. utilities. Based on the mid-point of the range of the constant growth and three-stage models, the cost of equity for the Canadian utility sample is approximately 9.8%. The application of both constant growth and three-stage models to the two samples supports a DCF cost of equity of approximately 9.1% to 9.8% (mid-point of approximately 9.4%).

F. COMPARABLE EARNINGS TEST

The comparable earnings test provides a measure of the fair return based on the concept of opportunity cost. Specifically, the test arises from the notion that capital should not be committed to a venture unless it can earn a return commensurate with that available prospectively in alternative ventures of comparable risk. Since regulation is a surrogate for competition, the opportunity cost principle entails permitting utilities the opportunity to earn a return commensurate with the levels achievable by competitive firms facing similar risk. The comparable earnings test, which measures returns in relation to book value, is the only test that can be directly applied to the equity component of an original cost rate base without an adjustment to correct for the discrepancy between book values and current market values.

Neither the equity risk premium results nor the DCF results, if left without adjustment, recognizes the discrepancy. The 50 basis point financing flexibility adjustment that has typically been applied by Canadian regulators to the market-based tests only minimally addresses the discrepancy.

The comparable earnings test is an implementation of the comparable returns standard, as distinguished from the cost of attracting capital standard. The comparable earnings test recognizes that utility costs are measured in vintaged dollars and rates are based on accounting costs, not economic costs. In contrast, the tests for estimating the cost of attracting capital rely on costs expressed in dollars of current purchasing power, i.e., a market-related cost of capital. In the absence of experienced inflation, the two concepts would be quite similar, but the impact of inflation has rendered them dissimilar and distinct.

The concept that regulation is a surrogate for competition may be interpreted to mean that the combination of an original cost rate base and a fair return should result in a value to investors commensurate with that of competitive ventures of similar risk. The fact that an original cost rate base provides a starting point for the application of a fair return does not mean that the original cost of the assets is a measure of their fair value. The concept that regulation is a surrogate for competition implies that the regulatory application of a fair return to an original cost rate base should result in a value to investors commensurate with that of similar risk competitive ventures. The comparable returns standard, as well as the principle of fairness, suggests that, if competitive firms facing a level of total risk similar to utilities are able to maintain the value of their assets considerably above book value, the return allowed to utilities should not seek to maintain the value of utility assets at book value. It is critical that the regulator recognize the comparable returns standard when setting a fair return.

The comparable earnings test remains the only test that explicitly recognizes that, in the North American regulatory framework, the return is applied to an original cost (book value) rate base. The persistence of moderate inflation continues to create systematic deviations between book and market values. Application of a market-derived cost of capital to book value ignores that distinction. The application of the results of the cost of attracting capital tests, i.e., equity risk

premium and discounted cash flow to the book value of equity, unless adjusted, do not make any allowance for the discrepancy between the return on market value and the corresponding fair return on book value. The comparable earnings test, however, does. It applies "apples to apples", i.e., a book value-measured return is applied to a book value-measured equity investment.

The principal issues in the application of the comparable earnings test are:[136]

1. The selection of a sample of unregulated companies of reasonably comparable total risk to a Canadian utility.
2. The selection of an appropriate time period over which returns are to be measured in order to estimate prospective returns.
3. The need for any adjustment to the "raw" comparable earnings results if the selected unregulated companies are not of precisely equivalent risk to a utility.
4. The need for a downward adjustment for the unregulated companies' market/book ratios.

The application of the comparable earnings test first requires the selection of a sample of unregulated companies of reasonably comparable risk to the benchmark BC utility, FEI. The selection should conform to investor perceptions of the risk characteristics of utilities, which are generally characterized by relative stability of earnings, dividends and market prices. These were the principal criteria for the selection of a sample of unregulated companies (from consumer-oriented industries). The criteria for selecting comparable unregulated low risk companies include industry, size, dividend history, capital structures, bond ratings and betas (See Appendix E).

Since the universe of Canadian unregulated companies is sufficiently large to produce a representative sample of sufficient size, the focus of the comparable earnings analysis was on

[136] Full discussion in Appendix E.

Canadian firms. The application of the selection criteria to the Canadian universe produced a sample of 21 companies.

Next, since unregulated companies' returns on equity tend to be cyclical, the selection of an appropriate period for measuring their returns must be determined. The period selected should, in principle, encompass an entire business cycle, covering years of both expansion and decline. That cycle should be representative of a future normal cycle, e.g., the historic and forecast cycles should be similar in terms of inflation and real economic growth. The last full business cycle, encompassing 1995-2011, may overestimate the returns on equity achievable going forward as nominal economic growth was higher, on average, than is projected for the longer term. As a result, the focus of the test was on the period 2004-2011, which commences subsequent to the 2001 downturn and includes the 2008-2009 recession. The period 2004-2011 represents an appropriate proxy for the next business cycle, as the average experienced rates of inflation and economic growth were reasonably similar to the average rates projected by economists over the next decade. The experienced returns on equity of the sample of 21 Canadian low risk unregulated companies over this period were in the range of 12.25%-13.5% (see Appendix E and Schedule 25).

The next step is to assess whether or not there is a need to adjust the "raw" comparable earnings results to reflect the differential risk of a Canadian utility relative to the selected unregulated companies. The comparative risk data (including betas and bond ratings) indicate that the unregulated Canadian companies are of higher risk than the benchmark BC utility, FEI. To recognize the unregulated companies' higher risk, a downward adjustment of 125 to 150 basis points[137] to their returns on equity was made, resulting in a comparable earnings result in the range of 11.0% to 12.0%.

The final step is to assess the need for a market/book adjustment to the comparable earnings results. The sample results would warrant such an adjustment if their market/book ratios relative to the overall market indicated an ability to exert market power. In other words, a high

[137] Based on the typical spread between Moody's BBB-rated long-term industrial bond yields and long-term A-rated utility bond yields and the relative betas of the unregulated companies and Canadian utilities.

market/book ratio (relative to that of the overall market) could suggest returns on equity that were higher than the levels achievable if market power were not present. The average market/book ratios of the sample of Canadian comparable unregulated companies over the both the full business cycle 1995-2011 and the shorter period 2004-2011 period were 2.3 and 2.2 times, similar to the market/book ratio of the S&P/TSX composite over the same periods and lower than the market/book ratio of the S&P 500 (see Appendix E). The similar to lower average market/book ratios of the Canadian sample of unregulated companies relative to both the Canadian and U.S. equity market composites indicate no evidence of market power. Thus there is no rationale for making an additional downward adjustment to the unregulated Canadian companies' returns on equity due to their market/book ratios. As a result, a fair return on equity based on the comparable earnings test is approximately 11.0% to 12.0%.

G. ALLOWANCE FOR FINANCING FLEXIBILITY[138]

The equity risk premium tests (Section VIII.D) and discounted cash flow tests (Section VIII.E) both indicate a "bare-bones" cost of equity for the benchmark BC utility of approximately 9.6%. The financing flexibility allowance is an integral part of the cost of capital as well as a required element of the concept of a fair return. The allowance is intended to cover three distinct aspects: (1) flotation costs, comprising financing and market pressure costs arising at the time of the sale of new equity; (2) a margin, or cushion, for unanticipated capital market conditions; and (3) recognition of the "fairness" principle. As indicated above, it is the normal practice of Canadian regulators to add an adjustment for financing flexibility to the estimated market-based utility cost of equity.

In the absence of an adjustment for financial flexibility, the application of a "bare-bones" cost of equity to the book value of equity, if earned, in theory, limits the market value of equity to its book value. The fairness principle recognizes the ability of competitive firms to maintain the real value of their assets in excess of book value and thus would not preclude utilities from achieving a degree of financial integrity that would be anticipated under competition. The

[138] See Appendix F for a more complete discussion.

market/book ratio of the S&P/TSX Composite averaged 2.1 times from 1995-2011; the corresponding average market/book ratio of the S&P 500 was 3.0 times.[139]

At a minimum, the financing flexibility allowance should be adequate to allow a regulated company to maintain its market value, notionally, at a slight premium to book value, i.e., in the range of 1.05-1.10 times. At this level, a utility would be able to recover actual financing costs, as well as be in a position to raise new equity (under most market conditions) without impairing its financial integrity. A financing flexibility allowance adequate to maintain a market/book in the range of 1.05-1.10 times is approximately 50 basis points.[140] As this financing flexibility adjustment is minimal, it does not fully address the comparable returns standard. The comparable returns standard can be addressed by applying and giving weight to the comparable earnings test. Alternatively, if the comparable earnings test were not to be afforded the weight that it merits, the financing flexibility allowance applied to the market-based tests needs to be increased in order to arrive at a return that meets all three requirements of the fair return standard.

The cost of capital, as determined in the capital markets, is derived from market value capital structures. The cost of equity has been estimated using samples of proxy companies with a lower level of financial risk, as reflected in their market value capital structures, than the financial risk reflected in the corresponding book value capital structure. Regulatory convention applies the allowed equity return to a book value capital structure. When the market value equity ratios of the proxy utilities are well in excess of their book value common equity ratios, the failure to recognize the higher level of financial risk in the book value capital structure relative to the financial risk of the proxy samples of utilities, as recognized by equity investors, results in an underestimation of the cost of equity.

Utilities are entitled to the opportunity to earn a return that meets the fair return standard, namely one that provides the utility an opportunity to earn a return on investment commensurate with that of comparable risk enterprises, to maintain its financial integrity and to attract capital on

[139] The market to book ratio of the S&P 500 includes Utilities. The market to book ratio of the S&P Industrials alone has been higher.
[140] Based on the DCF model as shown in Appendix F, footnote 2.

reasonable terms. What must be fair is the overall return on capital. The recognition in the allowed return on equity of the impact of financial risk differences between the market value capital structures of the proxy companies and the ratemaking capital structure is required to ensure the opportunity to earn a return commensurate with that of comparable risk enterprises. A full recognition of the disparity between the levels of financial risk in the market value capital structures and utility book value capital structures warrants an adjustment to the "bare bones" cost of equity of approximately 150 basis points (See Appendix F).

A reasonable adjustment for financing flexibility to the "bare bones" cost of equity estimated solely by reference to market-based tests (that is, without reference to the comparable earnings test) would be the mid-point of the indicated range of 50 to 150 basis points. The addition of an allowance for financing flexibility of 50 to 150 basis points to the "bare-bones" return on equity estimate of 9.6%, derived from the equity risk premium and DCF tests, results in an estimate of the fair return on equity for the benchmark BC utility of approximately 10.5%.

H. FAIR RETURN ON EQUITY FOR BENCHMARK BC UTILITY

Based on the risk premium, discounted cash flow and comparable earnings tests, the market-based cost of equity tests, a fair return on equity for the benchmark BC utility is approximately 10.5%, reflecting the following:

Table 31

Cost of Equity Test	"Bare-bones" Cost of Equity	Financing Flexibility Adjustment	Return on Equity
Risk Premium Tests:			
Risk-Adjusted Equity Market	9.0%	0.50%	9.5%
Discounted Cash Flow-Based	9.6%	0.50%	10.1%
Historic Utility	10.5%	0.50%	11.0%
Discounted Cash Flow Test	9.4%	0.50%	9.9%
Comparable Earnings Test	N/A	N/A	11.5%

The fair ROE for the benchmark BC utility can be viewed as falling within a range bounded by the market-based cost of equity inclusive of the minimal allowance for financing flexibility

(10.1%) at the bottom end of the range and the comparable earnings test results (11.5%) at the upper end of the range. The specific weight to be given the comparable earnings test versus the market-based tests is largely a matter of judgment. The comparable earnings test is, in my opinion, entitled to significant weight. With preponderant weight (75%) given to the market-based tests, the fair ROE for the benchmark BC utility, i.e., FEI, is approximately 10.5%.

Alternatively, should only the market-based tests be relied upon (risk premium and discounted cash flow), a reasonable allowance for financing flexibility is 1.0%, reflecting the mid-point of a range of 0.50% to 1.50%. The lower end of the financing flexibility allowance range represents the minimum required to notionally allow a utility to maintain the market value of its investment at a small premium to book value. The upper end of the range represents full recognition of the disparity between the levels of financial risk in the market value capital structures and utility book value capital structures. The alternative approach also supports a fair ROE on the book value of common equity for the benchmark BC utility (FEI) of 10.5%.

IX. DEEMED CAPITAL STRUCTURE AND DEEMED DEBT MATTERS

A. CONTEXT

In the MFR, the Commission identified a number of issues related to deemed capital structure and deemed debt that it wished to have addressed in this proceeding. This section responds to each of these issues as requested by the Commission. As all utilities in BC are regulated on the basis of a deemed capital structure, the focus of this section is on the scenarios which might warrant a deemed cost of debt.

B. APPLICABLE CIRCUMSTANCES FOR A UTILITY TO UTILIZE A DEEMED CAPITAL STRUCTURE WITH A DEEMED DEBT

As noted above, all utilities in British Columbia are regulated on the basis of a deemed capital structure, that is, the Commission deems an appropriate common equity ratio for the utility. The debt ratio is also deemed, as it is simply the residual between 100% and the deemed common

equity ratio. However, the deemed debt component typically incorporates actual debt issues whose cost rates can be objectively observed and determined.

The actual debt issues that comprise the debt component may consist of issues that have been made directly into the public market or by private placement to third party institutions such as banks or insurance companies, or they may be non-arms length issues between a utility and an affiliated company. In the latter case, there is a contract between the utility issuer (a legal entity) and the affiliated company, which specifies the terms and conditions of the loan, with cost rates that are based on market conditions.

Debt issued by the utility to a parent company may mirror an actual third-party issue made by the parent company (as has been the case for PNG (N.E.)). In that case, the parent company issues the debt, and the utility subsidiary (a legal entity) enters into an arrangement with the parent company for a specific portion of that debt issue, with the same terms as the third-party issue.[141] Alternatively, the utility may enter into an arrangement with its parent for a debt issue that reflects the utility issuer's risk profile, funding requirements and market conditions at the time the issue is made, but is not tied to a specific third-party issue made by the parent.[142]

In some cases, debt issued by the parent company may be allocated to a stand-alone utility division. This is the case, for example, for the Fort Nelson division of FEI. FEI effectively allocates to the Fort Nelson division the total amount of debt required to balance Fort Nelson's rate base and deemed capital structure, and the embedded cost of debt for the Fort Nelson division is identical to that of FEI.[143] Arguably, the cost of debt of the Fort Nelson division is "deemed" in the sense that, as a very small natural gas distribution operation which resides within FEI (not a separate legal entity), it does not have any debt issues of its own; its cost of debt is "deemed" to be the same as FEI's.

[141] This is also the approach used, for example, by ATCO Electric Ltd. and ATCO Gas and Pipelines Ltd. CU Inc. is the issuer, and ATCO Electric Ltd. and ATCO Gas and Pipelines Ltd. enter into separate arrangements with CU Inc. for specific slices of a CU issue, according to their own funding needs, but on the same terms and conditions as the CU Inc. public issue.

[142] This is the approach used by FEW, which, in turn, is similar to the approach adopted by the Régie for Gazifère Inc., which issues debt to its parent, Enbridge Inc.

[143] A similar approach is used in Alberta by ATCO Electric Inc. for its Transmission and Distribution divisions.

The concept of a "deemed cost of debt" may arise in situations where a utility raises its own debt but maintains more equity in its actual capital structure than has been deemed by the regulator or is unable to maintain an actual equity ratio equal to the deemed equity level, due to limitations on its access to debt there may be a need to "deem" a cost to be applied to the "gap" between rate base and the sum of deemed equity and actual debt. In this context, to "deem" a cost means to assign to the gap, where no actual debt exists, cost rates that are notional or not directly observable.[144]

A deemed cost of debt may be warranted where it is inefficient or uneconomic for a small utility to issue debt on a stand-alone basis. The small utility could be a separate legal entity, or a stand-alone division or distinct class of service. Where there has been actual debt issued by the legal entity in which the utility operation (e.g., a distinct class of service) resides, but the business risk profiles of the issuer and the specific utility operation (be it a separate legal entity, regulated division or distinct class of service) are materially different, a deemed cost of debt for that utility operation that differs from the issuer's cost of debt may be warranted. In such cases, the deeming of a utility-specific cost of debt is intended to ensure, consistent with the stand-alone principle, that there are no cross-subsidies among the operations of the firm. An appropriate deemed cost of debt for the regulated operation may be higher or lower than the cost of debt that is actually incurred by the issuer, i.e., the regulated operation may face higher or lower business risk than the issuer.

While, as discussed below, there are common approaches that the Commission can rely upon for the specific utilities to which a deemed debt cost might apply, the number of potentially affected utilities is relatively small,[145] and the need to approve a deemed cost of debt relatively infrequent. The individual utilities' circumstances may be different, in terms of risk, the funding requirements and appropriate terms of debt. As a result, I recommend that the Commission continue to address the cost of debt for each utility separately.

[144] This situation differs from that, for example, of the PNG utilities which have less deemed equity in their regulated capital structures than in the actual capital structure of the parent company, Pacific Northern Gas Ltd. The "gap" between the actual equity and the deemed equity is deemed to be short-term debt, and is assigned a cost that is directly observable, that is, the rate that Pacific Northern Gas Ltd. actually incurs on its operating line of credit.

[145] In contrast to Ontario, where the OEB, which has adopted a formula for establishing caps on the cost rates of affiliated debt, is charged with regulating close to 80 municipally-owned electric distribution utilities.

C. APPROPRIATE BASIS TO CALCULATE A DEEMED INTEREST RATE (LONG AND SHORT-TERM) FOR A UTILITY WITHOUT THIRD-PARTY OR NON-ARMS LENGTH DEBT

For small utilities which do not issue third-party debt, one option is to estimate the likely stand-alone credit rating for that utility. The stand-alone credit rating is based on an assessment of both the utility's business risk and financial risk as implied by the deemed common equity ratio. Based on the utility's estimated stand-alone credit rating, the relevant costs of debt (both long and short term) can be estimated by requesting indicative spreads from investment banks or other independent funding institutions with expertise in raising debt funds for utilities and/or infrastructure projects. Alternatively, the utility itself can provide yields and spreads on new or outstanding debt issues of similarly rated entities to support its requested cost of debt.[146] There are also debt indices available which could provide an additional check on the reasonableness of proposed debt costs, depending on the indicated stand-alone debt rating. For example, PC Bond Analytics, owned by the TSX Group, maintains and regularly publishes (for a fee) yields on A and BBB rated mid-term and long-term corporate indices.

D. TERM OF BOND FOR DEEMED INTEREST RATE

As regards what an appropriate term for deemed long-term debt might be, there is no single term that is appropriate in all circumstances. As a general proposition, the term should reflect the long-term nature of the assets. However, other considerations include:

1. If the specific utility operations are backed by contractual arrangements, the length of the contract would be a relevant consideration in the determination of the term of the deemed debt.

[146] GlobeinvestorGOLD publishes daily bid and ask yields, which it obtains from CIBC Wood Gundy, on a multitude of outstanding corporate bonds and maintains a history of the yields on its website. GlobeinvestorGold is a subscription service which can be obtained for a nominal monthly fee.

2. The higher the risk of the specific operations, the less their ability would be to obtain "real" debt on a long-term basis, i.e., on terms longer than 10 years.[147] The term of the debt should reasonably reflect the limitations of what would reasonably be available to operations with a similar risk profile.

3. The appropriate term for the deemed debt depends on the state of the capital markets. If, as during the financial crisis, the debt market would not accommodate a long-term issue, it would not be reasonable to deem a debt cost that was reflective of the yield on a long-term issue.

Each of these considerations underscores the conclusion that, in those situations where a deemed debt cost would be appropriate, it should be determined by the Commission on a case-by-case basis. There is no "one size fits all" cost that should be determined by means of an interest automatic adjustment mechanism.

E. APPROPRIATE CREDIT SPREAD FOR A BENCHMARK LOW RISK UTILITY

As discussed earlier, I am recommending that the Commission continue to designate FEI as the benchmark BC utility. There is no single appropriate spread for FEI. FEI issues new long-term debt periodically; the spread for a new FEI issue will be determined by the market at the time of issue and will depend on the terms and conditions in the capital market at the time.

If the Commission's objective is to have access on a continuing basis to yields on high grade Canadian utility bonds as a guide to assessing the reasonableness of proposed costs of debt for utilities for which a deemed cost of debt may be warranted, there are indices available which could serve that purpose. Yields are available by subscription from Bloomberg for A-rated

[147] For example, PNG, when it was rated BBB(low) by DBRS, would not have been able to raise debt with a term longer than 10 years.

Canadian utilities based on fair value curves for terms ranging from one year to 30 years.[148] In the alternative, daily yields are available from GlobeinvestorGold on various issues of A-rated Canadian utilities.

F. DEEMED CAPITAL STRUCTURE AND CREDIT SPREADS

At a high level, for a utility with a given level of business risk, the higher the deemed equity ratio is, the less risk there is to bondholders, and thus, the lower the credit spread. The credit spread (market conditions and term to maturity aside) for a real issue will also be a function of the actual debt covenants (e.g., whether the debt issue is an amortizing issue or a "bullet" issue) as well as a function of other factors that determine the available cash flows (e.g., the level of ROE and non-cash expenses, particularly depreciation). There is, however, no formulaic method for determining the how the credit spread will change for a given change in common equity ratio.

G. APPROPRIATE PORTIONS OF SHORT-TERM AND LONG-TERM DEBT IN THE DEEMED CAPITAL STRUCTURE

The issue of whether, and in what proportions, the debt should be deemed to be short-term or long-term, is only relevant in the scenarios, described above, where a deemed cost of debt may be warranted. In my view, there is no single right answer to the question of what proportion of a deemed capital structure should be designated as short-term debt and how much should be designated as long-term debt.

As a general proposition, since the assets that regulated utilities are financing are largely long-term assets, the preponderance of the deemed debt should be long-term. A more precise estimate of the appropriate proportion of long-term versus short-term debt is more difficult.

[148] Fair value curves are derived based the term structure of the population of bonds with similar characteristics, e.g. industry and credit rating. For example, the Bloomberg Fair Value (BFV) Canada 30-Year A-rated Utility Curve, used by the OEB for purposes of implementing its cost of capital policy, is based on Canadian dollar-denominated fixed-rate bonds, issued by Canadian utility companies with ratings of A+, A, A- from S&P, Moody's, Fitch and/or DBRS. The BFV Canada 30-Year A-rated Utility Curve is derived from using an optimization model comprised of various maturities (not solely 30-year bonds) to solve simultaneously for the term structure which best fits the existing bond yield data. Fair value curves are also available for Canadian BBB-rated utility bonds for a range of terms.

Although one can look to the actual capital structures of the larger Canadian utilities with rated debt as a reference point, as Schedule 5, page 2 of 2 shows, the percentage of short-term debt (1) has varied relatively widely among individual utilities and (2) for individual utilities, has varied relatively widely from year to year. The annual fluctuations for individual utilities will reflect, among other things, the fact that utilities frequently use short-term debt as a bridge between long-term debt issues, that is, they use short-term debt until the balance is large enough to warrant a long-term debt issue (or an equity issue) of sufficient size to be economic. The differences among utilities may reflect the use of short-term debt to finance a portion of their working capital requirements. The extent to which individual utilities rely on short-term debt during the year for this purpose will depend on the seasonality of their business and the extent to which revenues lag or lead payments for goods and services. With the caveat that it reflects material year-to-year and inter-utility variations, the average proportion of short-term debt to total capital for rated Canadian utilities has been approximately 1% to 2%, as Schedule 5, page 2 of 2 shows.

To my knowledge, the only regulator which has deemed a standard proportion of short-term debt component for utilities under its jurisdiction is the Ontario Energy Board. The OEB deemed a standard deemed short-term debt component for the electricity distributors on the grounds that (1) it was clear that distributors used some short-term debt; (2) short-term debt is generally less expensive than long-term debt and generally provides greater financing flexibility; and (3) while actual short-term debt percentages may seem to be a more accurate approach, it is administratively challenging given the number of electricity distributors regulated by the OEB. The 4% deemed short-term debt component that the OEB settled on in 2006 represented the actual Ontario electricity distribution industry average at the time.[149]

The 4.0% deemed short-term debt component that the OEB selected does not capture either the wide utility-by-utility variations or annual changes in the industry average. Based on 2010 data, the average and median actual short-term debt ratios for the 77 reporting Ontario electricity distributors were both lower than the deemed 4.0%, at 2.9% and 0.4% respectively, with

[149] OEB, *Report of the Board on Cost of Capital and 2nd Generation Incentive Regulation for Ontario's Electricity Distributors*, December 20, 2006, pages 9-10.

considerable variation among the reporting utilities.[150] Moreover, inasmuch as the other components of the Ontario distribution utilities' reported actual capital structures deviated materially from the deemed proportions, using the industry average short-term debt ratio to set the deemed component is questionable.[151,152]

The above observations demonstrate that there is no single right answer to what the short-term proportion of the total deemed debt component of the capital structure should be in those few cases where deeming a short-term component may be appropriate. Nevertheless, the utility industry data available indicate that the deemed percentage of short-term debt should be very small, e.g., 1% to 2% percent.

H. APPROACH TO DETERMINING A DEEMED SHORT-TERM INTEREST RATE

To the extent that short-term debt is determined to be an appropriate part of the capital structure, the deemed interest rate can be determined in a manner similar to the deemed long-term interest rate. Specifically, a stand-alone credit rating can be assessed for the utility and the deemed short-term term debt cost estimated on the basis of that credit rating.

Three-month Bankers' Acceptances (BAs) are a common benchmark for establishing the cost of short-term debt for utilities, e.g., for credit facilities negotiated with banks, and would provide an appropriate basis for estimating a deemed short-term debt cost. Short-term debt facilities whose pricing is based on BAs typically specify the spread over BAs that the utility will incur. The applicable spreads over the BA rate will differ depending on the utility's credit rating and the market environment. To illustrate, spreads for utilities with stand-alone ratings of BBB(low) could differ by at least 150 to 200 basis points from those applicable to utilities with stand-alone ratings of A(high).

[150] The average for the quartile with the highest reported short-term debt component was 9.6%, the middle two quartiles were 1.5% and 0.1% respectively and the lowest quartile had an actual average short-term debt ratio of 0.0%.

[151] The 2010 average and median equity ratios, at 53% and 58% respectively, were well above the industry's deemed 40%.

[152] Ontario Energy Board, *2010 Yearbook of Electricity Distributors*, August 2011.

Since spreads over BAs not only differ by credit rating, but in different credit market environments, a reasonable way of estimating the deemed debt cost is to obtain real time market quotes from major banks for issuing spreads for a utility with the specified stand-alone credit rating. The average spread obtained from the banks would then be added to the three-month BA rate. Three-month BA rates are published daily on the Bank of Canada website (series V39071).

X. GENERIC METHODOLOGY OR PROCESS FOR DETERMINING ROE AND EQUITY RATIO FOR BC UTILITIES

The Commission has requested submissions on a proposed generic methodology or process for each utility to determine its ROE in relation to the benchmark utility and its equity ratio. Since the ROE and equity ratio are inter-related, as discussed in Section IV above, I will address these two issues together.

To my knowledge, there is no generic methodology to set each BC utility's ROE and common equity in relation to the benchmark BC utility's ROE and common equity ratio. In this context, the term "methodology" means "formula". Just as the determination of the fair ROE for the benchmark utility, FEI, is not amenable to a formula, neither is there a formulaic methodology that could be used to establish the ROE for each utility in relation to the ROE for the benchmark utility. The same conclusion holds for common equity ratio. As previously discussed in Section VII.B, while one can reach qualitative conclusions regarding the relative business risks of utility sectors generically and of individual utilities, it is not possible to isolate specific business risks and assign different percentage points of equity ratio (or equity return) to them. While one can identify different categories of business risk, those risks are themselves inter-related, e.g., competitive risk impacts market risk; supply risk impacts market risk. Further, one category of business risk may have a greater impact on the business risk profile of one utility sector or one individual utility than another sector or individual utility.

As with the determination of the fair return for the benchmark utility, FEI, there are some general principles which should be observed in setting each utility's ROE and common equity ratio:

1. The overall returns (combination of ROE and common equity ratio) awarded to each utility in relation to the overall return adopted for the benchmark utility should reflect the level of that utility's business risk relative to that of the benchmark utility.

2. The overall return awarded to each utility should be comparable, on a risk-adjusted basis, to the overall return that is awarded to the benchmark utility.

3. The capital structure, in conjunction with the ROE, should be adequate to permit the utility, on a stand-alone basis, to achieve investment grade debt ratings, with the caveat that some of the affected utilities may not actually have credit ratings.

4. There is a trade-off between equity ratio and ROE. For a given level of business risk, the lower the common equity ratio is, the higher is the cost of equity. For example, if a utility is not fully compensated for higher business risk than the benchmark utility through its common equity ratio, its ROE needs to be higher than the ROE granted to the benchmark utility.[153]

There is only one regulator in North America which has recently used what might be described as a generic process to determine the equity ratios for each of the individual utilities it regulates, the AUC (and its predecessor). In this context, a generic process is distinguished from generic proceeding, where the latter simply means that the regulator set capital structures for a number of utilities in an omnibus hearing. A process, in contrast, is intended to convey that the regulator incorporates a set of common factors to establish the equity ratios for each of the utilities. The

[153] As discussed in Appendix F, there is no universally accepted methodology for calculating the trade-off between ROE and capital structure. However the approaches that are discussed therein and provided in Schedule 27 can be used as guidelines for estimating the range of trade-offs. For example, assume that the fair ROE and common equity ratio for the benchmark BC utility are 10.5% and 40% respectively, the cost of new debt is 5.35% and the corporate income tax rate is 26.25%. For a specific utility, the common equity ratio that would fully compensate for differences in risk between the specific utility and the benchmark BC utility is 45%, but the deemed common equity ratio for the specific utility is set at 40%. The three different approaches that are presented in Appendix F indicate that the ROE for the specific utility at a 40% common equity ratio should be set at a premium of approximately 55 to 80 basis points above that awarded to the benchmark utility.

process that has been used in Alberta provides some useful guidance that can be used in the determination of common equity ratios for individual BC utilities.

In Alberta, the AUC sets the common equity ratios of each of the utilities by (1) specifying a goal that it intends to achieve; and (2) considers a number of common factors to assist in achieving that goal. The AUC's objective is to set common equity ratios that "in the Commission's judgment, would allow a stand-alone utility to maintain a credit rating in the A range subject to company-specific circumstances."[154] The factors that it considers are:

1. Previously allowed common equity ratio.
2. Business risk
   a. The relative business risk of the various utility sectors in Alberta;
   b. Trends in business risk of the sectors since the previous capital structure review; and
   c. Business risks specific to individual utilities.
3. Credit environment and changes therein.
4. Credit metrics and actual credit ratings of stand-alone[155] utilities.
5. Company-specific considerations.

In contrast to the BCUC, the AUC attempts to compensate for differences in risks among the utilities that it regulates through capital structures, rather than a combination of ROE and capital structure. While this may be a reasonable objective for some utilities, there are two potential issues with this approach. First, there are some BC utilities whose business risk and size would not permit them, on a stand-alone basis, to achieve ratings in the A category, no matter how high the equity ratio.

For example, Pacific Northern Gas was rated BBB(low) by DBRS before its debt ratings were discontinued in March 2012. A BBB(low) debt rating is the lowest investment grade rating. At the end of 2012, the utility's actual common equity ratio was just below 50%; its deemed common equity ratios are currently 45% for PNG-West and 40% for both PNG (N.E.) (Fort St.

[154] AUC, *Decision 2009-216*, page 88. The AUC reaffirmed the importance of targeting A credit ratings in *Decision 2011-474*, pages 31 and 35.
[155] Refers to utilities which issue debt directly into the debt market independently of any affiliated companies.

John/Dawson Creek Division) and PNG (N.E) (Tumbler Ridge Division). It is unlikely that, even if the Commission were to increase PNG's deemed equity ratios to 60%, it would be able (notionally) to achieve ratings in the A category and thus to be able to raise debt at rates consistent with an A rating. Consequently, the utility would have a notional "A rating" capital structure without the concomitant access to debt capital and debt cost of an A rated utility. Overall, the cost of capital would be lower if the Commission were to continue its current practice for such utilities, that is, allow common equity ratios that are sufficient to achieve (notionally) an investment grade debt rating, and reflect the utilities' total risk difference with the benchmark BC utility in the ROE.

Second, in most cases where the regulator deems an equity ratio for a utility, there is an expectation that the utility will maintain an actual equity ratio at least as high as the deemed level. It cannot be assumed that a particular utility would either be able or willing to commit and maintain the additional equity that might be required for the notional "A rating" equity ratio.

In the context of this proceeding, the Commission will have an opportunity to canvas issues that are salient to capital structure decisions for all the BC utilities, e.g., relative business risks of utility sectors, the credit environment, the actual credit metrics of utilities that raise their own debt and their corresponding debt ratings. These factors should provide some insight into a range of capital structures that would be reasonable for individual utilities. Nevertheless, in each case informed judgment will be required.[156] Further, each utility has its own unique business risks and circumstances. Each utility should be afforded an opportunity, whether within its own revenue requirements proceeding or in an omnibus proceeding, to provide the evidence it believes is germane to, and supportive of, its requested capital structure and ROE relative to the benchmark utility.

[156] While the AUC considered and discussed each of the factors listed above, its ultimate decisions regarding each utility's common equity ratio were substantially a matter of the AUC's own judgment.

XI. GENERIC COMPANY-SPECIFIC MATTERS

In Order G-72-12, as part of the MFR on Capital Structure Matters, the Commission requested submissions on "generic company-specific adjustments for: effective income tax rates, size of utility, level of contributed assets, and company-specific or sector-specific factors." This section addresses the Commission's request.

A. EFFECTIVE INCOME TAX RATES

In Canada, most investor-owned utilities are regulated on the basis of flow-through income taxes.[157] That means they are only allowed to collect in their revenue requirement income taxes that are currently payable. For utilities that are undergoing periods of significant growth, this may mean that the income tax allowance in the revenue requirement is very low or potentially nil for an extended period. In other words, the utility's effective income tax rate is lower than the statutory rate. The effective tax rate can be calculated as the income tax payable divided by the pre-tax book income. The low to nil income tax allowance arises because the capital cost allowances on certain categories of utility plant exceed book depreciation, reducing income taxes payable. For government-owned utilities that are tax-exempt,[158] the effective income tax rate is zero.

There are two impacts of a low effective income tax rate that are relevant to capital structure decisions. First, the lower the effective income tax rate is, the more variable are after-tax earnings. When a utility pays corporate income taxes at the full statutory rate, any unanticipated reduction in pre-tax earnings (arising, for example, from lower than expected sales or higher than expected expenses), is shared between the utility and the taxing authorities. When the utility pays no income taxes, the full short-fall in pre-tax earnings is borne by the utility. The higher volatility in earnings arising from a low or nil effective corporate income tax rate is a factor that,

[157] In the U.S. most utilities are regulated on the basis of deferred taxes, which means that they collect in their revenue requirement, an allowance for taxes which is effectively based on book, rather, than tax depreciation expense.

[158] Not all government-owned utilities are tax-exempt; some, as in Ontario, make payments in lieu of income taxes which mirror the corporate income taxes paid by investor-owned utilities.

in isolation, warrants a higher common equity ratio than where taxes are payable at the full corporate income tax rate.[159]

The second impact of a low effective income tax rate relates to the impact on pre-tax credit metrics, such as the EBIT coverage ratio.[160] The lower is the income tax allowance, the lower is a utility's EBIT coverage ratio and other pre-tax credit metrics. A higher common equity ratio is required at a low or nil effective income tax rate in order to achieve the same level of credit metrics achievable when income taxes are collected in the revenue requirement at the full statutory rate.[161]

In both Decision 2009-216 and Decision 2011-474, the AUC awarded deemed common equity ratios two percentage points higher to utilities which were tax exempt or *de facto* non-taxable,[162] citing both the higher volatility of earnings and lower pre-tax interest coverage ratios of non-taxable utilities compared to otherwise equivalent taxable companies.[163]

[159] This phenomenon is more generally applicable to all taxable utilities, as the statutory tax rates in Canada have declined materially over the past 15 years. For example, the combined federal/provincial income tax rate in British Columbia was 45.6% 15 years ago. In 2013, the statutory rate will be 25%. Lower corporate income taxes enacted between 2004 and 2009 were one factor that the AUC considered in *Decision 2009-216* (page 106) in adopting a 2% across the board increase in allowed common equity ratios.

[160] As previously defined, Earnings before Interest and Taxes divided by Interest. Other pre-tax coverage ratios that the debt rating agencies consider are Earnings before Interest, Taxes, Depreciation and Amortization (EBITDA) to Interest and EBITDA to Total Debt.

[161] Assuming FEI's embedded cost of debt of 6.9% forecast for 2013, its current capital structure ratios (60% debt/40% common equity ratio) and current allowed ROE of 9.5%, at an income tax rate of 0%, an adjustment of approximately seven percentage points to the equity ratio is required in order to achieve the same EBIT interest coverage ratio implied at an income tax allowance at the full 2013 combined federal/British Columbia statutory rate of 25%.

[162] FortisAlberta was found to be *de facto* non-taxable as it was currently non-taxable and expected to be so for at least the near-term future, thus qualifying for the additional two percentage points.

[163] The Canadian Radio-television and Telecommunications Commission (CRTC) has allowed higher common equity ratios for telephone companies that did not incur income tax expense than for telephone companies that did. In Telecom Decision CRTC 98-2, the CRTC stated: "The Commission considers that, since MTS [MTS NetCom Inc.] does not currently incur income tax expense, the company's rates would not permit it to achieve interest coverage and a debt rating commensurate with its peers without recognition in the capital structure of the company's different circumstances." The CRTC also allowed Telus Inc. to utilize a higher common equity ratio than adopted for other major telephone companies due to its non-taxable status (60% versus 55%).

B. SIZE

In the assessment of investment risk, size has two dimensions which should be considered in the determination of specific utilities' ROEs and common equity ratios:

1. A small utility does not have the opportunities to diversify its risks to the same extent as a larger utility. Negative events are likely to have a greater impact on the earnings or viability of a small company. For example, assets are typically more concentrated in a limited geographic area, which limits operational flexibility. Even for a small utility with the same customer base in terms of proportions of residential, commercial and industrial customers as a large utility; the loss of a single customer within a customer class would have a greater impact on a small utility.

2. Smaller utilities have fewer financing options, less institutional interest in acquiring their debt securities, issued debt would be relatively illiquid, and, if issued to third-parties would likely require stricter covenants than debt issued by large utilities.

Debt rating agencies often take size into account when rating companies and their debt issues. The impact of smaller size for rated utilities is frequently exhibited in lower debt ratings for these companies even in cases where their financial parameters are stronger than their larger peers. As recently as June 2009, DBRS considered size to be a factor in its ratings of FortisBC Inc., referring to its comparatively small size relative to the dominant utility in the province, BC Hydro, as a "Challenge". At the time, FortisBC Inc. had total assets of slightly over $1 billion and was rated BBB(high).[164]

Regulators have recognized small size as a factor in establishing capital structures and ROEs for utilities. The AUC stated in *Decision 2011-474*, page 43, "Due to its small size, AltaGas is more

[164] DBRS, *Rating Report: FortisBC Inc.*, June 5, 2009. FortisBC was upgraded by DBRS to A(low) in October 2010.

risky than ATCO Gas." As a result, the AUC set the deemed common equity ratio for AltaGas Utilities at 43% compared to ATCO Gas' 39%. The Régie considers Gazifère Inc. to be of above average risk in particular due to its small size and competition with electricity in Québec. The Régie adopted an equity risk premium for Gazifère of 0.25% to 0.50% above that applicable to a benchmark distributor on a common equity ratio of 40%.[165]

Studies on small size and returns conducted by Ibbotson Associates Inc. have quantified the impact of a firm's small size on the required return based on an analysis of the relationship between betas and historic returns for companies of different sizes. The analyses indicate that small companies tend to exhibit higher betas than larger companies.[166]

To illustrate, in the Ibbotson classification of U.S. stocks for 2011, the median utility in the U.S. sample used to estimate the fair return for FEI would be a Mid-Cap stock (market value of equity capitalization in the range of approximately $1.6 billion to $6.9 billion). By comparison, for example, companies with market values of equity less than $400 million would be Micro-Cap stocks. The betas of Micro-Cap stocks have been approximately 0.30 higher than those of Mid-Cap stocks. In the context of the CAPM, an incremental beta of 0.32, when applied to a market risk premium of 7.25%, indicates an incremental equity risk premium of over 200 basis points (7.25% x 0.32) for a Micro-Cap company relative to a Mid-Cap stock.

While these analyses were performed using all stocks, not utilities specifically, Ibbotson has also performed an industry-by-industry analysis which shows that the conclusions regarding the firm size effect apply to regulated companies as well as unregulated companies. Based on 82 years of data, Ibbotson's analysis demonstrated that the returns for small publicly-traded electric, gas and sanitary utilities have been approximately 1.5 and 3 percentage points higher on a compound and arithmetic average basis respectively than those of large utilities.[167]

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[165] Régie de l'énergie, *Decision: Demande relative au renouvellement du mécanisme incitatif, à la fermeture réglementaire des livres pour la période du 1er janvier 2009 au 31 décembre 2009, à l'approbation du plan d'approvisionnement pour l'exercice 2011 et à la modification des tarifs de Gazifère Inc. à compter du 1er janvier 2011*, D-2010-147, November 26, 2010.

[166] Morningstar, *Ibbotson SBBI 2012 Valuation Yearbook: Market Results for Stocks, Bonds, Bills and Inflation, 1926-2011*, pages 85-107.

[167] Morningstar, Ibbotson SBBI, *2008 Valuation Yearbook: Market Results for Stocks, Bonds, Bills and Inflation, 1926-2007*, pages 154-155.

In sum, the above considerations indicate that small size is a factor that both debt and equity investors are concerned with, and which should be taken into account when evaluating ROEs and capital structures of individual BC utilities.

C. CONTRIBUTED ASSETS

Contributed assets, customer contributions, or contributions in aid of construction (CIAC), refer to assets which a utility owns, operates and manages, but which are financed by customers. The proportion of contributed assets to total capital for different utilities will depend in part on their investment policy and in part on the characteristics of the service territory. With respect to the former, investment policy determines how much of the investment in new connections the utility will make and how much the customer is required to make.

Most utilities in Canada have some proportion of their assets financed by customer contributions. The proportions vary widely among utilities, but for most large Canadian utilities outside Alberta, the proportion of customer contributions to total utility capital has been relatively small (i.e., less than 5% of the total utility capital). In Alberta and for some utilities in BC, the proportion is quite high, in some cases in excess of 30%.[168]

To put this in perspective, assume two utilities, one with no contributed assets and one whose contributed assets constitute 20% of gross rate base. Both have deemed common equity ratios of 40%. If contributed assets are included in the capital structure as a source of financing, the utility with no contributed assets has an effective equity ratio of 40%; the utility which has 20% of its assets financed with contributions has an effective equity ratio of 32%, as illustrated in the table below.

[168] For perspective, FEI's contributed assets as a percent of gross rate base are approximately 4.5%; FortisBC's are approximately 8% and PNG-West's are approximately 4%, but FEVI's are close to 30% and PNG (N.E.) (Tumbler Ridge Division)'s are close to 40% of the total utility capital.

Table 32

	Utility A	Utility B
Gross Rate Base	200,000	200,000
CIAC	-	40,000
Net Rate Base	200,000	160,000
Deemed Capital Structure: 60% Debt/40% Equity		
Debt	120,000	96,000
CIAC	-	40,000
Equity	80,000	64,000
Total	200,000	200,000
Capital Structure Ratios Inclusive of CIAC:		
Debt	60.0%	48.0%
CIAC	0.0%	20.0%
Equity	40.0%	32.0%

As regards risk and capital structure, the higher is the proportion of contributed assets to total capital, the higher is a utility's operating leverage, all other things equal. Since a utility operates and manages the contributed assets, it will incur operating and maintenance expenses to do so, just as if those assets were financed by investor-supplied capital.

Table 33 below provides an illustration of the greater sensitivity of the ROE to an unanticipated change in operating and maintenance (O&M) expense for a utility with 20% of its rate base funded by contributed assets (CIAC) than a similarly situated utility with no CIAC. In this example, the two hypothetical utilities have the same level of O&M expense as the only difference is that Utility A has no CIAC funding its assets and Utility B has 20% of its rate base funded by CIAC. Both utilities have a deemed common equity ratio that is 40% of rate base net of CIAC. In this illustration, a 5% unanticipated increase in O&M expense reduces the actual ROE below the allowed ROE by a wider margin than it does for a utility with no CIAC. In other words, the greater CIAC introduces greater potential volatility in actual earnings.

Table 33

	Utility A No CIAC	Utility B CIAC 20% Rate Base
Gross Rate Base	**$200,000**	**$200,000**
Debt at 60%	120,000	96,000
Equity at 40%	80,000	64,000
CIAC	-	40,000
Revenue Requirement:		
Operating and Maintenance Expense	30,000	30,000
Depreciation and Amortization (6%)[1/]	12,000	9,600
Interest Expense (6%)	7,200	5,760
ROE (10%)	8,000	6,400
Income Tax at 25%	2,667	2,133
Total Revenue Requirement	**$ 59,867**	**$ 53,893**
O&M Increases by 5%		
Revenue	**$ 59,867**	**$ 53,893**
Less:		
O&M	31,500	31,500
Depreciation & Amortization	(12,000)	(9,600)
Interest Expense	(7,200)	(5,760)
Operating Income	**9,167**	**7,033**
Income Tax at 25%	(2,292)	(1,758)
Net Income	**$ 6,875**	**$ 5,275**
Return on Equity	**8.6%**	**8.2%**

[1/] For illustrative purposes, depreciation expense is 6% of rate base funded by investor-supplied capital.

All other things equal, a utility with a relatively high proportion of contributed assets to total capital requires a higher common equity ratio than a utility with no contributed assets to achieve a similar degree of operating leverage and potential variability in ROE.[169] There is no "bright line" for determining at what level or proportion of total assets customer contributions become a material enough concern to warrant a higher common equity ratio than would be the case in the absence of such contributions. If a specific utility's proportion of contributions to gross rate base is well outside the norm, it would be reasonable to consider that factor in establishing that utility's regulated common equity ratio.

[169] In *Decision 2011-474*, page 92, the AUC found that CIAC-funded assets contribute to business risk. "In general, business risk would be expected to rise in proportion to assets. The Commission agrees with the Utilities that, without an increase in equity, CIAC-funded assets would cause an increase in financial risk and operating leverage risk."

Appendices
to
TESTIMONY

ON

COST OF CAPITAL

FOR THE

FORTISBC UTILITIES

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