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September 24, 2012

BC Utility Customers – AMPC/BCPSO/CEC
c/o Bull, Housser & Tupper LLP
3000 Royal Centre, P.O. Box 11130
1055 W. Georgia Street,
Vancouver, BC V6E 3R3

Attention: Mr. Brian Wallace

Dear Mr. Wallace:

Re: Generic Cost of Capital Proceeding

FortisBC Utilities (the "FBCU")[1]

Response to the British Columbia Utility Customers[2] (the "BC Utility Customers") Information Request ("IR") No. 1 on the Evidence of Concentric Energy Advisors Inc. ("Concentric")

On August 3, 2012, the FortisBC Utilities filed its Written Evidence in the Generic Cost of Capital proceeding as referenced above. In accordance with the British Columbia Utilities Commission Order No. G-84-12 setting out the Amended Preliminary Regulatory Timetable, the FBCU respectfully submit the attached response to the BC Utility Customers IR No. 1 on the Evidence of Concentric.

If there are any questions regarding the attached, please contact the undersigned.

Yours very truly,

on behalf of the FORTISBC UTILITIES

Original signed:

Diane Roy

Attachment

cc (e-mail only): Commission Secretary
Registered Parties

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[1] comprised of FortisBC Inc., FortisBC Energy Inc., FortisBC Energy (Vancouver Island) Inc., and FortisBC Energy (Whistler) Inc.

[2] including the Association of Major Power Consumers of BC ("AMPC"), British Columbia Public Interest Advocacy Centre on behalf of the British Columbia Pensioners' and Seniors' Organization et al ("BCPSO") and the Commercial Energy Consumers Association of British Columbia ("CEC").

1. Topic: Use of ROE formula in Canada (pages 1-3)

1.1 Would Mr. Coyne confirm that the NEB formula ROE worked satisfactorily between 1994 and 2008 without any changes and was reviewed in 2001 and judged to be working fine?

Response:

No, Mr. Coyne cannot confirm the NEB formula worked satisfactorily between 1994 and 2008. In previous analyses, Mr. Coyne has concluded that the formulas used in Alberta and Ontario resulted in ROEs that diverged from those that would satisfy the fair return standard, and that divergence occurred well prior to 2008. Those formulas were the same as the formula used by the NEB, so his conclusions would have been comparable. He identified the widespread adoption of a formula tied directly to steadily declining government bond yields in Canada and the coefficient on that relationship as the principal causes. (See: Concentric Energy Advisors, A Comparative Analysis of Return on Equity of Natural Gas Utilities, Prepared for the Ontario Energy Board, June 14, 2007, at 57-58; Direct Testimony of James M. Coyne On Behalf Of Atco Utilities (Atco Electric Ltd. And Atco Gas And Pipelines Ltd.) before the Alberta Utilities Commission, 2009 Generic Cost Of Capital Proceeding, Application No. 1578571 / Proceeding Id. 85, November 20, 2008; Concentric Energy Advisors, A Comparative Analysis of Return on Equity For Electric Utilities, Prepared for The Coalition of Large Distributors and Hydro One Networks Inc., June 2008; and Comments in Response to Consultative Process, Board File No.: EB-2009-0084, The Cost of Capital in Current Economic and Financial Market Conditions, Prepared for The Coalition of Large Distributors and Hydro One Networks Inc. and separately for Enbridge Gas Distribution Company, April 17, 2009.)

Concerning the NEB's decision in RH-4-2001, Mr. Coyne confirms that the NEB continued use of its formula established in RH-2-94 for TransCanada Pipeline, although its use was challenged in that case, and ultimately terminated in its 2009 TQM decision, finding:

> *The RH-2-94 Formula relies on a single variable which is the long Canada bond yield. In the Board's view, changes that could potentially affect TQM's cost of capital may not be captured by the long Canada bond yields and hence, may not be accounted for by the results of the RH-2-94 Formula. Further, the changes discussed above regarding the new business environment are examples of changes that, since 1994, may not have been captured by the RH-2-94 Formula. Over time, these omissions have the potential to grow and raise further doubt as to the applicability of the RH-2-94 Formula result for TQM for 2007 and 2008. (RH-1-2008, p. 17)*

1.2 Would Mr. Coyne confirm that the OEB formula was imposed in 1997 without a hearing but reviewed in 2003 and confirmed to be working perfectly fine and was judged to be providing fair and reasonable ROEs as late as 2008 in a Hydro One hearing?

Response:

Mr. Coyne is aware that in 1997 the ROE formula was first implemented for natural gas distribution utilities, with the OEB's Draft Guidelines on "A Formula-Based Return on Common Equity for Regulated Utilities" and it remained in use until the OEB modified its formula in December 2009. In that decision, the Board "determined that its current formula-based ROE approach needs to be reset and refined", and found "The existing formula approximates this relationship using a linear specification. The Board is of the view that it is unreasonable to conclude that the current formula correctly specifies this relationship, based on the passage of time, changes in financial and circumstances generally, and the empirical analyses provided by participants to the consultation and the discussion at the consultation itself." (EB-2009-0084, pp. 32 ad 33). Mr. Coyne can confirm that the formula was reviewed and upheld in RP-2002-158 (January 2004), and that Hydro One Distribution accepted the formula for determination of ROE in settlement for its 2008 rates (EB-2007-0681).

1.3 Would Mr. Coyne confirm that the BCUC continued to use an ROE formula from 1994 until 2009, albeit with minor tweaks?

Response:

Confirmed that a formula was used by the BCUC from 1994 – 2009, but Mr. Coyne would not characterize the changes to the formula over those years as "minor tweaks", as documented below:

History of the Formula in BC for Fortis BC (formerly BC Gas and Terasen Gas)

Year	Reference	Change	Description of Changes	Bond Yield	ROE
1994	G-35-94	Establish AAM	Formula based on a starting bond yield of 7.75; forecast determined based on 10-year long bond 3 mos. and 12 mos. out forecast plus spread for last 6 days of November; elasticity is 100%, interest rate >13% triggers a review of the formula; 50 bps deadband based on changes in forecast 30-year bond yield; rounded to 25 bps; applies to rate year 1995. Would have resulted in an ROE of 10.65.		
1995	L-39-94	Unchanged		9.180%	12.00%
1996	L-59-95	Unchanged		8.062%	11.00%
1997	L-61-96	Unchanged		7.197%	10.25%
1997	G-49-97	Modified formula	50 bps deadband is dropped; resets benchmark bond yield reset to 9.25%; changes elasticity factor to 80%; sets range for which formula will apply between 6% and 12% bond yields forecast; calculates ROE on unrounded change; establishes new benchmark ROE of 12.25%; Would have resulted in an ROE of 10.5% for BC Gas.		
1998	L-73-97	Unchanged		6.388%	10.00%
1999	L-89-98	Unchanged		5.468%	9.25%
1999	G-80-99	Modified formula	Rebases low risk benchmark ROE 9.5%; establishes fixed 350 bps risk premium for interest rates below 6%; changes method of calculating spread to using all days in previous month (October).		
2000	L-62-99	Unchanged		6.037%	9.50%
2001	L-61-00	Unchanged		5.731%	9.25%
2001	G-109-01	Modified formula	Changes rounding to nearest two decimal points.		
2002	L-43-01	Unchanged		5.629%	9.13%
2003	L-46-02	Unchanged		5.923%	9.42%
2004	L-57-03	Unchanged		5.647%	9.15%
2005	L-55-04	Unchanged		5.528%	9.03%
2006	G-14-06	Modified formula	Reduces elasticity to 0.75%; applies to all forecast yields regardless of level of interest rates. Establishes benchmark bond yield at 5.25%; Rebases ROE slightly from what otherwise would be 8.29% (L-104-05) to 8.8%.	4.788%	8.80%
2007	L-75-06	Unchanged		4.219%	8.37%
2008	L-93-07	Unchanged		4.549%	8.62%
2009	L-55-08	Unchanged		4.350%	8.47%
2009	G-158-09	Suspended formula	Suspends formula and sets return at 9.5% to become effective July 1, 2009	4.350%	9.50%
2010		Unchanged		4.300%	9.50%
2011		Unchanged		3.720%	9.50%
2012		Unchanged		3.060%	9.50%

1.4 Would Mr. Coyne confirm that the Manitoba ROE formula was applied to Centra Gas Manitoba when it was a private owned utility, but that it is now part of Manitoba Hydro a publicly owned utility?

Response:

Confirmed.

2. Topic: Status of ROE formulae (pages 3-7)

2.1 Would Mr. Coyne confirm that when the NEB formula was first used the forecast long Canada bond yield was 9.25% and for 2008 was 4.55%, that is the ROE formula was judged to be working fine over a period where forecast long term Canadian bond yields declined by over half from 9.25% to 4.55%?

Response:

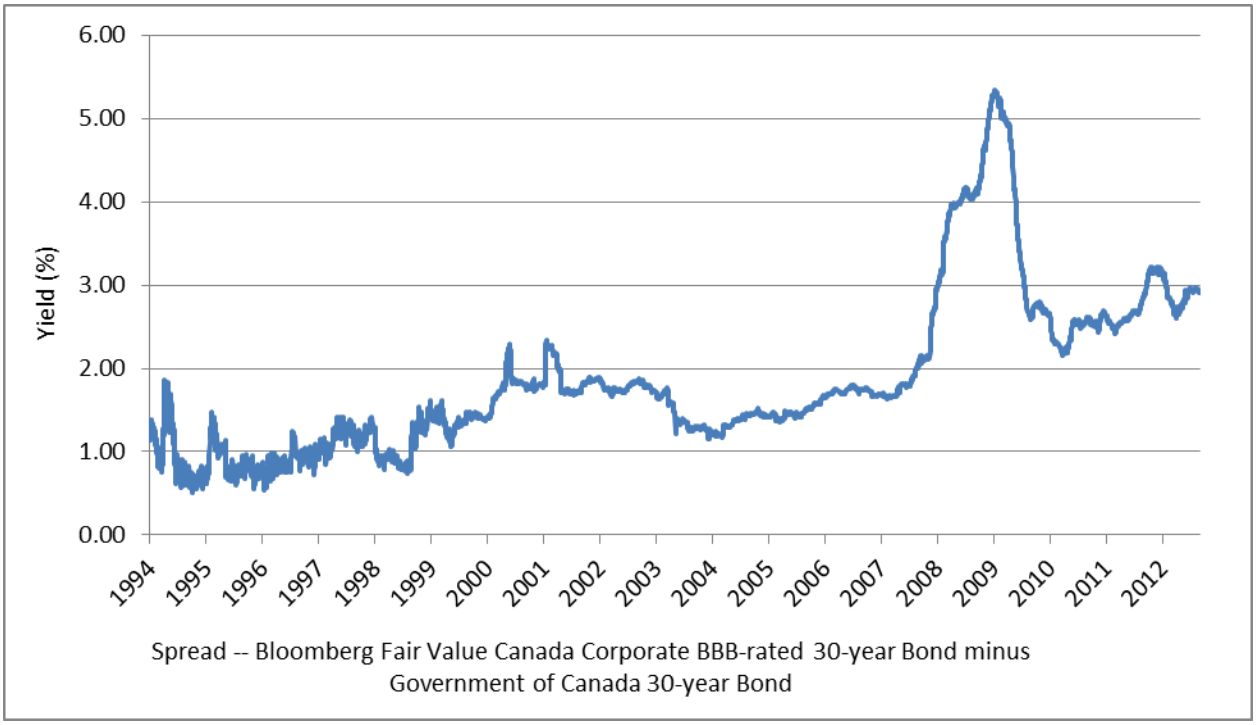
The NEB's decision dated March 1995 states: "These considerations have led the Board to rely on the upper end of the recommended long-term Government of Canada bond yield forecast range, namely, 9.25% for 1995." The NEB's letter announcing the ROE for 2008 states: "The above calculation produced a forecasted 30-year Government of Canada bond yield of 4.55 percent for 2008, which is 33 basis points higher than the 4.22 percent forecasted yield relied upon in the ROE calculation for 2007."

Mr. Coyne can therefore confirm the numbers cited in this data request, and he can confirm that the NEB relied on the ROE formula over this period of time. He cannot confirm, however, that the "ROE formula was judged to be working fine" over this entire period. There were numerous settlements over this period and by the time the NEB terminated use of the formula it was widely perceived as having worked poorly as Canadian long bond rates continued to fall. Please refer to the response to BC Util Cust-Concentric IR 1.1.1 for further explanation.

2.2 Can Mr. Coyne confirm that throughout the period 1994 until 2008 bond default (credit) spreads varied with the business cycle and in Canada reached heights (for BBB rated bonds) in 2001-2 similar to the level of the financial crisis of 2008/9?

Response:

Mr. Coyne can confirm that credit spreads vary with the business cycle, but cannot confirm that spreads for BBB bonds in 2001-02 were similar to those experienced in the financial crisis of 2008-09. See the chart below.



2.3 Further to 2.2 above would Mr. Coyne agree that in the ROE reviews that took place in the early and mid 2000's credit spreads were not seen as a factor that caused the ROE fomulae to have any particular problems?

Response:

Mr. Coyne first evaluated the formula in Concentric's work for the Ontario Energy Board in 2007. At that time, and he assumes prior to that time, credit spreads were not factored into the formula and were not a focus of review. The evolving concern was the disconnect between formulaic ROEs and ROEs that met the Fair Return Standard.

2.4 Further to 2.1 – 2.3 above given that the ROE formula were verified as providing fair and reasonable ROEs as late as 2008 why does Mr. Coyne indicate (page 10) that shifting relationships over the "past decade" have caused the ROE formulae to be "out of touch." In particular, please indicate any Board decisions prior to September 2008, and the serious problems caused by the financial crisis, that raised any concerns over the validity of the ROE formulae in use in Canada?

Response:

Mr. Coyne is aware that the adequacy of the ROEs produced by the formula had been questioned prior to the financial crisis. Mr. Coyne believes that the paper authored by John Major and Roland Priddle accurately summarized the evolution of the formula and the challenges associated with reversing its application once it became disconnected from fair returns.[1]

> *In the NEB generic ROE era, no new pipelines have applied for tolls based on that determination of ROE. Instead, new projects such as Alliance, Emera Brunswick, Maritimes and Northeast, and Mackenzie Valley have all come before the Board with negotiated tolls based on significantly higher ROEs. This suggests that the NEB's generic ROE is insufficient to attract capital to greenfield gas pipeline projects.*
>
> *The now-universal generic ROE approach by Canadian regulators of major gas utilities has created some regulatory economies. But unfortunately its mechanistic character suspends for lengthy periods the previously-valued application of informed judgment to the results of alternative methods of achieving the FRS required by Canadian jurisprudence in ROE awards.*
>
> *A wide and unprecedented gap has developed between Canadian gas utility ROEs and those of USA utilities and of North American low risk industrials. This is factual ground for concluding that the FRS, essentially the opportunity cost of capital needed to ensure*

[1] *The Fair Return Standard for Return on Investment by Canadian Gas Utilities:Meaning, Application, Results, Implication,* The Honourable John C. Major, Former Justice, Supreme Court of Canada, and Roland Priddle, President, Roland Priddle Energy Consulting Inc. and Former Chair of the National Energy Board, March 2008.

financial integrity and capital attraction, is no longer being achieved by the generic ROE approach.

Canadian regulatory convergence on the generic ROE may however inhibit its necessary reappraisal because particular regulators may be reluctant to break ranks with the group and because the consensus around an approved generic ROE is widely supported by stakeholders (footnote eliminated), for reasons of regulatory efficiency and short term economic self-interest.

It would be helpful if, at the same time as specific cases occasionally come before individual regulators (footnote eliminated), some further studies of general relevance were to be carried out. For example, examination is recommended of the results, ex post, of the generic approach in terms of the comparability of the resulting returns with non-utility and utility comparators and of the fundamentals of the present design including the choice of the risk-free rate; the appropriate measurement of the risk-premium; the adjustment mechanism; and the place of the DCF model which is accepted by the great majority of North American regulators.

In the NEB's decision which terminated use of the formula based upon evidence that was filed prior to the financial crisis, the Board acknowledged that the problems with the formula had developed since 1994, and listed factors that it considered to have impacted financial markets since 1994, which may have impacted the ability of the formula to produce a fair return. None of the factors listed pertained to the global economic crisis:

... the Board is of the view that there have been significant changes since 1994 in the financial markets as well as in general economic conditions. More specifically, Canadian financial markets have experienced greater globalization, the decline in the ratio of government debt to GDP has put downward pressure on Government of Canada bond yields, and the Canada/US exchange rate has appreciated and subsequently fallen. In the Board's view, one of the most significant changes since 1994 is the increased globalization of financial markets which translates into a higher level of competition for capital. When taken together, the Board is of the view that these changes cast doubt on some of the fundamentals underlying the RH-2-94 Formula as it relates to TQM.

* * *

The RH-2-94 Formula relies on a single variable which is the long Canada bond yield. In the Board's view, changes that could potentially affect TQM's cost of capital may not be

captured by the long Canada bond yields and hence, may not be accounted for by the results of the RH-2-94 Formula. Further, the changes discussed above regarding the new business environment are examples of changes that, since 1994, may not have been captured by the RH-2-94 Formula. Over time, these omissions have the potential to grow and raise further doubt as to the applicability of the RH-2-94 Formula result for TQM for 2007 and 2008. (RH-1-2008, p. 17)

As noted, the Board's decision applied for both 2007 and 2008. It is also worth noting that the formula did not function without changes in British Columbia. As detailed in response to BC Util Cust-Concentric IR 1.1.3, there were many changes required to adjust the formula over time.

2.5 Can Mr. Coyne agree that when the ROE formulae were introduced no-one expected them to be" exactly" correct at all time, but that the savings in hearing time were worth any minor inaccuracies given that ROE awards are always within a range of error? What would Mr. Coyne judge to be a reasonable range within which the normal "true" ROE lies?

Response:

Mr. Coyne cannot offer an opinion on the expectations in the jurisdictions that adopted the formula with regards to its accuracy. He would assume that anticipated savings in hearings time was an important consideration, but he cannot offer an opinion on what "minor inaccuracies" might have been deemed an acceptable trade-off.

2.6 Can Mr. Coyne agree that even when most Canadian utilities were on ROE adjustment formula the actually allowed ROEs in different jurisdictions diverged simply because the formulae were set at different points in time? Given the later

data in his report can be provide data on the range of allowed ROEs in Canada for each year since 1994.

Response:

Mr. Coyne would agree that ROEs for Canadian utilities under the formula differed based on the starting point, but due to the widespread adoption of the same formula tied to the Canada long bond and a typical 0.75 coefficient, the ROEs moved in tandem with very little divergence. The data provided in Attachment 2.6 illustrate this point.

2.7 In Mr. Coyne's review did he track which formulae were introduced at the request of the company and which by the board and confirm that no intervener ever requested an ROE formula? If so please indicate the origin of each ROE formula.

Response:

Mr. Coyne's research has not accounted for the positions of the parties in each case where a formula was introduced, and he cannot confirm that no intervener ever requested an ROE formula. He is aware that interveners have provided extensive evidence on the inputs and parameters of these formulas (see, for example, the evidence summarized in RH-94, pp. 28-30).

2.8 Please confirm that the Board of Commissioners of Newfoundland and Labrador plans to have an ROE adjustment formula hearing for this Fall and that the settlement ROE of 8.80% was just for 2012.

Response:

Mr. Coyne confirms that the 8.8% was for 2012, and that the Newfoundland and Labrador Board of Commissioners plans to have an ROE adjustment formula hearing at a later date.

The parties agreed that the issue of a just and reasonable return on rate base for Newfoundland Power for 2012 would be addressed in this proceeding but that the issue of discontinuing the automatic adjustment formula would be addressed in a separate proceeding at a later date (Order No P.U. 17(2012)).

2.9 Please confirm that the OEB ROE formula will be reviewed in 2014 as part of a 5 year cycle.

Response:

Confirmed.

2.10 Please provide the 2012 and 2013 allowed ROEs that result from the Illinois adjustment formula and indicate who presented evidence in support of the formula and whether there are any off ramps for its use.

Response:

The return on equity formula recently enacted in Illinois resulted from an act of the legislature, and not the utility regulator. Concentric has not researched legislative positions taken by Illinois legislators or stakeholders. Concentric estimates the results of the formula for 2012 and 2013 as follows, based on year-to-date data and estimates for 2013.

2012 MTD - 30-yr Treasury Bond Yield [1]	
2012-01	3.03
2012-02	3.11
2012-03	3.28
2012-04	3.18
2012-05	2.93
2012-06	2.7
2012-07	2.59
2012-08	2.77
Average	**2.95**

2013 30-yr Treasury Bond Yield Forecast [2]	
2013-Q1	2.9
2013-Q2	3.1
2013-Q3	3.2
2013-Q4	3.4
Average	**3.15**

Estimated ROE using IL Formula Rate

	30-yr Treasury Bond Yield	Premium	ROE
2012 [1]	2.95	5.80	8.75
2013 [2]	3.15	5.80	8.95

[1] Month to Date
[2] Quarterly Forecast

Source
[1] Federal Reserve
[2] Blue Chip Financial Forecasts Vol. 31, No. 9, September 1, 2012

2.11 Please indicate the legal basis for the Illinois ROE penalty if certain performance metrics are not met given the statement on page 12 that the formula has to track the cost of equity and that this is not "optional"?

Response:

The performance related provisions are contained in the law enacted by the Illinois General Assembly. Concentric cannot offer a legal opinion on whether the law will withstand challenges or appeals. See: 220 ILCS 5/ Public Utilities Act.

3. Topic: ROE formula tied to authorised ROEs (page 11)

3.1 Please confirm that no Canadian board has accepted linking the allowed ROE in their jurisdiction to allowed ROEs elsewhere as recommended by Concentric (page 12).

Response:

Confirmed, although we note regulators in Canada routinely evaluate evidence of awarded ROEs from other jurisdictions in their ROE determinations.

3.2 When Concentric indicates authorised returns elsewhere please confirm that they include returns from a foreign country, ie., the US, with different financial market conditions and without the standard forward exchange rate adjustment as required by the interest rate parity condition?

Response:

It is not clear as to what is being specifically referenced in the question. Concentric has not recommended adoption of a formula in its evidence. In our 2010 Report, we profiled formulas based on those adopted in other jurisdictions or variants, and identified five potential approaches for consideration by the BCUC, including four formulaic approaches (pp. 39-45). In two of those formulas, one uses an average awarded ROE for all major Canadian and U.S. gas and electric utilities "AAROE" as a trigger mechanism, and another incorporates the AAROE as part of an index for ROE, with a 50% weight. It is confirmed that these indices, as illustrated, would include awarded ROEs from the U.S. Concentric observes that Canadian regulators routinely refer to ROE awards in other jurisdictions, and some have begun to factor U.S. returns into their considerations. Concentric has provided extensive evidence on the comparability of the Canadian and U.S. economies, and shown that the two economies are highly comparable from an investment perspective (see references in response to 1.1, and most recently in the Direct and Rebuttal testimony of James M. Coyne on behalf of Nova Scotia Power Inc., NS Power 2013 General Rate Application). The use of the AAROEs in the two formulas cited did not make any adjustments for differences between the U.S. and Canadian financial markets using the "interest rate parity condition" or other method, as these returns are being incorporated into indices (that are applied to Canadian allowed returns). Hence, because an index reflecting the percentage change in North American allowed returns from a base year is

applied to the Canadian ROE, a translation between the currencies is not required. Further, Mr. Coyne considers this discussion inconsequential under current economic circumstances since the current and expected exchange rates between Canada and the U.S. hover near parity. Please also refer to the response to BC Util Cust-Concentric IR 1.9.1.

3.3 Further to 3.2 above please indicate whether Mr. Coyne has ever taken a course in international finance and is aware of the interest rate parity condition and that it is the basic arbitrage condition that equalises returns on securities of similar risk.

Response:

Mr. Coyne confirms that he has taken a course in international finance. Please also refer to the response to BC Util Cust-Concentric IR 1.3.2 above, for Mr. Coyne's discussion of the interest rate parity theorem.

3.4 Please provide the current 30 year government bond rates in the US and Canada and indicate why they are different.

Response:

Current 30 year bond yields as of 9/14/12 were: Canada: 2.54% and U.S. 3.09%. These rates have followed each other closely over the past several decades. Concentric has studied the correlation between Canadian and U.S. 10 year bond yields, which were in continuous use over 1987-2011, and that correlation is 0.98. Nonetheless, these bond yields may be different at any point in time for a variety of reasons, including:

- Monetary policy
- Fiscal policy
- Expectations of inflation
- Real return requirements of government bond investors.

4. Topic: Concentric's 2010 Report Page 2

4.1 Please confirm that Hydro One's witness in 2008 specifically requested the OEB ROE formula prior to the financial crisis.

Response:

Mr. Coyne confirms that Hydro One accepted the formula parameters and its outcome in settlement in its 2008 Distributor Rate Proceeding EB-2007-0681.

4.2 Please confirm that the Concentric analysis in 2009 before the AUC indicated that a "fairness gap" existed in the allowed ROEs for Alberta versus US utilities long before the adoption of an ROE adjustment formula in Alberta in 2004.

Response:

Concentric identified what it characterized as a "fairness deficit" in that proceeding, which it attributed to several factors, including the influence of the formula adopted in other jurisdictions.

4.3 Would Mr. Coyne confirm that due to 4.2 above the differential between US vs Canadian ROE's were nothing to do with the use of automatic ROE adjustment formula, but resulted from standard litigated ROE hearings.

Response:

Mr. Coyne cannot confirm. He would confirm that litigated proceedings predated adoption of the formula, but as explained in response to BC Util Cust-Concentric IR 1.4.2, the formula influenced results beyond the jurisdictions that adopted them.

4.4 Can Mr. Coyne confirm that not all Canadian provinces used ROE adjustment formulae up to the financial crisis and yet there was relative homogeneity in allowed ROEs across Canada?

Response:

Mr. Coyne confirms that not all, but most jurisdictions adopted a formula, which led to a considerable degree of homogeneity. The data provided in Attachment 2.6 in response to BC Util Cust-Concentric IR 1.2.6 illustrate this point.

5. Topic: Concentric report page 3

5.1 Can Mr. Coyne confirm that Mr. Justice Lamont's definition of a fair return in Canada grew out of "changed conditions in the money" market and such an evaluation is critical for determining fair returns in Canada?

Response:

In the *Northwestern* decision, the words "changed conditions in the money" do not appear. Consideration of "altered conditions of the money market" was a factor in that case, but the case and Justice Lamont are most quoted for establishing the definition of a fair return. That definition does not mention "changed conditions in the money", but clearly capital market conditions are a factor in the fair return.

> *By a fair return is meant that the company will be allowed as large a return on the capital invested in its enterprise (which will be net to the company) as it would receive if it were investing the same amount in other securities possessing an attractiveness, stability and certainty equal to that of the company's enterprise. (Northwestern Utilities Ltd. v. Edmonton (City), [1929] S.C.R. 186)*

5.2 Can Mr. Coyne discuss what he considers to be the "money market in Canada" and whether tying a fair return to a long Canada bond and/or the credit spread is consistent with recognising "changed conditions in the money market."

Response:

Assuming "money market in Canada" is taken from the *Northwestern* decision, the actual quote from Justice Lamont is citing language from the Board of Public Utility Commissioners of Alberta:

> *"As the Board was determining what would be a fair return on the capital invested by the company in the enterprise, and as it reduced the return from 10% to 9%, it can, I think, be taken that by "**the altered conditions of the money market**" the Board meant that the returns for money invested in securities in which moneys were ordinarily invested had decreased during the period in question. In other words, that the rate of interest obtainable for moneys furnished for investment was, generally speaking, lower by a certain percentage in 1927 than it was in 1922. That, in my opinion, is all that is involved in the finding."* [emphasis added]

The decision does not specifically define the "money market" in Canada other than "the returns for money invested in securities in which moneys were ordinarily invested" or "the rate of interest obtainable for moneys furnished for investment". Taken in the context of the current proceeding, one might rephrase the question as "what investments would equity investors in BC's utilities look to as comparable investments?"

Mr. Coyne would assume that BC utility equity investors might consider a variety of alternatives, including:

- Equity investments in other North American utilities of equivalent risk
- Equity investments in other relatively low risk industries of equivalent risk
- Corporate or utility bonds, with appropriate adjustments for risks and returns vs. equities

As described in detail in Concentric's 2010 and 2012 reports, tying utility returns to a long Canada bond and/or the credit spread would not be fully consistent with recognising "changed conditions in the money market" from an equity investor's standpoint. We concluded "Neither bond yield (government or corporate) provides a complete picture of required equity returns." (Concentric 2012 Report, p. 10)

5.3 Can Mr. Coyne suggest a better way of recognising "changed conditions in the money market" than through an automatic ROE adjustment formula?

Response:

Yes, as delineated in our Report "Concentric ultimately concludes that periodic rate case determinations remain the method most likely to produce fair returns over time under varied market circumstances." This was based on our evaluation that considered "The advantage of this approach is its adaptability to changing market conditions, the periodic input from stakeholders, and the ability of the Commission to act on updated capital market information. (Concentric 2012 report, p. 13 and p. 11).

6. Topic: Adjustment Coefficient to long Canada bond yields, page 7

6.1 Mr. Coyne states that "there is movement towards a range of 0.50." Please indicate which Canadian regulatory body, other than the OEB, has accepted an adjustment coefficient on the change in the long Canada bond yield of 0.50?

Response:

First Mr. Coyne would note that currently only two Canadian jurisdictions are actively using a formulaic ROE mechanism, Ontario and Quebec. All other jurisdictions have either suspended or terminated the formula. Quebec has incorporated a credit spread input and allowed an elasticity factor of 0.50 for the response of equity returns to the change in credit spread, albeit they have retained the elasticity for the change in government bond yields of 0.75. Lastly, California and Vermont both employ elasticity factors of 0.50 in their formulaic mechanisms to changes in corporate bond yields and government bond yields, respectively.

6.2 Can Mr. Coyne confirm that an adjustment coefficient of 0.50 has been frequently put forward by witnesses on behalf of utilities and except in the case of the OEB been rejected, for example the NEB and BCUC in 1994?

Response:

Confirmed.

6.3 Can Mr. Coyne confirm that the OEB decision resulted from a technical conference and not a litigated hearing and that 4 sets of "standard" ROE testimony were entered by witnesses on behalf of utilities and none by interveners.

Response:

Mr. Coyne recalls that the OEB decision resulted from a "Consultative Process" in which interested parties submitted comments. He confirms that four utility groups submitted comments which included an ROE analysis, though he cannot confirm that it was or was not standard ROE testimony. Mr. Coyne recalls that there was ample opportunity for the filing of initial comments and to challenge filed evidence. Mr. Coyne also recalls that Dr. Booth did file 46 pages of testimony on behalf of the CCC, VECC, CME, IGUA, LPMA and BOMA and made a recommendation for a generic ROE in Ontario of 7.75% based on a CAPM analysis.

6.4 Please file a copy of the OEB decision that resulted from the technical conference.

Response:

Attachment 6.4 contains the OEB Decision EB-2009-0084.

6.5 In the graph on page 14 can Mr. Coyne confirm that what caused concern in 2008/9 was the period during the financial crisis when long government yields went down and utility yields went up and further that apart from the period of the financial crisis this does not normally happen?

Response:

Mr. Coyne confirms that in the period in 2008 and 2009 the corporate cost of debt capital became entirely delinked from government bond yields and was prima facie evidence that the government bond yield could not produce a fair return under the circumstances.

Mr. Coyne believes the use of the government bond yield as the sole input for an ROE AAM lacks the robustness required to reliably estimate required equity returns. Mr. Coyne confirms that the delinking of government and corporate bond yields does not normally occur.

6.6 Can Mr. Coyne run a simple regression of the utility bond yield against the government bond yield using the data on page 14 and include a dummy variable for the period of the financial crisis from September 2008 to the end of March 2009 and report the coefficient estimates.

Response:

The results of that regression are shown below. We have set the dependent variable as the Canadian A-rated corporate bond yield and the independent variables as the 30-year long Canada government bond yield and the requested dummy variable. Both sources are from Bloomberg:

SUMMARY OUTPUT									
Regression Statistics									
Multiple R	0.966899								
R Square	0.934893								
Adjusted R Square	0.934863								
Standard Error	0.306281								
Observations	4276								
ANOVA									
	df	*SS*	*MS*	*F*	*Sig. F*				
Regression	2	5755.84	2877.92	30678.89	0.000000				
Residual	4273	400.84	0.09						
Total	4275	6156.68							
	Coefficients	*Std. Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*	
Intercept	2.278763	0.019067	119.510861	0.000000	2.241381	2.316145	2.241381	2.316145	
30-yr Govt Bond	0.799670	0.003229	247.659781	0.000000	0.793340	0.806001	0.793340	0.806001	
2008-09 Dummy	1.383166	0.026014	53.170043	0.000000	1.332165	1.434167	1.332165	1.434167	

7. Topic: Corporate bond yield and Spreads, page14

7.1 Please provide all research that Mr. Coyne is aware of that a change in the credit spread is "likely paralleled on the equity side."

Response:

Mr. Coyne has performed several analyses that measure the response of utility authorized returns to changes in both government bond yields and corporate bond yields. His analysis, shown on page 13 of his report, shows a stronger relationship between corporate bond yields and utility authorized returns than that of government bond yields and utility authorized returns. Since the yield on corporate bonds is divided between the risk free rate and the credit spread, it is evident by this analysis that a change in credit spread is more closely correlated with changes in the equity risk premium than is the risk free rate, albeit not a one-on-one relationship due to factors that affect the bond market that do not impact the equity market.

Mr. Coyne has performed a regression of the U.S. A-rated utility bond credit spread (versus a 30-year Treasury bond) and the authorized equity risk premium in litigated utility rate decisions. He found this relationship to be given by the following equation with a t-statistic of the intercept of 18.2939 and the t-statistic for the slope coefficient of 3.8026:

$$y = 0.6187x + 0.0464$$

$$R^2 = 0.1598$$

7.2 Is Mr. Coyne aware of research from the Bank of Canada that indicates that 63% of the change in A credit spreads in Canada is driven by liquidity changes unrelated to the equity market?

Response:

Yes. Mr. Coyne is aware of an article by Garcia and Yang which analyzed and attempted to decompose credit spreads between liquidity and default risk. The Study was not focused on A credit spreads in Canada, but rather analyzed six investment grade companies that were rated BBB and two less than investment grade companies rated CC, nor was it conclusive, indicating

that its findings should be corroborated with more testing and data since it relied on an extremely limited data set of 8 companies.

Mr. Coyne has relied upon his analysis to measure the statistical relationship between corporate bond yields and utility equity returns and has not attempted to identify the major factors influencing the historical relationship. Rather, Mr. Coyne has acknowledged the historical relationship that is described statistically in the 2010 Concentric Report on page 13.

7.3 Is Mr. Coyne aware of the fact that the income on preferred shares in Canada has preferential tax treatment relative to bond income and that as a result preferred shares traditionally have lower yields than Government of Canada bonds?

Response:

Mr. Coyne is aware that preferred shares in Canada have preferential tax treatment relative to bond income. However, Mr. Coyne disagrees that preferred shares "traditionally" have lower yields than Government of Canada bonds, though he is aware that there have been periods in the past during which preferred yields have slipped below those of government bond yields. (Also, please refer to the response to BC Util Cust-Concentric IR 1.7.4) Further, Mr. Coyne does not see how this circumstance impacts his measurement of the relationship between utility bond yields and utility equity returns or the Concentric Report.

7.4 Would Mr. Coyne judge a lower yield on a preferred share than a similar maturity Government of Canada bond to be a violation of the risk reward trade-off or a "rare occurrence"?

Response:

Mr. Coyne understands that the differing tax treatment between preferred dividends and government bond yields may result in a preferred dividend that is below the government bond yield. However, Mr. Coyne understands that on a tax equivalent basis, it would be anomalous if

the preferred share provided a lower return than the government bond yield after consideration of the differing tax treatments.

Regardless, Mr. Coyne's analysis has focused on identifying formulaic factors that predictably impact utility equity returns. Mr. Coyne has not attempted to identify such factors for preferred equity returns. Mr. Coyne views preferred shares to be much more like debt than equity and as such would have no place in his analysis of formulaic factors for determining utility equity returns.

7.5 Would Mr. Coyne agree that Canadian utility shares are often repackaged into split shares consisting of preferred shares and residual equity shares without a dividend? Would he agree that this indicates that this implies there is a tax preference in the Canadian capital market for dividend income?

Response:

Mr. Coyne understands that this practice has occurred in the past, but would not agree that it is common or widespread for traditional utilities' securities. Further, he believes that this question has no relevance to the evidence he has filed in this proceeding.

8. Topic: Newfoundland ROE formula

8.1 Is Mr. Coyne aware that the Board of Commissioners of Newfoundland and Labrador confirmed their ROE adjustment formula in 2010 subject to some technical changes on the long Canada bond yield?

Response:

No. Mr. Coyne is aware that the Board rebased the ROE at 9% for the 2010 test year, based upon the evidence of its experts, and did not rely on the formula for the 2010 rate year. The Board indicated that the authorized returns for 2011 and 2012 should be based upon the formula. [*Order No. P.U. 43 (2009)*] Mr. Coyne notes that certain technical changes in calculating the bond yield and spread were applied to the formula for purposes of the 2011 calculation. [*Order No. P.U. 12 (2010*)].

8.2 Is Mr. Coyne aware that the 2012 ROE for Newfoundland Power was continued at the 2011 formula ROE on an interim basis at the request of the company and agreed to by interveners before being fixed at 8.80% in a settlement?

Response:

No. Mr. Coyne is aware that the 2011 Board-approved rate of return on equity for Newfoundland Power was 8.38%, based on the operation of the automatic adjustment formula [*Order No. P.U. 32 (2010)*], and that because the formula produced an extraordinarily low result for 2012 of 7.85%, it was accepted by all parties that the formula should be suspended, the Board approved the suspension and decided that Newfoundland Power should continue to earn the 8.38% (2011 equity return) on an interim basis until a final "fair" rate of return could be established for 2012. Mr. Coyne understands that a final rate of return on equity was established for Newfoundland Power through settlement of 8.8 percent and that any future use of the formulaic AAM for determining ROE will be revisited in Newfoundland Power's current general rate application [*Order No. P.U. 17 (2012)*].

8.3 Is Mr. Coyne aware that the New Brunswick Public Utility Board (Decision November 30, 2010) set the benchmark ROE for 2011 at 8.13% as a result of a litigated hearing?

Response:

Yes. However, Mr. Coyne believes it is important to note that the benchmark ROE calculated in the referenced decision has not been applied to any New Brunswick entity. The actual awarded ROE for EGNB was 10.9% on 45% equity after accounting for its risk profile. *[NBEUB Decision, November 30, 2010]*.

9. Topic: US vs Canadian comparisons

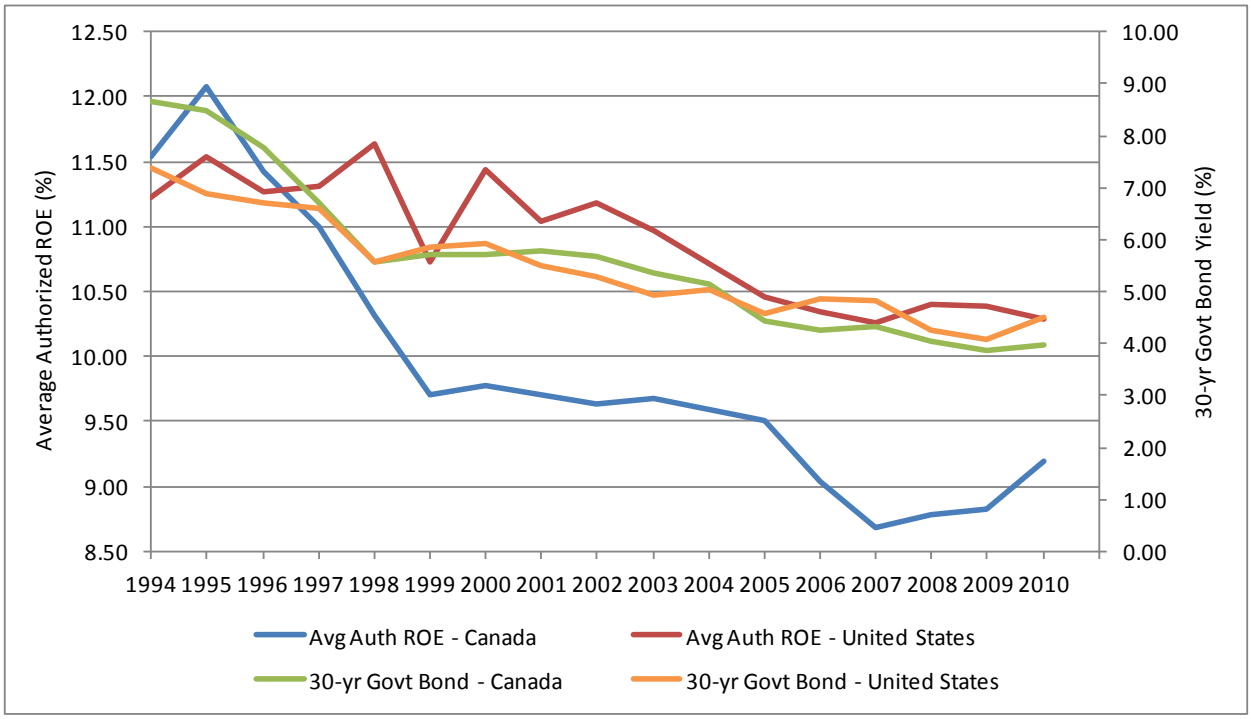
9.1 With reference to the backtesting and graph on page 26, please provide all theoretical support for the notion that it is meaningful to look at rates of return in different countries in different currencies without a foreign exchange adjustment.

Response:

With respect to the backtesting and graph on page 26, Concentric did not make any adjustments for differences between the U.S. and Canadian financial markets using the "interest rate parity condition" or other method, as these returns are being incorporated into indices (that are applied to Canadian allowed returns). Hence, because an index reflecting the percentage change in North American allowed returns from a base year is applied to the Canadian ROE, a translation between the currencies is not required. Further, Mr. Coyne considers this discussion inconsequential under current economic circumstances since the current and expected exchange rates between Canada and the U.S. hover near parity. Concentric has addressed the international comparability of rates of return in its 2007 Report for the OEB, A Comparative Analysis Of Return On Equity Of Natural Gas Utilities (June 14, 2007). Excerpt provided in Attachment 9.1. Please also refer to the response to BC Util Cust-Concentric IR 1.3.2.

9.2 Please present a graph of the average ROE in both the US and Canada over the same time period and the long Government bond yield in both countries.

Response:



9.3 Please provide the annual deficit/surplus for the Federal Governments of Canada and the US since the introduction of formula ROEs in Canada in 1994.

Response:

Please refer to Attachment 9.3.

9.4 For each year since 1994 please provide the monthly average long term Canada and US government bond yields(30 year) indicating precisely which data source and yield series are being used. Would Mr. Coyne regard these two series to be

equivalent such that the opportunity cost of long treasury financing in the US could be used as a good estimate for the Government of Canada?

Response:

Attachment 9.4 contains the requested data. Mr. Coyne would not consider the two bond yield series to be exactly equivalent, but as illustrated in the chart and through statistical analysis, the U.S. and Canada bonds are highly correlated.

Attachment 2.6

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Electric Utilities																		
AltaLink	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.40	9.60	9.50	8.93	8.51	8.75	9.00	9.00	8.75
ATCO Electric	NA	NA	11.25	1/	1/	1/	1/	1/	1/	9.40	9.60	9.50	8.93	8.51	8.75	9.00	9.00	8.75
FortisAlberta Inc.	NA	NA	NA	NA	NA	NA	NA	NA	9.50	9.50	9.60	9.50	8.93	8.51	8.75	9.00	9.00	8.75
FortisBC Inc. 3/	11.00	12.25	11.25	10.50	10.25	9.50	10.00	9.75	9.53	9.82	9.55	9.43	9.20	8.77	9.02	8.87	9.90	9.90
Newfoundland Power	NA	NA	11.00	NA	9.25	9.25	9.59	9.59	9.05	9.75	9.75	9.24	9.24	8.60	8.95	8.95	9.00	8.38
Nova Scotia Power	NA	NA	10.75	NA	NA	NA	NA	NA	10.15	NA	NA	9.55	9.55	9.55	NA	9.35	NA	9.35
Ontario Electricity Distributors	NA	NA	NA	NA	NA	9.35	9.88	9.88	9.88	9.88	9.88	9.88	9.00	9.00	8.57	8.01	9.85	9.42
TransAlta Utilities	NA	12.25	11.25	1/	2/	9.25	9.25	NA	9.40	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mean of Electric Utilities	**11.00**	**12.25**	**11.10**	**10.50**	**9.75**	**9.34**	**9.68**	**9.74**	**9.59**	**9.63**	**9.66**	**9.51**	**9.11**	**8.78**	**8.80**	**8.88**	**9.29**	**9.04**
Gas Distributors																		
AltaGas Utilities	NA	12.00	11.75	11.75	11.75	11.75	9.90	9.70	9.70	9.50	9.60	9.50	8.93	8.51	8.75	9.00	9.00	8.75
ATCO Gas	NA	NA	NA	10.50	9.38	NA	NA	9.75	9.75	9.50	9.50	9.50	8.93	8.51	8.75	9.00	9.00	8.75
Enbridge Gas Distribution	11.60	11.65	11.88	11.50	10.30	9.51	9.73	9.54	9.66	9.69	NA	9.57	8.74	8.39	8.39	8.39	8.39	8.39
FortisBC Energy 3/	10.65	12.00	11.00	10.25	10.00	9.25	9.50	9.25	9.13	9.42	9.15	9.03	8.80	8.37	8.62	8.47	9.50	9.50
Gaz Métro	12.00	12.00	12.00	11.50	10.75	9.64	9.72	9.60	9.67	9.89	9.45	9.69	8.95	8.73	9.05	8.76	9.20	9.09
Pacific Northern Gas 3/	11.50	12.75	11.75	11.00	10.75	10.00	10.25	10.00	9.88	10.17	9.80	9.68	9.45	9.02	9.27	9.12	10.15	10.15
Union Gas	12.50	11.75	11.75	11.00	10.44	9.61	9.95	9.95	9.95	9.95	9.62	9.62	8.89	8.54	8.54	8.54	8.54	8.54
Mean of Gas Distributors	**11.65**	**12.03**	**11.69**	**11.07**	**10.48**	**9.96**	**9.84**	**9.68**	**9.68**	**9.73**	**9.52**	**9.51**	**8.96**	**8.58**	**8.77**	**8.75**	**9.11**	**9.02**
Minimum of All Companies	**10.65**	**11.65**	**10.75**	**10.25**	**9.25**	**9.25**	**9.25**	**9.25**	**9.05**	**9.40**	**9.15**	**9.03**	**8.74**	**8.37**	**8.39**	**8.01**	**8.39**	**8.38**
Mean of All Companies	**11.54**	**12.08**	**11.42**	**11.00**	**10.32**	**9.71**	**9.78**	**9.70**	**9.63**	**9.68**	**9.59**	**9.51**	**9.03**	**8.68**	**8.78**	**8.82**	**9.19**	**9.03**
Maximum of All Companies	**12.50**	**12.75**	**12.00**	**11.75**	**11.75**	**11.75**	**10.25**	**10.00**	**10.15**	**10.17**	**9.88**	**9.88**	**9.55**	**9.55**	**9.27**	**9.35**	**10.15**	**10.15**

1/ Negotiated settlement, details not available.
2/ Negotiated settlement, implicit ROE made public is 10.5%.
3/ Allowed ROE for 2009 for first six months
4/ Rate cases ongoing for 2012.
Note: The allowed ROEs for ENMAX Distribution, EPCOR Distribution and EPCOR Transmission have been identical to those of the other Alberta utilities since 2004 (ENMAX Transmission since 2006).

Source: Direct Evidence of Nova Scotia Power Inc., 2013 General Rate Application, Testimony of Kathleen C. McShane; 2011 Annual Information Forms and Annual Reports

Attachment 6.4

Ontario Energy Board

EB-2009-0084

Report of the Board

on the Cost of Capital for Ontario's Regulated Utilities

December 11, 2009

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Executive Summary

Earlier this year, the Board initiated a consultative process to assist the Board in reviewing its cost of capital policies. The consultative process began in February 2009 and has culminated in this policy report of the Board. All materials in relation to this consultation are available on the Board's web site.

The Board affirms its view that the Fair Return Standard frames the discretion of a regulator, by setting out three requirements that must be satisfied by the cost of capital determinations of the tribunal. Meeting the standard is not optional; it is a legal requirement. Notwithstanding this obligation, the Board notes that the Fair Return Standard is sufficiently broad that the regulator that applies it must still use informed judgment and apply its discretion in the determination of a rate regulated entity's cost of capital. The Board also confirms other key principles with respect to its cost of capital policy.

The Board has analyzed submissions, discussions at the consultation and the final written comments of participants to the consultation with these general principles in mind. In light of the information and supporting empirical analysis provided in consultation with stakeholders, the following refinements to the Board's policies with regard to the cost of capital are set out in this report.

1. Need to Reset and Refine Existing Return on Equity Formula: The Board will continue to use a formula-based equity risk premium approach. Also, the Board is of the view that the Long Canada Bond Forecast (the "LCBF") continues to be an appropriate base upon which to begin the return on equity calculation. However, in order to ensure that on an ongoing basis changing economic and financial conditions are adequately and appropriately accommodated in the Board's formulaic approach for determining a utility's equity cost of capital, the Board has determined that its current formula-based return on equity approach needs to be reset and refined.

- Reset the Formula: The formula needs to be reset to address the difference between the allowed return on equity arising from the application of the formula and the return on equity for a low-risk proxy group that cannot be reconciled based on differences in risk alone. Based on the equity risk premium recommendations derived from multiple approaches that were provided by all participants in this consultation, the Board has determined that an initial equity risk premium of 550 basis points is appropriate for the purposes of deriving the initial return on equity to be embedded in the Board's reset and refined return on equity formula. This includes an implicit 50 basis points for transactional costs. Consequently, assuming a forecast long term government of Canada bond yield of 4.25%, the initial return on equity to be embedded in the Board's reset and refined return on equity formula will be 9.75% (i.e., 4.25% + 550 basis points = 9.75%).

- Refine the Formula: The formula also needs to be refined to reduce its sensitivity to changes in government bond yields due to monetary and fiscal conditions that do not reflect changes in the utility cost of equity. First, the Board views the determination of the LCBF adjustment factor to be an empirical exercise, and as such, based on the empirical analysis provided by participants in conjunction with the consultation, the Board is of the view that the LCBF adjustment factor should be set at 0.5. Second, based on the analysis provided by participants to the consultation, the Board concludes that there is a statistically significant relationship between corporate bond yields and the cost of equity, and that a corporate bond yield variable should be incorporated in the return on equity formula. The Board has determined that it will use a utility bond spread based on the difference between the Bloomberg Fair Value Canada 30-Year A-rated Utility Bond index yield and the long Canada bond yield and that the utility bond spread reflected will be subject to a 0.50 adjustment factor, consistent with the empirical analyses provided by participants to the consultation.

2. Refine Long-term Debt Guidelines and Approach to Determine Rate: The determination of the cost of long-term debt was not a primary focus of the consultation and the Board notes that the comments made by participants in the consultation largely

supported the continuation of the Board's existing policies and practices. However, in the report the Board formalizes certain approaches to reflect recent determinations regarding long-term debt costs. Further, the deemed long-term debt rate will be estimated including the A-rated utility bond index yield consistent with refinement to the return on equity formula.

3. Refine Approach to Determine Deemed Short-term Debt Rate: The determination of the cost of short-term debt also was not a primary focus of the consultation. However, to better reflect utility short-term debt costs, the Board has determined that the spread over the Bankers' Acceptance rate used to derive the deemed short-term debt rate should be based on real market quotes for issuing spreads over Bankers' Acceptance rates for the cost of short-term debt.

The Board will apply the methods set out in this report annually to derive the values for the return on equity and the deemed long-term and short-term debt rates for use in cost of service applications. If the application of these methods produces numerical results that, in the view of the Board, raise doubt that the Fair Return Standard is met, the Board may then use its discretion to begin a consultative process. Also, the Board has determined that a review period of five years provides an appropriate balance between the need to ensure that the formula-generated return on equity continues to meet the Fair Return Standard and the objective of maintaining regulatory efficiency and transparency. Accordingly, the Board intends to conduct its first regular review in 2014.

The remainder of this Report sets out in greater detail the Board's policy as summarized above, as well as the considerations underlying the different elements of the Board's approach.

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1 Introduction

The Ontario Energy Board (the "Board") adopted a formula-based approach using the Equity Risk Premium ("ERP") method for determining the fair rate of return on common equity for Ontario natural gas utilities in March, 1997. Application of the approach was extended to the electric utilities when the Board's regulatory oversight expanded to include the electricity sector in 1999. The Board's current approach for determining the cost of capital is set out in the *Report of the Board on Cost of Capital and 2nd Generation Incentive Regulation for Ontario's Electricity Distributors*, dated December 20, 2006 (the "December 20, 2006 Report").

Earlier this year, the Board initiated a consultative process to assist the Board in reviewing its cost of capital policies. The consultative process, detailed below, began in February 2009 and has culminated in this policy report of the Board. All materials in relation to this consultation are available on the Board's web site.

This report sets out the Board's updated approach to cost of capital and the methods that the Board will use to annually update the cost of capital parameters for all rate-regulated utilities. Specifically, this report refines the Board's policies regarding the cost of capital in the following five ways: (i) resetting and refining the return on equity ("ROE") formula; (ii) refining long-term debt guidelines and the approach to determining the deemed long-term debt rate; (iii) refining the approach to determining the deemed short-term debt rate; and (iv) setting out an annual review process to be used by the Board in conjunction with each application of the methodology to ensure that the results meet the Fair Return Standard ("FRS"); and (v) developing a framework within which to conduct a periodic review of the Board's cost of capital policies.

Organization of this Report

This report is organized as follows: The consultative process is detailed in Chapter 2. Important principles in the regulation of cost of capital are discussed in Chapter 3. The Board's policy for and analysis of cost of capital are outlined in Chapter 4. Certain

implementation considerations are identified in Chapter 5, and the annual update process and provision for periodic review of the cost of capital policies are addressed in Chapter 6. A summary of the formula-based ROE guidelines in effect in the 2009 rate year is provided in Appendix A. The new methods that the Board will use to annually update the cost of capital parameters as set out in this report are contained in the Appendices.

2 Consultative Process

On February 24, 2009, the Board issued a letter which set out its determination on the values for the ROE and the deemed long-term and short-term debt rates for use in the 2009 rate year cost of service applications. These cost of capital parameter values were calculated based on the methodologies and formulae set out in the December 20, 2006 Report. In that letter, the Board advised participants that it would be initiating a review of its current policy regarding the cost of capital.

2.1 Overview

Initial Consultation

On March 16, 2009, the Board initiated a consultation process to help it to determine whether current economic and financial market conditions warrant an adjustment to any of the cost of capital parameter values (i.e., the ROE, long-term debt rate, and/or short-term debt rate) set out in the Board's February 24, 2009 letter. The consultation was initiated, in part, by (i) the fact that the difference between the cost of equity and the cost of long-term debt values determined by the Board for the 2009 Cost of Service Applications was only 39 basis points (8.01% and 7.62%), versus a difference of 247 basis points in 2008; and (ii) concern that the Board did not have a sufficiently robust approach within which to exercise its discretion to adjust any or all of the values produced by the application of the methodology. The Board indicated that the objective of the consultation was to test whether the values produced, and the relationships among them, are reasonable in the current economic and financial market conditions, and to allow the Board to determine if, when and how to make any appropriate adjustments to any of the values.

Cost of Capital Review

In light of stakeholders' comments, the Board determined not to vary the 2009 parameter values for 2009 rates. In its June 18, 2009 letter setting out this determination, the Board explained that it was not persuaded that there was a sufficient basis to do so, in a timely manner. Nevertheless, the Board determined that further examination of its policy regarding the cost of capital was warranted to ensure that, on a going forward basis, changing economic and financial conditions are accommodated if required. Therefore, the Board advised that it would proceed with a review of its policy regarding the cost of capital. The Board indicated that any changes to the policy made as a result of this review would apply to the setting of rates for the 2010 rate year.

The Board set an issues list to form the basis of its review which took into account the stakeholder comments received in response to the Board's March 16, 2009 letter and other information that the Board considered relevant (the "Issues List"). This Issues List was posted to the Board's web site on July 30, 2009. Appended to the Issues List were: a summary of stakeholder options in response to the Board's March 16, 2009 letter; and a list of references to documents germane to the consultation.

The Issues List

In the cover letter to the Issues List, the Board affirmed its view that the FRS constitutes the over-arching principle for setting the cost of capital, which is one input into the setting of rates. The Board also set the scope for the consultation as follows. First, that the consultation would deal only with the means by which the Board determines the cost of capital. The actual effect, if any, on specific utilities' revenue requirements as a result of any updated policies arising from this consultation and the determination of just and reasonable rates would not be addressed in this process, but in future rate proceedings. Second, that historically, the Board has found the ERP approach to be pragmatic and efficient given the Ontario market structure and the number of utilities that the Board regulates. The Board concluded that an ERP approach remains the most appropriate in the current circumstances. However, the Board decided to review the application and the derivation of the current ERP approach to determine if it is sufficiently robust to guide the

Board's discretion in applying the FRS. And third, the Board stated that the application of the FRS would be central to the consultation.

The Board identified three areas where further information was needed:

- Potential adjustment to the established cost of capital methodology (i.e., based on the ERP approach) to adapt to changes in financial market and economic conditions;
- Determination of reasonableness of the results based on a formulaic approach for setting cost of capital parameter values; and
- Board discretion to adjust those results, if appropriate.

The Board received written comments from stakeholders identifying their views and positions on the listed issues and held a Stakeholder Conference to provide a forum for discussion of the substantive matters contained in the Board's Issues List.

The Stakeholder Conference

The Stakeholder Conference was held over a three day period, September 21, 22 and October 6, 2009.

The Board identified the objectives of the stakeholder conference as follows:

- To allow participants and their respective experts to clarify and elaborate on their written comments;
- To provide participants with an opportunity to explore in some depth the rationale and merits of alternatives supported by other participants and their respective experts; and
- To help the Board gain, through the presentations and an interactive exchange with participants and their respective experts, a clearer understanding of the positions of participants and of significant issues and areas of concern.

At the start of the Stakeholder Conference, a Capital Markets Panel provided participants with a comprehensive overview of capital markets conditions. The Panel was comprised of practicing capital markets individuals, representing investor, equity analyst, and bond market perspectives. Representatives from Sun Life Financial, TD Securities Inc., Scotia Capital, and Macquarie Capital Markets participated on the Capital Markets Panel. Panel members addressed matters such as:

- What the capital markets have been through, where they are today, and set out key indicators or variables that are of interest prospectively;
- Overall availability of capital and the cost of that capital (both debt and equity);
- Access to bank credit/debt/equity, the absolute cost of debt, spread, term availability, and covenants;
- Spreads that have been and are being observed and under what conditions; and
- Activity that has been and/or is evident in the market in terms of funds flow into the market and between asset classes.

Following the Capital Markets Panel discussion, the following individuals provided presentations to participants and the Board at the Stakeholder Conference:

- Dr Laurence D. Booth, Professor, University of Toronto (consultant for the Building Owners and Managers Association of the Greater Toronto Area, the Consumers Council of Canada, Canadian Manufacturers and Exporters, Industrial Gas Users Association, London Property Management Association, and the Vulnerable Energy Consumer's Coalition);
- Mr. Donald A. Carmichael, Independent Consultant (consultant for Enbridge, Fortis Ontario Inc., and Toronto Hydro-Electric System Limited);
- Mr. James M. Coyne, Senior Vice President, Concentric Energy Advisors (consultant for Enbridge, Hydro One Networks, Inc. and the Coalition of Large Distributors [Enersource Hydro Missisauga Inc., Horizon Utilities Corporation, Hydro Ottawa Limited, PowerStream Inc., Toronto Hydro-Electric System Limited and Veridian Connections Inc.]);

- Mr. John Dalton, Power Advisory LLC (consultant for Great Lakes Power Transmission);
- Ms Kathleen McShane, President, Foster Associates (consultant for Electricity Distributors Association);
- Dr Lawrence P. Schwartz, Consulting Economist (consultant for Energy Probe Research Foundation); and
- Dr. James Vander Weide, Research Professor of Finance and Economics, Duke University, The Fuqua School of Business (consultant for Union Gas).

Subsequent to the Stakeholder Conference and in light of the presentations made by participants and discussions at the conference, the Board received final written comments from participants. The Board indicated in its October 5, 2009 letter to participants that following the receipt of final written comments, it would review all of the materials, including Stakeholder Conference transcripts and all of the written comments in making its determination, and that the Board aimed to issue its report in December.

2.2 Approach to Developing Regulatory Policy

In their final comments to the Board, several participants expressed concern regarding the potential scope of outcomes arising from this consultation. In a joint submission, the Consumers Council of Canada, the Vulnerable Energy Consumer's Coalition and the Canadian Manufacturers and Exporters describe their understanding that the consultation was intended to have a limited scope, and pointed to several statements made by the Board regarding the scope of the consultation. In summary, the submission states: "[i]n these circumstances, we suggest that the possible outcomes of this consultation are limited to a Board report which evaluates whether any of the information presented during the course of the consultative is sufficient to call into question the continued appropriateness of any element of the Board's current cost of capital methodology."[1] The School Energy Coalition filed a similar submission, stating: "[t]he primary purpose of this part of the consultation, as

[1] Final Comments on behalf of the Consumers Council of Canada, the Vulnerable Energy Consumer's Coalition and the Canadian Manufacturers and Exporters. October 30, 2009. p. 3.

noted by the Board in a number of communications, and reiterated at the stakeholder conference, is to help understand whether the current approach to cost of capital has sufficient robustness to be relied on by the Board in all circumstances."[2]

Although the Board appreciates the perspectives of these participants about their expectations, it does not agree that the scope of the consultation was limited in the fashion that they suggest. The Issues List set out a comprehensive set of issues that set the scope for this consultation. Amongst the issues are the following: How should the Board establish the initial ROE for the purpose of resetting the methodology? Does the current approach used by the Board to calculate the ERP remain appropriate? If not, how should the ERP be calculated?[3]

In response to a letter it received on August 13, 2009 from Mr. Robert Warren, sent on behalf of the Consumers Council of Canada, the Vulnerable Energy Consumers Coalition and the London Property Management Association, the Board again invited participants to provide any information they felt appropriate in responding to the questions on the Issues List:

> Stakeholders are asked to provide in their written comments answers to the questions identified in the Board's Issues List. To help the Board in its review, the Board invites stakeholders to include in their written comments some analytical support and detailed information to identify their views and support their positions in response to the Board's questions.[4]

It is the Board's view, therefore, that the policies determined by the Board in this report are within the scope of the consultation. The Board has benefitted from the materials and submissions received from the participants. This information contributes to the substantive foundation upon which the Board will base its policies. The Board does not believe that the

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[2] Final Comments on behalf of the School Energy Coalition, p. 2.
[3] Ontario Energy Board. Letter to Participants re: Consultation on Cost of Capital – Issues List, Attachment B: Issues for Discussion at Stakeholder Conference. July 30, 2009. Questions 10 and 13.
[4] Ontario Energy Board. Letter to Mr. Robert B. Warren re: Consultation on Cost of Capital (Board File No.: EB-2009-0084). August 20, 2009.

extensive body of information before it would be materially improved by a hearing process, as was suggested by some participants.

Courts have long recognized that duties of procedural fairness such as the requirement of a hearing apply to adjudicative decisions and decisions affecting specific rights, interests and privileges. Where a board is engaged, as here, in the development of a policy guideline, courts have held that it falls to the board to decide on the method of consultation to be employed - as long as the legislative requirements, if any, are met. There also is abundant precedent for this approach within the Board's practice, and it is neither unusual nor improper to develop a guideline through a consultative process.[5]

The final "product" of this process, of course, is a Board policy. This was not a hearing process, and it does not - indeed cannot - set rates. The Board's refreshed cost of capital policies will be considered through rate hearings for the individual utilities, at which it is possible that specific evidence may be proffered and tested before the Board. Board panels assigned to these cases will look to the report for guidance in how the cost of capital should be determined. Board panels considering individual rate applications, however, are not bound by the Board's policy, and where justified by specific circumstances, may choose not to apply the policy (or a part of the policy).

[5] The Board's current methodology for setting electricity rates through the incentive regulation mechanism, for example, was established through a consultative/guideline process.

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3 Context, Background and the Role of the Board

In competitive markets, the outputs of the goods and services of the economy and the prices for these outputs are determined in the market place, in accordance with consumers' preferences and incomes, as well as producers' minimization of cost for a given output. In such a market, the outcome is the efficient allocation of resources, including capital, and social welfare is maximized.

However, in some situations, markets fail to achieve such efficient outcomes. Market failure refers to situations in which the conditions required to achieve the market-efficient outcome are not present. Common examples of market failure are the existence of significant externalities, the exercise of market power by a small number of producers or buyers, natural monopolies, and information asymmetry between producers and their customers.

Electric transmission and distribution companies and natural gas distribution utilities are natural monopolies and are subject to rate regulation in Ontario by the Ontario Energy Board. In this context, the purpose of rate regulation, among other things, is to create or emulate an efficient market solution that cannot otherwise be achieved due to the presence of one or more market failures. As it relates to a rate regulated entity's cost of capital, the role of the regulator is to determine, as accurately as possible, the opportunity cost of capital to ensure that an efficient amount of investment occurs in the public interest for the purpose of setting utility rates.

3.1 Fair Return Standard

On July 30, 2009 the Board issued a letter and its Issues List for the then planned stakeholder consultation. In that letter, the Board communicated its view that the FRS constitutes the over-arching principle for setting the cost of capital, which is one input into the setting of rates. There are a number of key messages in this statement.

First, as set out by the Federal Court of Appeal, the cost of capital to a utility "is equivalent to the aggregate return on investment investors require in order to keep their capital invested in the utility and to invest new capital in the utility."[6]

Second, the Federal Court of Appeal also stated:

> … even though cost of capital may be more difficult to estimate than some other costs, it is a real cost that the utility must be able to recover through its revenues. If the… [Board] does not permit the utility to recover its cost of capital, the utility will be unable to raise new capital or engage in refinancing as it will be unable to offer investors the same rate of return as other investments of similar risk. As well, existing shareholders will insist that retained earnings not be reinvested in the utility.[7]

Thirdly, the Board is of the view that the process to determine the cost of capital aligns the private interest of the utility and its shareholders with the public interest, and notes that the Federal Court of Appeal said:

> … in the long run, unless a regulated enterprise is allowed to earn its cost of capital, both debt and equity, it will be unable to expand its operations or even maintain its existing ones…This will harm not only its shareholders, but also the customers it will no longer be able to service. The impact on customers and ultimately consumers will be even more significant where there is insufficient competition in the market to provide adequate alternative service.[8]

The determination of a utility's cost of capital must meet the FRS. The FRS is a legal concept, and has been articulated in three seminal court determinations as set out below:

1. In *Bluefield Waterworks & Improvement Co. v. Public Service Commission of West Virginia* et. al. 262 U.S. 679 (1923), the FRS is expressed to include concepts of comparability, financial soundness and adequacy:

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[6] TransCanada PipeLines Limited v. National Energy Board et al. [2004] F.C.A 149. Para. 6.
[7] Ibid. Para. 12.
[8] Ibid. Para. 13.

> A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding, risks and uncertainties; but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures. The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties.

2. In *Northwestern Utilities Limited v. City of Edmonton*, [1929] S.C.R. 186, the FRS concept was described as follows:

> By a fair return is meant that the company will be allowed as large a return on the capital invested in its enterprise, which will be net to the company, as it would receive if it were investing the same amount in other securities possessing an attractiveness, stability and certainty equal to that of the company's enterprise.

3. In *Federal Power Commission v. Hope Natural Gas* 320 U.S. 591 (1944), the Court expresses that "balance" is achieved in the ratemaking process, and outlines three elements of a fair return:

> The rate-making process under the act, i.e., the fixing of "just and reasonable" rates, involves a balancing of the investor and the consumer interests…the investor interest has a legitimate concern with the financial integrity of the company whose rates are being regulated. From the investor or company point of view it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business. These include service on the debt and dividends on the stock…By that standard, the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital.

The FRS was further articulated by the National Energy Board in its RH-2-2004 Phase II Decision as:

> A fair or reasonable return on capital should:
>
> - be comparable to the return available from the application of invested capital to other enterprises of like risk (the comparable investment standard);
> - enable the financial integrity of the regulated enterprise to be maintained (the financial integrity standard); and
> - permit incremental capital to be attracted to the enterprise on reasonable terms and conditions (the capital attraction standard).[9]

In its letter of July 30, 2009, the Board noted that the National Energy Board's articulation of the FRS is consistent with the principled approach described on page 2 of the Compendium to the Board's March 1997 *Draft Guidelines on a Formula-Based Return on Common Equity for Regulated Utilities* (the "1997 Draft Guidelines") and the policies set out in the Board's December 20, 2006 Report.

The Board is of the view that the FRS frames the discretion of a regulator, by setting out three requirements that must be satisfied by the cost of capital determinations of the tribunal. Meeting the standard is not optional; it is a legal requirement. As set out by Enbridge in their final comments, the Supreme Court of Canada has "described this requirement that approved rates must produce a fair return as an 'absolute' obligation."[10] Notwithstanding this mandatory obligation, the Board notes that the FRS is sufficiently broad that the regulator that applies it must still use informed judgment and apply its discretion in the determination of a rate regulated entity's cost of capital.

Informed by the comments made by stakeholders in the context of this consultation and the relevant jurisprudence, the Board offers the following observations about the application of the FRS.

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[9] National Energy Board. RH-2-2004, Phase II Reasons for Decision, TransCanada PipeLines Limited Cost of Capital. April 2005. p. 17

[10] *British Columbia Electric Railway Co. Ltd. v. Public Utilities Commission of British Columbia et al [1960] S.C.R. 837*, at p. 848.

First, the Board notes that the FRS expressly refers to an opportunity cost of capital concept, one that is prospective rather than retrospective.

Second, the Board agrees with the National Energy Board which stated that "[i]t does not mean that in determining the cost of capital that investor and consumer interests are balanced."[11] Further, the Board notes that the Federal Court of Appeal was clear that the overall ROE must be determined solely on the basis of a company's cost of equity capital and that "the impact of any resulting toll increase is an irrelevant consideration in that determination. This does not mean however, that any resulting increase in tolls cannot be considered by a tribunal in determining the way in which a utility should recover its costs."[12] The Federal Court of Appeal also stated that:

> It may be that an increase is so significant that it would lead to "rate shock" if implemented all at once and therefore should be phased in over time. It is quite proper for the Board to take such considerations into account, provided that there is, over a reasonable period of time, no economic loss to the utility in the process. In other words, the phased in tolls would have to compensate the utility for deterring the recovery of its cost of capital.[13]

Third, all three standards or requirements (comparable investment, financial integrity and capital attraction) must be met and none ranks in priority to the others. The Board agrees with the comments made to the effect that the cost of capital must satisfy all three requirements which can be measured through specific tests and that focusing on meeting the financial integrity and capital attraction tests without giving adequate consideration to comparability test is not sufficient to meet the FRS.

Fourth, a cost of capital determination made by a regulator that meets the FRS does not result in economic rent being earned by a utility; that is, it does not represent a reward or payment in excess of the opportunity cost required to attract capital for the purpose of

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[11] National Energy Board. Reasons for Decision. Trans Quebec & Maritimes Pipelines Inc. RH-1-2008. March 19, 2009. p. 6.
[12] *TransCanada PipeLines Ltd. v. National Energy Board, 2004 FCA 149*, para. 35-36.
[13] *TransCanada PipeLines Ltd. v. National Energy Board, 2004 FCA 149*, para. 43.

investing in utility works for the public interest. Further, the Board reiterates that an allowed ROE is a cost and is not the same concept as a profit, which is an accounting term for what is left from earnings after all expenses have been provided for. The Board notes that while cost of capital and profit are often used interchangeably from a managerial or operational perspective, the concepts are not interchangeable from a regulatory perspective.

Fifth, there was considerable discussion in the consultation about utility bond ratings. The ability of a utility to issue debt capital and maintain a credit rating were generally put forth by stakeholders in the consultation as a sufficient basis upon which to demonstrate that a particular equity cost of capital and deemed utility capital structure meet the capital attraction and financial integrity requirements of the FRS. The Board is of the view that utility bond metrics do not speak to the issue of whether a ROE determination meets the requirements of the FRS. The Board acknowledges that equity investors have, as the residual, net claimants of an enterprise, different requirements, and that bond ratings and bond credit metrics serve the explicit needs of bond investors and not necessarily those of equity investors.

Finally, the Board questions whether the FRS has been met, and in particular, the capital attraction standard, by the mere fact that a utility invests sufficient capital to meet service quality and reliability obligations. Rather, the Board is of the view that the capital attraction standard, indeed the FRS in totality, will be met if the cost of capital determined by the Board is sufficient to attract capital on a long-term sustainable basis given the opportunity costs of capital. As the Coalition of Large Distributors commented:

> [t]he fact that a utility continues to meet its regulatory obligations and is not driven to bankruptcy is not evidence that the capital attraction standard has been met. To the contrary, maintaining rates at a level that continues operation but is inadequate to attract new capital investment can be considered confiscatory. The capital attraction standard is universally held to be higher than a rate that is merely non-confiscatory. As the United States Supreme Court put it, 'The mere fact that a rate is non-confiscatory does not indicate that it must be deemed just and reasonable'.[14]

[14] Final Comments of the Coalition of Large Distributors. October 26, 2009. pp. 5-6.

The Role of the Comparable Investment Standard

Continued investment in network utilities does not, in itself, demonstrate that the FRS has been met by a regulator's cost of capital determination, and in particular, whether the determination of the equity cost of capital meets the requirements of the FRS. This is a particular challenge – how does the regulator determine when investment capital is not allocated to a rate regulated enterprise? These decisions are typically made within the utility/corporate capital budgeting process and rarely, if ever, broadly communicated to stakeholders. The Board notes that acquisition and divestiture activities of regulated utilities are not definitive in this regard, one way or the other, and notes that there are many reasons why investors are willing to acquire or desirous of selling utility assets, notwithstanding their view of whether an allowed ROE meets the FRS.

The primary tool available to the regulator to rectify this lack of transparency is the comparable investment standard. By establishing a cost of capital, and an ROE in particular, that is comparable to the return available from the application of invested capital to other enterprises of like risk, the regulator removes a significant barrier that impedes the flow of capital into or out of, a rate regulated entity. The net result is that the regulator is able, as accurately as possible, to determine the opportunity cost of capital for monies invested in utility works, with the ultimate objective being to facilitate efficient investment in the sector.

There are a number of specific issues relating to the comparable investment standard that the Board considers are relevant in the context of this cost of capital policy.

First, "like" does not mean the "same". The comparable investment standard requires empirical analysis to determine the similarities and differences between rate-regulated entities. It does not require that those entities be "the same".

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."[15] 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 analyses of Concentric Energy Advisors and Kathy McShane of Foster Associates Inc. are particularly relevant in this regard, and substantially advance the issue of establishing comparability to meet the requirements of the FRS. Further, the Board notes that in the consultation session on October 6, 2009, Dr. Booth stated that it is "absolutely possible" to form a sample from a risky universe that is low risk and compare it to the universe or the population of Canadian utilities.[16] All participants agreed.

The Board notes that Concentric did not rely on the entire universe of U.S. utilities for its comparative analysis. Rather, Concentric carefully selected comparable companies based on a series of transparent financial metrics, and the Board is of the view that this approach has considerable merit. Commenting on Concentric's analysis, Union Gas noted that no one else in the consultation performed this kind of detailed analysis of U.S. comparators.[17] The use of a principled, analytical, and transparent approach to determine a low risk comparator group from a riskier universe for the purpose of informing the Board's judgment was supported by various participants in the consultation.

The PWU commented that the position taken by Dr. Booth on the question of the comparability of US utility returns is not based on an appropriate empirical foundation.[18] The PWU further commented that:

> On the other hand, it is the view of the PWU that the analysis produced by Concentric, as summarized in one of their charts presented at the conference, represents a far more comprehensive analysis of the key characteristics of distribution utilities in Ontario vs. a North American

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[15] Professor L.D. Booth. Written Comments on behalf of Consumers Council of Canada, the Vulnerable Energy Consumer's Coalition, the Industrial Gas Users Association, the Canadian Manufacturers & Exporters (CME), the London Property Management Association and the Building Managers and Owners Association of the Greater Toronto Area. September 8, 2009. p. 25.
[16] Ontario Energy Board. Transcript of Consultation Process on Cost of Capital Review. October 6, 2009. Comments of Dr. Booth at p. 60. Lines 24-26.
[17] Written Comments of Union Gas Limited. October 30, 2009. p. 14.
[18] Final Comments of the Power Workers' Union. October 30, 2009. p. 3.

> proxy group. Differences and similarities were thoroughly considered before arriving at the conclusions that based on a careful selection of like companies, a proxy group which includes US distribution utilities adheres to the Comparable Investment Standard. Moreover, Concentric was better suited to complete such as an analysis, having recognized expertise in the risks faced by both Ontario and US electricity distributors.[19]

Dr. Vander Weide indicated that since Canadian utility bonds tend to have more covenants than US utility bonds, they would receive a slightly higher credit rating. The PWU observed that it the slight variance in ratings can be attributed to specific features of debt instruments, rather than fundamental differences in the underlying business or regulatory risks faced by the utilities. This observation was also made by Ms. Zvarich of Sun Life Financial, who presented evidence that Canadian utility bonds generally have more restrictive covenants than U.S. utility bonds.[20]

The Board is of the view that the U.S. is a relevant source for comparable data. The Board often looks to the regulatory policies of State and Federal agencies in the United States for guidance on regulatory issues in the province of Ontario. For example, in recent consultations, the Board has been informed by U.S. regulatory policies relating to low income customer concerns, transmission cost connection responsibility for renewable generation, and productivity factors for 3rd generation incentive ratemaking.

Finally, the Board agrees with Enbridge that, while it is possible to conduct DCF and CAPM analyses on publicly-traded Canadian utility holding companies of comparable risk, there are relatively few of these companies. As a result, the Board concludes that North American gas and electric utilities provide a relevant and objective source of data for comparison.

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[19] Final Comments of the Power Workers' Union. October 30, 2009. p. 6.
[20] Ontario Energy Board. Transcript of Consultation Process on Cost of Capital Review. September 21, 2009. Comments of Ms. Zvarich at pp. 24 -25.

3.2 The Cost of Capital in Theory and Practice

The Cost of Capital

The Ontario Energy Board has been engaged in the rate regulation of utilities for many years. Over this extended period, the Board notes that there continues to be any of a number of misconceptions about the cost of capital concept, particularly what the cost of capital is and why it is an important consideration.

The Board is of the view that the following points articulated by Dr. Bill Cannon in his presentation at CAMPUT's 2009 Energy Regulation Conference on July 3, 2009, are principally relevant to defining and understanding the cost of capital concept.

> At its simplest, the cost of capital is the minimum expected rate of return necessary to attract capital to an investment. The rate of return includes the income received during the time the investment is held plus any capital gain or loss, realized or accruing during this period, all as a percentage of the initial investment outlay.
>
> The cost of capital can be viewed from both: (a) a company or utility perspective; and (b) from the investor's or capital provider's perspective. From the company's perspective, the cost of capital is the minimum rate of return the company must promise to achieve for investors on its debt and equity securities in order to preserve their market values and, thereby, retain the allegiance of these investors.
>
> [There is interest] in the cost of capital…because all utilities – private or public – at some time… must raise financial capital to pay for investments, and both fairness and practical considerations dictate that the private and/or government investors who provide these capital funds must be adequately compensated. Raising capital is a competitive process. Private investors are under no obligation to buy a particular utility's securities, and government-owned utilities must compete with other government spending priorities. A utility will be able to secure new capital and replace maturing securities only if investors believe that they will be adequately rewarded for providing new capital funds. That required reward, in turn, must compensate the investors for a least two things: (1) for postponing the consumption of the goods and services that they might otherwise have enjoyed had they not made the investment; and (2) for exposing their funds to the risk that they may not

> get all their money back or not get it back as promptly as they anticipated. The reward demanded by investors is therefore a necessary cost of doing business from the utility's point of view, just as much as the cost of labour or fuel.
>
> From the viewpoint of investors as a group, however, the cost of capital can be defined more clearly and operationalized as "the expected rate of return prevailing in the capital markets on alternative investments of equivalent risk and attractiveness." There are four concepts embedded in this operational definition:
>
> First, it is *forward-looking*. Investment returns are inherently uncertain and the ex post, actual returns experienced by investors may differ from those that were expected ahead of time. The cost of capital is therefore an *expected* rate of return.[21]
>
> Second, it reflects the *opportunity cost* of investment. Investors have the opportunity to invest in a wide range of investments, so the expected rate of return from a given utility-company investment must be sufficient to compensate investors for the returns they might otherwise have received on foregone investments.
>
> Third, it is *market-determined*. This market price - expressed as the expected return per dollar of invested capital - serves to balance the supply of, and demand for, capital for the firm.
>
> And, fourth, it reflects the *risk* of the investment. It reflects the expected returns on investments in the marketplace that are exposed to equivalent risks. Another way of expressing this principle is to say that the cost of capital depends on the *use* of the capital – or, more precisely, the risk associated with the use of the funds – and not on the *source* of the funds.

In Ontario, utilities regulated by the Board in the gas and electricity sectors are structured to operate as commercial entities. As such, the rate setting methodologies used by the Board apply uniformly to all rate-regulated entities regardless of ownership. The determination of rate-regulated entities' cost of capital is no exception. It follows that the opportunity cost of capital should be determined by the Board based on a systematic and empirical approach that applies to all rate-regulated utilities regardless of ownership. The Board sees no

[21] The word "expected" is used in the statistical sense (i.e., the probability-weighted rate of return). It does not refer to a "hoped for" or "most likely" rate of return.

compelling reason to adopt different methods of determining the cost of capital based on ownership.

The Equity Risk Premium Approach

As previously indicated, the Board has determined that the ERP approach remains the most appropriate approach in the current circumstances. The ERP approach is one of four main approaches that are traditionally used by experts during regulatory cost of capital reviews to establish a fair ROE: (1) the comparable earnings approach; (2) discounted cash flow approach; (3) the capital asset pricing model; and (4) ERP approach. These methods are all used in varying degrees to formulate and/or test an opinion regarding a fair return to investors.[22] The Board's current formulaic approach is a modified Capital Asset Pricing Model methodology and ERP approach.

Each of these four main approaches has well documented strengths and weaknesses. Notwithstanding the known weaknesses of these differing approaches, the Board agrees with Ms. McShane when she states: "each of the various types of tests brings a different perspective to the estimation of a fair return. No single test is, by itself, sufficient to ensure that all three requirements of the fair return standard are met."[23]

Through the consultative process which began in February 2009 and has culminated in this report, the Board has been informed by a number of ex-post analytical approaches, including analysis of experienced ERPs on investments in Canadian utility stocks. The Board observes from these analyses that the ROE produced by various approaches can be expressed as an absolute ROE number or as an ERP over a risk-free rate. Also, the Board agrees that expressing the ROE in terms of a premium above the long-term Canada bond yield does not mean that the initial ROE needs to be estimated by using a single test or a number of tests that might be defined as ERP tests.

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[22] Ontario Energy Board. Draft Guidelines on a Formula-Based Return on Common Equity for Regulated Utilities. March 1997. p. 2.
[23] McShane, K., Foster Associates, Inc. Written comments on behalf of the Electricity Distributors Association. September 8, 2009. p. 2.

A Formulaic Approach

The Board has used a formula-based methodology to determine the rate of ROE since 1998. The advantages identified in the 1997 Draft Guidelines remain appropriate today and include:

- Simplification of the hearing process;
- Is relatively free from conflicting interpretation and is readily understood by all participants;
- Reduces the need for complex, annual risk assessments, while still reflecting major changes in the capital markets; and
- Is capable of producing a rate of return that approximates the result which would have been produced through the traditional process.[24]

The Board also notes that a formula-based approach:

- Is transparent, resulting in predictable and consistent outcomes, and meets the needs of stakeholders broadly, particularly those in the capital market; and
- Is a practical necessity in Ontario, given the large number of rate regulated entities.

The Board also acknowledges that a formula-based ROE methodology and mechanical approaches in general, have a number of disadvantages, as identified in the 1997 Draft Guidelines:

- Establishing the initial parameters of the generic formula will have a profound influence on the potential success or failure of the process. Over time, these parameters and adjustment factors will have a cumulative or compounding effect on the

[24] Ontario Energy Board. Draft Guidelines on a Formula-Based Return on Common Equity for Regulated Utilities. March 1997. p. 7.

results of the formulaic ROE mechanism. The use of an inappropriate initial ROE will either inflate or understate subsequent rate determinations;

- The present formulaic ROE generally relies predominantly on the ERP method to the exclusion of other methods;
- Adjustment for the impact of timing differences for utilities with different year-ends is a challenge; and
- The Board's ability to make discretionary adjustments to a utility's return for the purpose of creating incentives for particular behaviours or sending signals to the marketplace may be restricted. [25]

Notwithstanding these concerns, the Board is of the view that it is appropriate to continue to use a formulaic approach to determine the equity cost of capital and that the overall advantages of the approach outweigh potential disadvantages.

An Empirical Foundation

The essential elements of a formulaic approach must be empirically derived – the initial ROE, implied ERP and the adjustment factor are determined by the Board based on empirical analysis. It is essential that sufficient empirical analysis be provided periodically to ensure that assumed relationships are not misspecified. This includes the construction and application of a framework to evaluate the degree of comparability between rate regulated natural gas distribution and electricity distribution and transmission utilities in Canada and the United States.

To be clear, the approach to be used by the Board in setting the essential elements of a formula-based rate of ROE (i.e., base ROE, formula terms and adjustment factors) will be based on "economic theory and empirically derived from objective, data-based analysis."[26] As such, it is not sufficient for a formulaic approach for determining ROE to produce a

[25] Ibid. p. 7.
[26] Ontario Energy Board. Report of the Board on 3rd Generation Incentive Regulation. July 14, 2008. p. 19

numerical result that satisfies the FRS on average, over time. The Board is of the view that each time a formulaic approach is used to calculate an allowed ROE it must generate a result that meets the FRS, as determined by the Board using its experience and informed judgment.

This principle is supported by the *Hope* decision, which states: "Under the statutory standard of 'just and reasonable' it is the result reached not the method which is controlling…"[27]

[27] Federal Power Commission v. Hope Natural Gas 320 U.S. 591 (1944). p. 602

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4 The Board's Approach

4.1 Summary of Key Principles

As discussed previously, the Board confirms the following key principles with respect to its cost of capital policy. The Board has analyzed submissions, discussions at the consultation and the final written comments of participants to the consultation with these general principles in mind.

1. **Fair Return Standard.** All three requirements – comparable investment, financial integrity and capital attraction – must be met and none ranks in priority to the others. It is not sufficient for a formulaic approach for determining ROE to produce a numerical result that satisfies the FRS on average, over time. The Board is of the view that each time a formulaic approach is used to calculate an allowed ROE; it must generate a number that meets the FRS, as determined by the Board using its experience and informed judgment.

2. **The overall ROE must be determined solely on the basis of a company's cost of equity capital**. It does not mean that in determining the cost of capital that investor and consumer interests are balanced. The opportunity cost of capital should be determined by the Board based on a systematic and empirical approach that applies to all rate-regulated utilities regardless of ownership. The Federal Court of Appeal was clear that the overall ROE must be determined solely on the basis of a company's cost of equity capital and that the impact of any resulting toll increase is an irrelevant consideration in that determination.

3. **Efficient amount of investment.** As it relates to a rate regulated entity's cost of capital, the role of the regulator is to determine, as accurately as possible, the opportunity cost of capital to ensure that an efficient amount of investment occurs in the public interest for the purpose of setting utility rates.

4. **Predictability, transparency, and stability**. The approach adopted by the Board to determine the opportunity cost of capital should result in an environment where outcomes are predictable and consistent so that investors, utilities and consumers are better able to plan and make decisions.

5. **Systematic and empirically-based approach**. The methodology used by the Board to determine the cost of debt and equity capital should be a systematic approach that relies on economic theory and is empirically derived from objective, data-based analysis. For example, in establishing comparability, it is possible to build a low-risk sub-set from a higher risk universe using an empirically based approach.

6. **Minimize the time and cost of administering the framework.** Costs imposed on all participants, including the regulated entity and the regulator, should not exceed the benefits available. This objective could be met through a simple process that reflects the concerns of interested participants and reduces the formal process requirements.

4.2 Return on Equity

4.2.1 Need to Reset and Refine Existing ROE Formula

In order to ensure that on an ongoing basis changing economic and financial conditions are adequately and appropriately accommodated in the Board's formulaic approach for determining a utility's equity cost of capital**, the Board has determined that its current formula-based ROE approach needs to be reset and refined**. As previously indicated, **the Board will continue to use a formula-based ERP approach**. However, informed by the discussion at the consultation and the written comments of participants generated by the consultation, as well as its own analysis, the Board has concluded that the formula needs to be reset to address the difference between the allowed ROE arising from the application of the formula and the ROE for a low-risk proxy group that cannot be reconciled based on differences in risk alone. The formula also needs to be refined to reduce its

sensitivity to changes in government bond yields due to monetary and fiscal conditions that do not reflect changes in the utility cost of equity.

The Board's current approach to estimating the cost of equity has been in effect for 12 years. The Board notes that in the 1997 Draft Guidelines, the Board stated that "it is persuaded that there exists a non-linear relationship between interest rates and the ERP." [28] The existing formula approximates this relationship using a linear specification. The Board is of the view that it is unreasonable to conclude that the current formula correctly specifies this relationship, based on the passage of time, changes in financial and economic circumstances generally, and the empirical analyses provided by participants to the consultation and the discussion at the consultation itself. However, the Board is of the view that its current formulaic approach for determining the equity cost of capital should be reset and refined, not otherwise abandoned or subject to wholesale change.

The events that unfolded earlier this year that triggered this review effectively illustrated that the Board's approach needs to be refined to reduce the sensitivity of the formula to changes in government bond yields due to monetary and fiscal conditions that do not reflect changes in the utility cost of equity. The Board concludes that the current approach could be more robust and better guide the Board's discretion in applying the FRS. The Board notes that while the current formula today produces results similar to that in 2008, it does not address the observed behaviour of the formula during the financial crisis – lowering the allowed ROE when the amount and price of risk in the market was increasing.

The view expressed by some participants in the consultation that the Board must wait to be provided with evidence from a regulated utility in Ontario of financial hardship due to the current allowed ROE before its adapts its policies to better reflect market realities is not consistent with the Board's approach.

The Board is of the view that resetting and refining the current formula-based ERP approach maintains the transparency, predictability and stability associated with the current

[28] Ontario Energy Board. Draft Guidelines on a Formula-Based Return on Common Equity for Regulated Utilities. March 1997. p. 31.

approach, and avoids sudden changes in regulatory policy to address potentially transitory capital market conditions. [29]

The Board has been informed by the numerous approaches used by various participants to the consultation to determine whether the formula continues to produce results that meet the FRS. The sum of the elements supporting the Board's decision to reset and refine its formulaic ROE is independent of the recent financial crisis and whether or not the crisis has abated.

4.2.2 The Initial Set Up

Use of Multiple Tests

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"[30].

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 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.

Participants argued from a number of different perspectives that a variety of methods should be used to develop the ERP:

- "The Board should not limit itself to one specific method of calculating an ERP; rather it should consider the results produced by multiple approaches in order to

[29] Written Comments of the Industrial Gas Users Association, October 30, 2009, p. 2.
[30] Ibid. p. 20.

generate a range of reasonable results from which it may select an appropriate ERP. This process requires the exercise of informed judgment"[31].

- "The Board established the initial risk premium for the Formula, in its decision for Consumers Gas in EBRO 495, by considering an array of risk premium estimates put forward by experts and selecting a risk premium within the range of results presented. The risk premiums put forth by experts were either the result of directly measuring the historical relationship between bond yields and equity returns; or alternatively, by deriving an implied risk-premium, by backing-out forward looking bond yields from ROE estimates produced by using other methodologies, i.e., DCF, CAPM, or Comparable earnings.

  Multiple approaches for determining ROE provide greater assurance that the end result will be just and reasonable, as conditions that may bias results could be detected or mitigated by considering alternative results."[32]

- "The Board should consider comparable utilities' rates of return and a minimum spread to long-term debt rates, as well as resetting the reference rate".[33]

- "The Board should establish the initial ROE by looking at the best available evidence on the utilities' required return. This evidence should include results of various cost of capital methodologies…The Board would be remiss to predetermine a single methodology for establishing the initial allowed ROE without reviewing alternative methods for determining cost of equity." [34]

- "We propose that the Board, in reviewing cost of capital, would hear the evidence of the various experts with their different views of the ERP result, but would also look at

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[31] Concentric Energy Advisors. Written Comments on behalf of Enbridge Gas Distribution, Hydro One, and the Coalition of Large Distributors, September 8, 2009. September 8, 2009. p. 59.
[32] Ibid. p. 47.
[33] Written Comments of the Power Workers' Union. September 8, 2009. p. 6.
[34] Dr. J. H. Vander Weide. Written Comments on behalf of Union Gas. pp. 7-8.

other ways in which the market directly speaks about returns…they (the examples provided) and many other examples – are ways in which the market communicates the returns for investment comparable to utility investments. These sources are therefore useful in testing whether the results of various ERP or other market studies of cost of capital are realistic." [35]

- "If the utility is not a stand-alone entity and/or does not have traded shares, then the Board has no alternative but to look at total rates of return earned by investors in a relevant sample of companies." [36]

- "Expressing the ROE in terms of a premium above…long-term Canada bond yield… does not mean that the initial ROE need be estimated solely using a test or tests that might be defined as ERP tests." [37]

  "No single model is powerful enough 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." [38]

- "…use of multiple tests. The tests all measure different factors that should be considered in setting a fair return on equity that is consistent with the comparable investment standard, the financial integrity standard and the capital attraction standard. The OEB should not rely on a single method or test." [39]

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

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[35] Written Comments of the School Energy Coalition. September 2009. pp. 2-3.
[36] Written Comments of Energy Probe Research Foundation. September 8, 2009. p. 14.
[37] McShane, K., Foster Associates, Inc. Written Comments on behalf of the Electricity Distributors Association. September 8, 2009. p. 2.
[38] Ibid. p. 23.
[39] Written Comments of Ontario Power Generation Inc. September 8, 2009. p. 3.

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.

Setting the Initial Equity Risk Premium

The Board is of the view that the initial ERP should be reset to address the difference between the allowed ROE arising from the application of the formula and the ROE for a low risk proxy group that cannot be reconciled based on differences in risk alone.

Therefore, based on the ERP recommendations provided by all participants in this consultation the **Board has determined that an initial ERP of 550 basis points** is appropriate for the purposes of deriving the initial ROE to be embedded in the Board's reset and refined ROE formula. This includes an implicit 50 basis points for transactional costs.

Consequently, **assuming a forecast long term government of Canada bond yield of 4.25%, the initial ROE to be embedded in the Board's reset and refined ROE formula will be 9.75%** (i.e., 4.25% + 550 basis points = 9.75%).

The Board has assessed the various empirical tests and recommendations submitted by participants and translated each of the recommended approaches as an ERP assuming a forecast long term government of Canada bond yield of 4.25%, where appropriate, as summarized in Table 1.

The empirical tests of each of the participants to the consultation are also described below. Although the Board maintains its view that each of the tests has empirical strengths and weaknesses, the diversity of approaches tabled and discussed in the consultation was helpful. As a result, the Board has given each test weight in the process to establish the initial ERP to be embedded in the Board's formula.

Table 1: Summary of Participant Recommendations

Direct/Indirect Equity Risk Premium	Low	Medium	High
Dr. L.D. Booth			
CAPM (Adjusted Using CoC Formula to Reflect 4.25% GOC, 0.75 Adj)	3.31%	3.31%	3.31%
Average Dr. L.D. Booth	**3.31%**	**3.31%**	**3.31%**
Concentric Energy Advisors			
DCF Analysis for Low-Risk Proxy Group (US Gas, Elec, Cdn)	6.03%	6.78%	7.83%
CAPM Analysis for Low-Risk Proxy Groups (US Gas, US Elec, Cdn)	4.58%	4.72%	4.86%
ERP Econometric Model (Average Gas and Electric)	6.35%	6.35%	6.35%
Average Concentric Energy Advisors	**5.65%**	**5.95%**	**6.35%**
J. Dalton - Power Advisory LLC			
ERP Econometric Model #1 and ERP Econometric Model #2	6.05%	6.45%	6.85%
Average J. Dalton - Power Advisory	**6.05%**	**6.45%**	**6.85%**
K. McShane - Foster Associates			
New Formula for Calculating Allowed ROE (NEB Initial Formula Metrics)	6.38%	6.38%	6.38%
Illustrative method	5.75%	5.75%	5.75%
Average: K. McShane	**6.07%**	**6.07%**	**6.07%**
Dr. J.H. Vander Weide			
Experienced Equity Risk Premium	4.30%	5.50%	6.60%
2008 Awarded ROEs Vs. Avg 2008 US LT T-Bills - Gas	6.16%	6.16%	6.16%
2006-8 Awarded ROEs Vs. Avg 2006-8 US LT T-Bills - Gas	5.61%	5.61%	5.61%
2008 Awarded ROEs Vs. Avg 2008 US LT T-Bills - Electric	6.26%	6.26%	6.26%
2006-8 Awarded ROEs Vs. Avg 2006-8 US LT T-Bills - Electric	5.71%	5.71%	5.71%
Forecast $E(R_e)$ = DCF Expected Return - LT Treasury Yield			
Gas	6.19%	6.19%	6.19%
Electric	6.21%	6.21%	6.21%
Regression - Ex-ante ERP (Above) with YTM LT Treasury Yields			
Gas (Modified to use Canadian LT GOC bond)	6.97%	6.97%	6.97%
Electric (Modified to use Canadian LT GOC bond)	7.33%	7.33%	7.33%
DCF Analysis for Value Line Utility Companies			
Gas	7.81%	7.81%	7.81%
Electric	8.71%	8.71%	8.71%
Average: Dr. J.H.Vander Weide	**6.48%**	**6.59%**	**6.69%**
Average ERP All Submissions	**5.51%**	**5.67%**	**5.85%**

Analyses of Dr. J. H. Vander Weide

Dr. Vander Weide performed a number of empirical analyses. The average experienced ERP on an investment in Canadian utility stocks from data on returns earned by investors in Canadian utility stocks compared to interest rates on long-term Canada bonds was approximately 5.50 percent, as set out below:

Comparable Group	Period of Study	Average Stock Return	Average Bond Yield	Risk Premium
S&P/TSX Utilities	1956 - 2008	11.84%	7.54%	4.3%
BMO CM Utilities Stock Data Set	1983 - 2008	14.31%	7.66%	6.6%
Average				**5.5%**

Source: Written comments of Dr. J.H. Vander Weide. Page 14.

He also provided information on recent allowed ROEs for U.S. utilities which demonstrated implicit ERPs:

	Natural Gas Distribution		Electric Utilities	
	2008	2006 - 2008	2008	2006 - 2008
Average U.S. ROE Awarded (%)	10.4	10.3	10.5	10.4
Spread to OEB September 2009 Long Bond Estimate of 4.25%	6.15	6.05	6.25	6.15
Spread to Average Long-Term Canada Bond Yield in 2008 of 4.06%	6.34	NA	6.44	NA
Spread to Average Long-Term Canada Bond Yield in 2006 to 2008 of 4.21%	NA	6.09	NA	6.19
Spread to Average Long-Term U.S. Treasury Bill Yield in 2008 of 4.24%	6.16	NA	6.26	NA
Spread to Average Long-Term U.S. Treasury Bill Yield in 2006 to 2008 of 4.69%	NA	5.61	NA	5.71

Sources: Government of Canada Bond Yields: Bank of Canada; U.S. Long-Term Treasury Bill Yields: U.S. Department of Treasury

Further, forecast expected required returns by investors were calculated by Dr. Vander Weide by deducting the long-term Treasury bond yield from the DCF expected return (Exhibit 5, Dr. Vander Weide) over the period September 1999 to February 2009. This calculation produced an average ERP of 621 basis points for electric utilities and an average expected ERP of 619 basis points for natural gas utilities (Exhibit 6, Dr. Vander Weide) over the period June 1998 to February 2009.

However, regressing the relationship between the *ex ante* risk premium and the yield to maturity on long-term U.S. Treasury bond produced an ERP equation of:

- ERP = 12.10 – 1.123 x I_B for Electric Utilities. Assuming an estimated Canadian Long-Term Bond yield of 4.25%, the Ex-Ante expected ERP is 7.33% and an ROE of 11.58%; and

- ERP = 10.26 – 0.773 x I_B for Natural Gas Distribution Utilities. Assuming an estimated Canadian Long-Term Bond yield of 4.25%, the Ex-Ante expected ERP is 6.97% and an ROE of 11.22%.

Finally, Dr. Vander Weide conducted a DCF Analysis for Value Line Natural Gas Companies that resulted in an estimated ROE of 11.5% (Exhibit 9, Dr. Vander Weide) or an ERP of approximately 7.81%, using the average February 2009 long-term composite Treasury bond yield of 3.69%. His DCF Analysis for Value Line Electric Companies (Exhibit 8, Dr. Vander Weide) resulted in an estimated ROE of 12.4% or an ERP of approximately 8.71%, assuming the same long-term composite Treasury bond yield.

Analysis of Kathy McShane of Foster Associates Inc.

Ms. McShane proposed a new formula for calculating the allowed ROE: ROE_{New} = Initial ROE + 50% (Change in Forecast GOC Bond Yield) + 50% (Change in Corporate Bond Yield Spread), which reflects the analysis provided in her comments.

Ms. McShane also demonstrated that using her recommended approach for 2009, based on the NEB formula contained in RH-2-94 Decision, the ROE would have been 10.73%[40], equal to an ERP of 638 basis points and assuming a forecast GOC yield of 4.35% for 2009.

[40] McShane, K., Foster Associates Inc. Written Comments on behalf of the Electricity Distributors Association. Schedule 4.

For illustrative purposes in her analysis, she linked a forecast long-term Canada bond yield of 4.5% and a corporate bond yield spread of 175 basis points to an ROE of 10%. Implied in this ROE is an ERP of 550 basis points.

Analysis of Power Advisory LLC

Power Advisory evaluated a range of different model specifications in an effort to come up with a formula that will yield more reasonable results than the existing formula under a range of different credit and financial market conditions.[41] Two models performed the best in terms of standard econometric considerations (i.e., goodness of fit, highly significant parameter values, and plausible statistical relationships)[42]:

1. ROE = 7.008% + (US Corp BAA Bond Yield with 6 month lag x 0.5356); and
2. ROE = 7.451% + (US Gov 30 Year Bond yield with 6 month lag x 0.5122) + (VIX index value with 6 month lag x 0.0077).

Using current values for these variables produces ROE estimates of 10.5% to 11.3%. Using Canadian values in these models results in ROE estimates of 10.3% to 11.1%. The implied ERP using the results of the models run using a forecast long-term government of Canada bond yield of 4.25% is 605 basis points to 685 basis points.

Analysis of Concentric Energy Advisors

Concentric's overall recommended ROE for natural gas distribution utilities, assuming a 40% deemed equity capital structure is 10.5% and for electric transmission and distribution utilities is 10.3%, also assuming 40% deemed equity. The implied ERP assuming a 4.25% forecast GOC bond yield is 625 basis points and 605 basis points, for natural gas and electric transmission and distribution, respectively. These recommendations are supported by multiple analytical approaches; each calculated using data for a specific proxy group for

[41] Power Advisory LLC. Written Comments on behalf of Great Lakes Power Transmission LP. September 8, 2009. p. 16.
[42] Ibid. p. 17.

the natural gas and electric transmission and distribution utilities established by Concentric.[43]

The results of Concentric's DCF analysis are presented in the table below[44].

Proxy Group	**Low**	**Mean**	**High**
U.S. Natural Gas Distribution Utilities	9.70%	10.44%	11.57%
U.S. Electric Distribution Utilities	10.08%	10.96%	12.09%
Canadian Utilities	9.97%	10.60%	11.47%
Average	9.92%	10.67%	11.71%
Implied ERP at 4.25% forecast LT GOC Yield	5.67%	6.42%	7.46%
Implied ERP Including 50 basis points Flotation Costs	**6.17%**	**6.92%**	**7.96%**

The results of Concentric's CAPM analysis are presented in the table below. The results reflect a Market Risk Premium of 586 basis points, which is supported by material provided in Appendix F (page F-10) and Exhibit Concentric-06 of their written comments.

Proxy Group	**Low**	**Mean**	**High**
U.S. Natural Gas Distribution Utilities	9.05%	9.18%	9.32%
U.S. Electric Distribution Utilities	8.54%	8.68%	8.82%
Canadian Utilities	7.80%	7.95%	8.10%
Average	8.46%	8.61%	8.75%
Implied ERP at 4.25% forecast LT GOC Yield	4.21%	4.36%	4.50%
Implied ERP Including 50 basis points Flotation Costs	**4.71%**	**4.86%**	**5.00%**

The results of Concentric's ERP analysis are presented in the table below and are explained in detail in Appendix F of their written comments.

[43] Concentric Energy Advisors. Written Comments on behalf of Enbridge Gas Distribution, Hydro One, and the Coalition of Large Distributors. September 8, 2009. Appendix C.
[44] Ibid. p. F-6.

Concentric's ERP regression formula is as follows: ROE = Constant = U.S. Gov 30-year Bond • x_1 + Moody's Utility A-rated Spread • x_2 + % Generation • x_3 + Natural Gas Dummy Variable • x_4.[45]

	U.S. Natural Gas Distribution Proxy Group	**U.S. Electric Distribution Proxy Group**
Constant	7.634	7.634
U.S. Government 30-year Bond Yield	0.428 x 4.18	0.428 x 4.18
Moody's Utility A-rate Spread (July 2009)	0.310 x 1.56	0.310 x 1.56
% Generation	0.008 x 0.00	0.008 x 49.76
Natural Gas Dummy (Electric = 0,Gas = 1)	0.384 x 1.00	0.384 x 0.00
Authorized ROE	10.29%	10.30%
Implied ERP at 4.25% forecast LT GOC Yield	6.04%	6.05%
Implied ERP Including 50 basis points Flotation Costs	**6.54%**	**6.55%**

The tables below summarize Concentric's recommended ROEs prior to any adjustment for changes in leverage:[46]

U.S. Electric T & D Utilities	**Low**	**Mean**	**High**
DCF	10.08%	10.96%	12.09%
CAPM	8.54%	8.68%	8.82%
Average	9.31%	9.82%	10.46%
Differential between Vertically Integrated and T&D Utilities	(0.40%)	(0.40%)	(0.40%)
Return before Leverage and Flotation Cost Adjustments	8.91%	9.43%	10.06%
Flotation Cost Adjustment 0.50%	0.50%	0.50%	0.50%
Benchmark T&D ROE	9.41%	9.93%	10.56%
Benchmark T&D Equity Ratio	46.32%	46.32%	46.32%
Implied ERP using 4.25% forecast LT GOC Yield	5.16%	5.68%	6.31%

U.S. Natural Gas Distribution Utilities	**Low**	**Mean**	**High**
DCF	9.70%	10.44%	11.57%
CAPM	9.05%	9.18%	9.32%
Return before Leverage and Flotation Cost Adjustments	9.37%	9.81%	10.45%
Flotation Cost Adjustment 0.50%	0.50%	0.50%	0.50%
Benchmark Natural Gas Distribution ROE	9.87%	10.31%	10.95%
Benchmark Natural Gas Distribution Equity Ratio	44.47%	44.47%	44.47%
Implied ERP using 4.25% forecast LT GOC Yield	5.62%	6.06%	6.70%

Adjusting for leverage that is higher than the benchmark equity ratio, i.e., deemed equity of 40%, the recommended ROEs increase to 10.5% for natural gas distribution and 10.3% for electric transmission and distribution, representing implied ERPs of 625 basis points and 605 basis points, respectively.

[45] Ibid. p. F-14.
[46] Ibid. p. F-16.

Analysis of Dr. Booth

Dr. Booth recommended a fair ROE of 7.75%. This number is based on the following key assumptions.[47]

First, a market risk premium of 5.0%. However, Dr. Booth noted that many of his peers believe it to be 6.0%. Second, beta is estimated to be 0.5. Dr. Booth indicated that he "is not using the current beta coefficient"[48]; i.e., the beta of 0.5 used to derive the recommended ERP of 325 (assuming a 4.50% long-term government of Canada bond yield) is not supported by Dr. Booth's recent beta estimates, where beta is less than 0.5. Thirdly, Dr. Booth also noted that the range of fair return cost of equity estimates could vary by 0.50%. His unadjusted estimate of a fair return was 7.00% and he noted that the estimates of his colleagues would be 7.50%. He therefore added 0.25% to his estimate to "split this difference", resulting in his ROE recommendation of 7.25%. Finally, Dr. Booth added 0.50% for issuance costs, bringing his fair recommended return to 7.75%.

The Board notes that in the course of the consultation, Dr. Booth indicated that he would be prepared to recommend "fixing ROE at 8.5% or 8.75% over the business cycle, for say, a five-year period."[49] Dr. Booth did not support this estimated ROE with empirical analysis, and as such, there is no principled basis upon which the Board can rely on Dr. Booth's recommendation of 8.5% or 8.75%.

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[47] Professor L.D. Booth. Written Comments on behalf of Consumers Council of Canada, the Vulnerable Energy Consumer's Coalition, the Industrial Gas Users Association, the Canadian Manufacturers & Exporters, the London Property Management Association and the Building Managers and Owners Association of the Greater Toronto Area. September 8, 2009. p. 40.
[48] Ontario Energy Board. Transcript of Consultation Process on Cost of Capital Review. October 6, 2009. p. 100. Lines 12 and 13.
[49] Ontario Energy Board. Transcript of Consultation Process on Cost of Capital Review. October 6, 2009. p. 98. Lines 10 – 12.

4.2.3 The Formula-based Return on Equity

4.2.3.1 Long Canada Bond Forecast

The Board is of the view that the LCBF continues to be an appropriate base upon which to begin the ROE calculation. In particular, the Board is of the view that the sensitivity of the allowed ROE to changes in government of Canada bond yields arising from monetary and fiscal conditions that do not reflect changes in utility cost of equity will be addressed, in part, by the use of multiple methods to determine the initial ERP or ROE in the formula. The Board also agrees with Ms. McShane's comment that the LCBF provides an important forecast component to the formula[50] and with the Industrial Gas Users Association's comment that "there is an intrinsic logic to using the same parameter to adjust ROE as was used to set the ROE in the first place."[51]

4.2.3.2 Long Canada Bond Forecast Adjustment Factor

In its 1997 Draft Guidelines, the Board determined that the difference between the LCBF for the current test year and the corresponding rate for the immediately preceding year should be multiplied by a factor of 0.75 to determine the adjustment to the allowed ROE.[52] In that same document, however, the Board noted that there was a significant difference of opinion concerning the relationship between interest rates and the ERP and that ratios contained in the evidence from generic rate of return proceedings in other Canadian jurisdictions ranged from 0.5:1 to 1:1.[53] Moreover, the Board notes that the selection of the 0.75 adjustment factor is described in the 1997 Draft Guidelines as "admittedly somewhat arbitrary."[54]

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[50] Ontario Energy Board. Transcript of Consultation Process on Cost of Capital Review. September 22, 2009. Ms. McShane's presentation, pp. 161-162;
[51] Final Written Comments of the Industrial Gas Users Association. October 30, 2009. p. 10.
[52] Ontario Energy Board. Draft Guidelines on a Formula-Based Return on Common Equity for Regulated Utilities, March 1997. p. 31.
[53] Ibid.
[54] Ibid. p. 32.

The Board views **the determination of the LCBF adjustment factor to be an empirical exercise, and as such, based on the empirical analysis provided by participants in conjunction with the consultation, the Board is of the view that the LCBF adjustment factor should be set at 0.5**. The Board notes that four participants in this consultation empirically tested the relationship between government bond yields and ROE:

- Dr. Vander Weide determined that when the yield to maturity on long-term government bonds increases by 100 basis points, the allowed ERP tends to decrease by approximately 55 basis points, and when the yield to maturity on long-term government bonds decreases by 100 basis points, the allowed ERP tends to increase by approximately 55 basis points.[55]

- Kathy McShane of Foster Associates, Inc. submitted that a regression analysis used to estimate the relationship between government bond yields and the utility cost of equity indicates that the ROEs increased (decreased) by approximately 50 basis points for every one percentage point increase (decrease) in long-term government bond yields.[56]

- Concentric Energy Advisors also conducted a regression analysis in which the litigated ROEs of U.S. LDC utility returns demonstrated an elasticity factor to government bond yields of 0.45. This implies that the risk premium should have actually increased by approximately 0.55 for each percentage point drop in the government bond yield (as opposed to the 0.25 implied by the current formula).[57]

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[55] Dr. J.H. Vander Weide. Written Comments on behalf of Union Gas. September 8, 2009. p. 21.
[56] K. McShane. Foster Associates, Inc. Written Comments on behalf of the Electricity Distributors Association. September 8, 2009. p. 26.
[57] Concentric Energy Advisors. Written Comments on behalf of Enbridge Gas Distribution, Hydro One, and the Coalition of Large Distributors. September 8, 2009. pp. 41-42.

- John Dalton of Power Advisory also used a regression analysis to determine that the ERP changes by less than 50% of the change in the long-term government bond rate.[58]

The Industrial Gas Users Association also stated that it sees some merit in further consideration of adjusting downwards to 0.5 the coefficient for application of changes in long Canada bond yields to ROE.

4.2.3.3 Additional Term – Changes in Utility Bond Spread

The Board is of the view that the sensitivity of the formula to changes in government bond yields due to monetary and fiscal conditions that do not reflect changes in the utility cost of equity is addressed, in part, by using multiple methods to determine the initial ERP and ROE in its formulaic ROE approach and by reducing the LCBF adjustment factor to 0.5 from 0.75. The Board also is of the view, however, that **the specification of the relationship between interest rates and the ERP in the formula would be improved by the addition of a further term to the formula**.

In particular, the Board is of the view that there is a relationship between corporate bond yields and the equity return, and the Board agrees with Dr. Booth, who stated, with respect to corporate bond spreads, that "this is not to say that spreads have no information about required risk premium."[59] The Board notes that three participants to the consultation conducted empirical analysis to specify the relationship between corporate bond yields and the equity return:

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[58] Power Advisory LLC. Written Comments on behalf of Great Lakes Power Transmission LP. April 17, 2009. p. 15.

[59] Professor L.D. Booth. Written Comments on behalf of Consumers Council of Canada, the Vulnerable Energy Consumer's Coalition, the Industrial Gas Users Association, the Canadian Manufacturers & Exporters (CME), the London Property Management Association and the Building Managers and Owners Association of the Greater Toronto Area. September 8, 2009. p. 29.

- Concentric demonstrated by using a regression analysis that there is a statistically significant relationship between ROE and corporate bond yields and specified that the sensitivity of allowed returns to corporate bond yields is about 0.45 to 0.55[60]. Concentric also demonstrated empirically that Treasury bonds have been more volatile than corporate bonds since January 1997.

- Kathy McShane of Foster Associates tested the relationship between corporate bond yields and the utility cost of equity. She determined the cost of equity using two approaches: first, by using approved returns on equity for utilities not governed by formulas as a proxy for the utility cost of equity, and second, by relying on a time series of utility costs of equity developed by using the discounted cash flow approach against which yields on utility bonds can be compared[61]. By using regression analysis, Ms. McShane determined that allowed ROEs have increased (decreased) by approximately 45 basis points for every one percentage point increase (decrease) in the A rated utility bond yield. Similarly, the DCF cost of equity increased (decreased) by approximately 55 basis points for every one percentage point increase (decrease) in long-term A rated utility bond yields.[62]

- John Dalton from Power Advisory LLC conducted an econometric analysis, which established that the relationship between ROE and U.S. corporate BAA bond yields with a six month lag is approximately 0.53.[63]

Based on the analysis provided by participants to the consultation, the Board concludes that **there is a statistically significant relationship between corporate bond yields and the cost of equity, and that a corporate bond yield variable should be incorporated in the ROE formula**. The Board notes that the presence of a corporate bond yield variable in its

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[60] Concentric Energy Advisors. Written Comments on behalf of Enbridge Gas Distribution, Hydro One, and the Coalition of Large Distributors. September 8, 2009. pp. 53–55.
[61] K. McShane. Foster Associates, Inc. Written Comments on behalf of the Electricity Distributors Association. September 8, 2009. p. 25.
[62] Ibid. p. 26.
[63] Power Advisory LLC. Written Comments on behalf of Great Lakes Power Transmission LP. September 8, 2009. p. 17.

current ROE formula would have served to increase the allowed ROE during the recent credit crisis, which, in the Board's view, would have been directionally correct.[64]

The Board has determined that it is appropriate to use a corporate yield variable that is reflective of the borrowing costs of Canadian utilities, one that is well-understood and is based on an established index from a recognized source. **The Board has** accordingly **determined that it will use a utility bond spread based on the difference between the Bloomberg Fair Value Canada 30-Year A-rated Utility Bond index yield and the long Canada bond yield.** This is further described in Appendix B.

The Board agrees with the comment of Ms. McShane that separating the LCBF and the utility bond spread variables, as opposed to using one corporate bond yield variable that would implicitly incorporate the LCBF, provides transparency as it shows "what part is causing the ROE to move in either direction."[65]

The Board also determines that the utility bond spread reflected in the reset and refined formulaic ROE approach will be subject to a 0.50 adjustment factor, consistent with the empirical analyses provided by participants to the consultation.

4.3 Capital structure

The Board's current policy with regard to capital structure for all regulated utilities continues to be appropriate. As noted in the Board's draft guidelines, capital structure should be reviewed only when there is a significant change in financial, business or corporate fundamentals. [66] The Board's current policy is as follows:

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[64] Written Comments of the Electricity Distributors Association. September 8, 2009. Schedule 4.
[65] Ontario Energy Board. Transcript of Consultation Process on Cost of Capital Review. Ms. McShane's presentation, p. 161.
[66] Ontario Energy Board. Ontario Energy Board Draft Guidelines on a Formula-Based Return on Common Equity for Regulated Utilities. March 1997. p. 2

- The Board has determined that a split of 60% debt, 40% equity is appropriate for all electricity distributors. [67] Capital structure was not a primary focus of the consultation and the Board notes that the comments made by participants in the consultation largely supported the continuation of the Board's existing policy.

- For electricity transmitters, generators, and gas utilities, the deemed capital structure is determined on a case-by-case basis. The Board's draft guidelines assume that the base capital structure will remain relatively constant over time and that a full reassessment of a gas utility's capital structure will only be undertaken in the event of significant changes in the company's business and/or financial risk. [68]

4.4 Debt Rates

4.4.1 Long-term debt

The determination of the cost of long-term debt was not a primary focus of the consultation and the Board notes that the comments made by participants in the consultation largely supported the continuation of the Board's existing policies and practices.

While the Board agrees with this approach, it is important to note that the determination of the cost of long-term debt has typically received significant interest in the processes to establish electricity distribution and, to a lesser extent, electricity transmission rates. In contrast to the difficulty establishing the utility cost of equity that arises from a lack of transparency, the issues associated with the determination of a utility's long-term debt cost arise from different factors, including the relatively short period of time since the corporatization of electricity distribution and transmission utilities, the relatively short history of rate regulation by the Board, and the presence of significant amounts of affiliate debt.

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[67] Ontario Energy Board. Report of the Board on Cost of Capital and 2nd Generation Incentive Regulation for Ontario's Electricity Distributors. December 20, 2006. p. 5
[68] Ontario Energy Board. Compendium to Draft Guidelines on a Formula-Based Return on Common Equity for Regulated Utilities. March, 1997. p. 30

Natural gas distributors

The Board has a long history of determining the cost of long-term debt for natural gas distributors. Based on this experience and in the absence of any material comments in the consultation suggesting otherwise, the Board is of the view that **the current policy of using the weighted cost of embedded debt should continue**. Consistent with the current practice, in a forward test year rate application the onus is on the applicant utility to forecast the amount and cost of new long-term debt. These values are then factored into the estimated cost of existing long-term debt for the purpose of setting regulated natural gas distribution rates. Debt instruments and debt rates are subject to a prudence review in an application for rates. However, it is the Board's policy that the total estimated cost of debt should be a close proxy for the actual long-term debt cost incurred by the natural gas utility in the rate year.

OPG's prescribed rate-regulated baseload generation

Consistent with the Board's practice in OPG's 2008 Cost of Service application, considered under Board file number EB-2007-0905, the Board is of the view that **OPG's cost of long-term debt should be set in a manner similar to that adopted for natural gas distributors**.

Electricity transmitters

Consistent with the Board's current practice as set out in various Decisions and Orders arising from rate applications by electricity transmitters, the Board is of the view that **an electricity transmitter's cost of long-term debt should be set in a manner similar to that adopted for natural gas distributors**.

Electricity distributors

In the 2000 Electricity Distribution Rate Handbook, the Board adopted deemed long-term debt rates and deemed capital structures that varied based on the size of utility rate base.

The deemed long-term debt rates applied regardless of a utility's actual cost of debt and actual capitalization. This deemed approach reflected the ongoing corporatization of the sector and the fact that many electricity distribution utilities had no debt.

The *2006 Electricity Distribution Rate Handbook*, issued by the Board on May 11, 2005, documented an evolution of the treatment of long-term debt for electricity distributors. While the size-related capital structure and (updated) deemed debt rates were retained, the handbook outlined that long-term debt costs could also reflect the cost of embedded debt. The cost of affiliate debt was also capped by the deemed debt rate at the time of issuance.

In April of 2006, Board Staff undertook research, commissioned expert advice and consulted with stakeholders on the methods for setting the cost of capital and 2nd Generation Incentive Rate Making. These consultative activities culminated in the December 20, 2006 Report. In that report, the Board provided additional guidance on the treatment of long-term debt, and emphasized that while there should be increased reliance on actual or embedded debt costs, the need for a deemed debt rate that would continue to apply (either in itself or as a ceiling on affiliate debt) was recognized.

In distribution utility rate applications heard by the Board since the issuance of the December 20, 2006 Report, the Board has made determinations on the treatment of long-term debt that not only reflect the 2006 guidelines, but are based on the record before it in each application. The Board has also been informed by the findings made in relation to completed applications. **The Board is of the view that it is appropriate for this cost of capital policy to reflect the current practices of the Board with respect to determining the cost of long-term debt based on recent Board decisions**.

The following guidelines on the treatment of long-term debt are intended to provide more certainty for applicants and all participants in general. **The Board wishes to emphasize that the long-term debt guidelines relating to electricity distribution utilities are expected to evolve over time and are expected to converge with the process used by the Board to determine the amount and cost of long-term debt for natural gas distributors**. The Board recognizes that there is still a need for the deemed long-term debt rate, however its usage should become more limited in application. The Board wishes to

reiterate that the onus is on the distributor that is making an application for rates to document the actual amount and cost of embedded long-term debt and, in a forward test year, forecast the amount and cost of new long-term debt to be obtained during the test year to support the reasonableness of the respective debt rates and terms.

The following guidelines are relevant with respect to the determination of the amount and cost of long-term debt for electricity distribution utilities.

The Board will primarily rely on the embedded or actual cost for existing long-term debt instruments. The Board is of the view that electricity distribution utilities should be motivated to make rational decisions for commercial "arms-length" debt arrangements, even with shareholders or affiliates.

In general, the Board is of the view that the onus is on the electricity distribution utility to forecast the amount and cost of new or renewed long-term debt. The electricity distribution utility also bears the burden of establishing the need for and prudence of the amount and cost of long-term debt, both embedded and new.

Third-party debt with a fixed rate will normally be afforded the actual or forecasted rate, which is presumed to be a "market rate". However, the Board recognizes a deemed long-term debt rate continues to be required and this rate will be determined and published by the Board. **The deemed long-term debt rate will act as a proxy or ceiling for what would be considered to be a market-based rate by the Board in certain circumstances**. These circumstances include:

- For affiliate debt (i.e., debt held by an affiliated party as defined by the Ontario *Business Corporations Act, 1990*) with a fixed rate, the deemed long-term debt rate at the time of issuance will be used as a ceiling on the rate allowed for that debt.

- For debt that has a variable rate, the deemed long-term debt rate will be a ceiling on the rate allowed for that debt. This applies whether the debt holder is an affiliate or a third-party.

- The deemed long-term debt rate will be used where an electricity distribution utility has no actual debt.

- For debt that is callable on demand (within the test year period), the deemed long-term debt rate will be a ceiling on the rate allowed for that debt. Debt that is callable, but not within the period to the end of the test year, will have its debt cost considered as if it is not callable; that is the debt cost will be treated in accordance with other guidelines pertaining to actual, affiliated or variable-rate debt.

- A Board panel will determine the debt treatment, including the rate allowed based on the record before it and considering the Board's policy (these Guidelines) and practice. The onus will be on the utility to establish the need for and prudence of its actual and forecasted debt, including the cost of such debt.

Deemed Long-term Debt Formula for Electricity Distributors

While the Board is of the view that greater reliance should be placed on embedded debt, including forecasts of the amount and cost of new debt expected to be incurred during the test year, the Board recognizes that there is a continuing need for a deemed long-term debt rate.

While there were no specific suggestions for how the deemed long-term debt rate should be calculated, **the Board sees merit in modifying the formula in a manner consistent with the changes adopted for the ROE adjustment formula**.

Specifically, the Board considers that **the deemed long-term debt rate for the test year should be an estimate based on the long (30-year) Government of Canada bond yield forecast plus the average spread between an A-rated Canadian utility bond yield and 30-year Government of Canada bond yield for all business days in the month three (3) months in advance of the (proposed) effective date for the rate changes**. This change is only in the source of the data, in the following ways:

- The 30-year A-rated Canadian utility bond yield data from Bloomberg will replace the BBB/A-rated Canadian Corporate bond yield series that was obtained from PC Bond, an affiliate of TSX.[69]

- The monthly average of business daily data will be used, instead of the weekly data used previously.

The changes are due to the data availability, and to transparency and cost. Both Bloomberg and PC Bond corporate bond series are proprietary and available on subscription bases. Using the same A-rated Canadian utility bond yield series from Bloomberg will reduce costs and work and increase transparency of the calculations. The Board does not consider the changes in methodology will have any material impact on the calculated deemed long-term debt rate. The Board also notes that this methodology was supported by LPMA and BOMA in their final written comments.[70]

Appendix C provides a detailed description of the methodology for calculating the deemed long-term debt rate.

4.4.2 Short-term debt

Natural gas distributors

For rate regulated natural gas distributors, short-term debt is used for an unfunded portion to true-up the deemed capitalization to the utility's actual capitalization. As the variance between actual and deemed capital structures is generally small, the unfunded portion is typically a small fraction of total capitalization for rate-setting purposes.

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[69] The PC Bond data was, prior to mid-2007, produced by Scotia Capital Inc., and publicly available from Statistics Canada and the Bank of Canada.
[70] Written Comments of the London Property Management Association and the Building Managers and Owners Association of the Greater Toronto Area. October 30, 2009, p. 32

In a Cost of Service application, the applicant natural gas distributor forecasts the cost of short-term debt for the test year, and this is subject to review. The Board notes that no participant questioned the Board's policy and practice for natural gas distributors, and **has determined that it is appropriate to continue with this approach.** With the development of a new deemed short-term debt rate for use in the electricity transmission and distribution sector, the Board notes that it and other participants may take into consideration the deemed short-term debt rate, as discussed below and documented in Appendix D.

OPG's prescribed rate-regulated baseload generation

Consistent with the Board's practice in OPG's 2008 Cost of Service application (EB-2007-0905), **the Board is of the view that OPG's cost of short-term debt should be set in a manner similar to that adopted for natural gas distributors.**

Electricity transmitters and distributors

Prior to the issuance of 2008 rates, short-term debt was not factored into electricity distribution and transmission rate-setting. In the December 20, 2006 Report, the Board adopted a deemed short-term debt rate that would apply to a deemed 4% of the capital structure. The formula for the deemed short-term debt rate was established as the average 3-month Bankers' Acceptance rate plus a 25 basis point spread, determined three months in advance of the effective date for rates. The short-term debt rate, and deemed 4% component of the capital structure was introduced in Cost of Service applications for 2008 distribution rates.

In the consultation, certain electricity distributors commented that they are unable to borrow at rates as predicted by the current deemed short-term debt formula. [71,72] These electricity

[71] Written Comments of FortisOntario Inc. September 10, 2009. p. 8, bullet at bottom of page. FortisOntario Inc. indicates that a high-grade utility would be Bankers' Acceptance + 175 basis points, for smaller operating company entities, it would be Bankers' Acceptance + 250-275 basis points

distributors have documented that the cost of short-term debt is much higher and depends on market conditions and on the rating of a distributor. The concern was not with using the Bankers' Acceptance rate, but primarily with the spread over Bankers' Acceptances. The suggestion was that the Board should obtain estimates of the spread from major Canadian banks, and add this to the average Bankers' Acceptance rate as calculated for rate-setting. To lessen the burden, it was suggested that this spread be calculated annually in January of the year, and used as needed. The Board could obtain quotes from banks more frequently if market conditions warranted it.

The Board is of the view that this approach to establishing the deemed short-term debt rate has merit. **The Board thus will adopt the following approach to determining the deemed short-term debt rate:**

- In mid-January of each year, the Board will contact major Canadian banks to obtain estimates of the spread of a typical short-term loan for an R1-low utility over the 3-month Bankers' Acceptance rate. The selection of R1-low is to reflect the fact that most distributors currently going to market would fall in that category; only Toronto Hydro Electric Systems Limited and Hydro One Networks Inc. would be R1-Mid or R1-High. Up to six quotes will be obtained. Ideally, the high and low estimates will be discarded to reduce the influence of outliers, and the average spread will be calculated. In the event that less than four quotes are obtained, the average spread will be calculated without discarding high and low estimates. The identity of the banks providing quotes will be protected.

- For the month three months in advance of the effective date for rates, the average 3-month Bankers' Acceptance rate should be calculated based on data for all business days in the month. To this will be added the average spread calculated above, giving the deemed short-term debt rate for rate-setting purposes.

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[72] Ontario Energy Board. Transcript of Consultation Process on Cost of Capital Review. October 6, 2009, p.144, l. 20 to p. 146, l. 22. Also, p. 148, l. 19 to p. 149, l. 15.

Full documentation on the deemed short-term debt rate methodology is provided in Appendix D.

In its final comments, LPMA/BOMA submitted that the current formula should be retained, but the spread increased from 25 basis points to 50 basis points, on the basis of recent economic history.[73] The Board has determined that distributors and other participants provided sufficient documentation that the spread over bankers' acceptance rates with which they can borrow short-term debt is much higher than the 25 basis points currently used, or even the 50 basis points proposed by LPMA/BOMA. Further, LPMA/BOMA's proposal could possibly need review in the future. The Board is of the view that its adopted approach, while entailing some more work by the Board to obtain the spread quotes from the banks each year, is more flexible and will provide more reasonable estimates of the cost of short-term debt in each year.

[73] Written Comments of the London Property Management Association and the Building Managers and Owners Association of the Greater Toronto Area. October 30, 2009. p, 31.

4.5 Summary

The key elements of the Board's cost of capital policy are summarized in the following table.

Table 2: Components of the Board's Cost of Capital Policy

Capital structure	• 60% debt (56% long-term and 4% short-term) and 40% equity for electricity distributors. • Gas distributors, electricity transmitters and OPG will continue with approved capital structures.
Short-term debt rate	• Once a year, in January, obtain real market quotes from major banks, for issuing spreads over Bankers Acceptance rates for the cost of short-term debt. • The short term rate will be calculated as the average Bankers' Acceptance for the month 3 months in advance of the effective date for the rates, plus the spread for the year calculated above.
Long-term debt rate	• The deemed long-term debt rate will be based on the Long Canada Bond Forecast plus an average spread with an A-rated long-term utility bond yield). • Third-party embedded/actual debt with fixed rates, terms and maturity will get the actual rate. • Affiliate embedded/actual debt with fixed rates, terms and maturity will get the lower of actual and deemed debt rate at time of issuance. • Utility provides forecasts of new debt for a forward test year, where possible. New third-party debt will be accepted at the negotiated market rate. If a forecasted new rate is not available (i.e., due to timing), the deemed long-term debt rate may apply. • For new affiliated debt, the deemed long-term debt rate will be a ceiling on the allowed rate. The onus will be on the utility to demonstrate that the applied for rate and terms are prudent and comparable to a market-based agreement and rate on arms-length commercial terms. • Variable-rate debt will be treated like new affiliated debt. • Renegotiated or renewed debt will be considered new debt. • Where a utility has no actual debt, the deemed long-term debt rate shall apply.
Common equity return	• Refined formula-based ROE will be calculated as the base ROE + 0.5 X (change in Long Canada Bond Forecast from base year) + 0.5 X (change in the spread of (A-rated Utility Bond Yield – Long Canada Bond Yield) from the spread in the base year). This includes an implicit 50 basis points for transactional costs. • The ROE (and the short-term and long-term debt rates) will be based on data for the month 3 months in advance of the effective date for rates. • Reset formula for 2010: The base ROE in the refined formula will be calculated for 2010 as Long Canada Bond Forecast rate plus an ERP of 550 basis points, and reflects multiple, empirically supported, estimates provided in consultation which led to this report.

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5 Implementation

5.1 Transition to Recommended Cost of Capital

The policy set out in Chapter 4 of this report will come into effect for the setting of rates, beginning in 2010, by way of a cost of service application.

The Board's "Minimum Filing Requirements for Natural Gas Distribution Cost of Service Applications" and the Board's "Filing Requirements for Transmission and Distribution Applications" are sufficient for the purposes of implementing the policies set out in this report. Those requirements include information to be filed in support of a utility's proposed cost of capital in a cost of service application. There is no need for additional filing requirements. The onus is on an applicant to adequately support its proposed cost of capital, including the treatment of and appropriate rates for debt instruments. The Board notes that this is being done in cost of service applications. However, the Board wishes to point out the increased emphasis that it is placing on applicants to support their existing and forecasted debt, and the treatment of these in accordance with the guidelines, or to support any proposed different treatment.

5.1.1 Continued Migration to Common Capital Structure

The Board will continue to include an adjustment to rates in 2010, as applicable, as outlined in its December 20, 2006 Report, in order to transition electricity distributors to the single deemed capital structure of 60% debt and 40% equity.

With 2010 rates, most electricity distributors will have completed the transition to the deemed capital structure of 60% debt (56% long-term and 4% short-term) and 40% equity. However, some distributors have not completed the transition. The Board will deal with the transition to the common deemed capital structure for these distributors when they file applications for rates.

5.2 Impact on Other Board Policies

5.2.1 Prescribed Interest Rates

The deemed short-term debt rate and the prescribed interest rate for deferral and variance accounts use closely related methodologies. Distributors commented that changes to the deemed short-term debt rate should be reflected in the prescribed interest rate. Further, there was acknowledgement that any new formula for the prescribed interest rate for deferral and variance accounts, used to calculate carrying charges on balances, would apply to both credit and debit balances. The Board agrees. While the policy in this report does not cover the prescribed interest rates, the Board intends to initiate a review of its approach to calculating the prescribed interest rate to align it with the approaches set out in this report.

6 Annual Update Process and Periodic Review

6.1 Annual Update Process

The Board will apply the methods set out in this report annually to derive the values for the ROE and the deemed long-term and short-term debt rates for use in cost of service applications.

If the application of these methods produces numerical results that, in the view of the Board, raise doubt that the FRS is met, the Board may then use its discretion to begin a consultative process to determine whether circumstances warrant an adjustment to the formulaic approach, in general, or to any of the cost of capital parameter values specifically. The Board also may, at its discretion and based on the circumstances at the time, use the previous year's formula-generated values on an interim basis until its final determination is made following the consultative process.

Stakeholders proposed a variety of tests and approaches that could be used to supplement the Board's annual review of the cost of capital parameters. The Board is of the view that any tests or approaches used to assess the reasonableness of the cost of capital parameters should be consistent with the formulaic ROE adjustment mechanism adopted. Accordingly, the Board will not attempt to annually derive the ROE using CAPM, DCF or other cost of capital methodologies to assess the reasonableness of the formula-generated ROE. The Board notes that participants are free to perform such calculations and ask the Board to review the formula when they feel it is appropriate.

For the purposes of assessing the reasonableness of results on an annual basis, the Board will examine the values produced by the Board's cost of capital methodology, and the relationships between them, in the context of the economic and financial conditions of the day. Further and consistent with the 1997 Draft Guidelines, the Board will review its approach as conditions arise that may call into question its validity. Further, parties may ask the Board to review its cost of capital policies when they feel it is appropriate or the

Board may do so on its own initiative. In either case it will be the Board's decision as to the time for a review. Finally, the Board may request the presentation of other tests or require some weighting for other tests should the Board want to assure itself that its approach does not lead to perverse results and is directionally in line with other market indicators. [74]

6.2 Periodic Review

The Board has determined that it will periodically review its formulaic ROE adjustment mechanism. The use of any formulaic approach to approximate a change in the ROE is bound to be imperfect and any such imperfection may, over time, result in cumulative or compounding effects such that the application of it may not continue to meet the FRS.

The Board notes that the time period for a review suggested by stakeholders varied from 3-5 years, with Energy Probe suggesting that "4-5 years is probably too short."[75]
The Board has determined that a review period of five years provides an appropriate balance between the need to ensure that the formula-generated ROE continues to meet the FRS and the objective of maintaining regulatory efficiency and transparency. Accordingly, the Board intends to conduct its first regular review in 2014 and any changes to the policy made as a result of that review would apply to the setting of rates for the 2015 rate year.

At the time of the review, the Board will provide guidance to stakeholders through, for example, an issues list similar to that issued on July 30, 2009, and the relevant period over which to estimate the risk-free rate. This latter approach will promote the use of a common basis to derive cost of capital estimates, increasing their direct comparability.

The periodic review will not necessarily result in a resetting of the base ROE or refining of the adjustment factors and/or terms of the formula. The Board will seek the views of

[74] Ontario Energy Board. Draft Guidelines on a Formula-Based Return on Common Equity for Regulated Utilities. March 1997. p. 2.
[75] Written Comments of Energy Probe Research Foundation, September 8, 2009, p. 12.

stakeholders on the need to reset the ROE and the need to revise the formula. If the Board is satisfied that its approach remains appropriate, the base ROE and the formula will remain unchanged and the review will conclude.

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Appendix A: Summary on the Formula-Based Return on Equity Guidelines in Effect in the 2009 Rate Year

The Board's existing formula-based approach using the equity risk premium ("ERP") method for determining the fair rate of return for natural rate regulated natural gas utilities is set out in its 1997 *Draft Guidelines on a Formula-Based Return on Common Equity.* The 1997 *Draft Guidelines* were first applied in the EBRO 495 proceeding which set fiscal 1998 rates for the Consumers' Gas Company Ltd. The Board's December 2006 *Report of the Board on Cost of Capital and 2nd Generation Incentive Regulation for Ontario's Electricity Distributors* reaffirmed the continued use of this approach for electricity distribution utilities subject to a number of minor modifications, as described below.

Draft Guidelines on a Formula-Based Return on Common Equity for Regulated Natural Gas Utilities:

The 1997 Draft Guidelines, have two phases: an initial setup and an ongoing adjustment mechanism.

Initial Set-Up

Step 1: Establish the forecast of the long Government of Canada yield for the test year

The forecast yield of long-term Government of Canada bonds is established for the test year by taking the average of the 3 and 12 months forward 10-year Government of Canada bond yield forecasts, as stated in the most recent issue of Consensus Forecasts, and adding the average of the actual observed spreads between 10 and 30-year Government of Canada bond yields, for each business day in the month corresponding to the most recent Consensus Forecast issue.

Step 2: Establish implied risk premium

A utility's test year ROE will consist of the projected yield for 30-year long Canada bonds plus an appropriate premium to account for the utility's risk relative to long Canada bonds. The primary methodological approach to be used in evaluating the appropriate risk premium should be the ERP test.

The ERP test is designed to measure the cost of equity capital from the capital attraction perspective. It relies on the assumption that common equity is riskier than debt and that investors will demand a higher return on shares, relative to the return required on bonds, to compensate for that risk. The premium required by an investor to assume the additional risk associated with an equity investment is taken to be the difference between the relevant debt rate, usually the yield on long-term government bonds, and some estimate of the stock's cost of equity. The recommended cost of equity value under the ROE approach is therefore usually computed as the sum of the test-period forecast for the government yield

and the utility-specific risk premium the analyst has estimated based on historical ROE evidence and forward-looking considerations.

The Adjustment Mechanism

Once the initial ROE has been set for each of the utilities, a procedure must be put in place to automatically adjust the allowed ROE for each utility to account for changes in long Canada yield expectations. The timing of the adjustment mechanism process for each utility will be consistent with its fiscal year-end.

Step 1: Establish the forecast long Canada rates

The formula-based ERP approach annually adjusts a utility's allowed ROE based on changes in forecast long-term Government of Canada bond yields. Each year the process outlined in Step 1 of the initial setup phase will be repeated and an updated, consensus-based forecast of 30-year long-Canada bond yields will be obtained. The current test year rate forecast will then be compared to the previous test year forecast.

Step 2: Apply adjustment factor

The difference between the forecast long Canada rate calculated in Step 1 and the corresponding rate for the immediately preceding year should be multiplied by a factor of 0.75 to determine the adjustment to the allowed ROE. This adjustment will then be added to the utility's previous test year ROE and the sum should be rounded to two decimal points.

Term of the Rate of Return Formula

The rate of return formula should be reviewed as conditions arise that may call into question its validity. Parties may ask the Board to review the formula when they feel it is appropriate or the Board may do so on its own initiative. In either case it is the Board's decision as to the time for a review.

The Board may request the presentation of other tests or require some weighting for other tests in the formula should the Board want to assure itself that the ERP formula approach does not lead to perverse results and is directionally in line with other market indicators.

December 20, 2006 *Report of the Board on Cost of Capital and 2nd Generation Incentive Regulation for Ontario's Electricity Distributors*:

Since 1999, the cost of capital for electricity distributors has been governed by the Board's Decision with Reasons in proceeding RP-1999-0034. This decision established a size-related capital structure for distributors and set the return on equity at 9.88%.[76] In the December 20, 2006 Report, the Board determined that the current approach to setting ROE would be maintained. The ROE will continue to be determined based on the Long Canada

[76] Ontario Energy Board. Report of the Board on Cost of Capital and 2nd Generation Incentive Regulation for Ontario's Electricity Distributors. December 20, 2009. p. 3.

Bond Forecast plus an ERP. The approach is a modified Capital Asset Pricing Model method and includes an implicit 50 basis points for transaction costs. At that time, the Board also adopted deemed equity of 40% for all distribution utilities.

In the December 20, 2006 Report, the Board clarified the starting point to be used for each annual update and determined that it is appropriate to use the ROE calculated at that time as the starting point. This figure was 9.35%, as per the Board's determination in Hydro One Network Inc.'s RP-1998-0001 Decision. The Board indicated that it will use 9.35% as the starting point for the update. As a result of the December 20, 2006 Report, the ROE for any period would be:

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

Where:

- The ROE is set three months in advance of the effective date for the rate change. Therefore, for May 1 rate changes the ROE will be based on January data.

- The Long Canada Bond Forecast ($LCBF_t$) for any Period is the average of the 3-month and 12-month forecasts of the 10-year Government of Canada bond yield as published in Consensus *Forecasts* at time t *plus* the average of the actual observed spreads between 10 and 30-year Government of Canada bond yields, for each business day during the month corresponding to the *Consensus Forecasts* at time t.

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Appendix B: Method to Update ROE

With the release of this report, the Board is resetting and refining its formulaic approach for determining a utility's Return on Equity ("ROE") applicable to the prospective test year. The formula has been reset to address the difference between the allowed ROE arising from the application of the formula and the rate of ROE for a low risk proxy group that cannot be reconciled based on differences in risk alone. The formula has been refined to reduce the sensitivity of the approach to changes in government bond yields due to monetary and fiscal conditions that do not reflect changes in utility cost of equity.

The formula as set out in this report includes (a) a term to reflect the change in the Long Canada Bond forecast ("LCBF") and (b) a term to reflect the change in the spread between A-rated Utility bond yields over the Long Canada Bond yield.

The adjustment factor for the LCBF term is set at 0.5. The adjustment factor for the A-rated Utility bond term is set at 0.5. The methodology for calculating the Long Canada Bond forecast is the same as that set out in the Board's December 20, 2006 Report.

The base for the ROE adjustment formula is set at 9.75%. The corresponding base LCBF is 4.25% and the spread in 30-year A-rated Canadian utility bonds over the 30-year benchmark Government of Canada bond yield is 1.415%.

While there is a change in the base numbers and the adjustment formula, the general approach for calculating the updated ROE is the same as that set out in the Board's December 20, 2006 Report.

The ROE for the prospective test year (ROE_t) will be calculated by the following adjustment formula:

$$ROE_t = BaseROE + 0.5 \times (LCBF_t - BaseLCBF) + 0.5 \times (UtilBondSpread_t - BaseUtilBondSpread)$$

Where:

- $LCBF_t$ is the Long Canada Bond Forecast for the test year, and is calculated as:

$$LCBF_t = \left[\frac{{}_{10}CBF_{3,t} + {}_{10}CBF_{12,t}}{2} \right] + \left[\frac{\sum_i ({}_{30}CB_{i,t} - {}_{10}CB_{i,t})}{I} \right]$$

  Where

  - ${}_{10}CBF_{3,t}$ is the 3-month forecast of the 10-year Government of Canada bond yield as published in Consensus Forecasts three (3) months in advance of the implementation date for rates;

- o ${}_{10}CBF_{12,t}$ is the 12-month forecast of the 10-year Government of Canada bond yield as published in Consensus Forecasts three (3) months in advance of the implementation date for rates;
- o ${}_{30}CB_{i,t}$ is the benchmark bond yield rate for the 30-year Government of Canada bond at the close of day i of the month that is three (3) months in advance of the implementation date for rates, as published by the Bank of Canada [**Cansim Series V39056**];
- o ${}_{10}CB_{i,t}$ is the benchmark bond yield rate for the 10-year Government of Canada bond at the close of day i of the month that is three (3) months in advance of the implementation date for rates, as published by the Bank of Canada [**Cansim Series V39055**]; and
- o I is the number of business days for which Government of Canada and A-rated Utility bond yield rates are published in the month three (3) months in advance of the implementation date for rates.

- $UtilBondSpread_t$ is the average spread of 30-year A-rated Canadian Utility bond yields over 30-year Government of Canada bond yields over all business days in the month three (3) months in advance of the implementation date for rates, and is calculated as

$$UtilBondSpread_t = \frac{\sum_i ({}_{30}UtilBonds_{i,t} - {}_{30}CB_{i,t})}{I}$$

Where:

- o ${}_{30}UtilBonds_{i,t}$ is the average 30-year A-Rated Canadian Utility bond yield rate, from Bloomberg L.P., for business day i of the month that is three (3) months in advance of the implementation date for rates [**Series C29530Y**];
- o ${}_{30}CB_{i,t}$ is the benchmark bond yield rate for the 30-year Government of Canada bond at the close of day i of the month that is three (3) months in advance of the implementation date for rates, as published by the Bank of Canada [**Cansim Series V39056**]; and
- o I is the number of business days for which Government of Canada and A-rated Utility bond yield rates are published in the month three (3) months in advance of the implementation date for rates.

As noted above, based on September 2009 data, the base ROE is set at 9.75% and the corresponding *BaseLCBF* is 4.25% and *BaseUtilBondSpread* is 1.415%. Thus the ROE adjustment formula is specified as:

$$ROE_t = 9.75\% + 0.5 \times (LCBF_t - 4.25\%) + 0.5 \times (UtilBondSpread_t - 1.415\%)$$

The ROE for any period will be rounded and expressed as a percentage with two decimal places (i.e., XX.XX%).

As for other cost of capital parameters, data will be for the month that is three months prior to the effective date for the new rates. For example, for rates effective May 1, January data will be used to calculate the updated ROE. This means is that *Consensus Forecasts* published in the month of January, and Bank of Canada and Bloomberg L.P. data for all business days during the month of January will be used to calculate the updated ROE.

The necessary data are available shortly after the end of the month, and thus poses no undue delays for rate-setting.

The use of the ROE will be in accordance with the policy described in section 4.2 of this report.

Appendix C: Method to Update the Deemed Long-term Debt Rate

The Board will use the Long Canada Bond Forecast plus an average spread of A-rated Corporate Utility bond yields over the actual Long Canada Bond yield to determine the updated deemed long-term ("LT") debt rate.

This approach is consistent with the methodology adopted in the December 20, 2006 Report, to represent a fair market rate for a long-term debt instrument in the test period. The only change is the source of the corporate bond yields, which is now the A-rated Corporate Utility bond index yield obtainable from Bloomberg L.P.

Consistent with the approach used in prior guidelines, the *2006 Electricity Distribution Rate Handbook* and the December 20, 2006 Report, the ROE and the deemed long-term debt rates are based on the same forecast of the risk-free rate. For certainty, the Long Canada Bond Forecast ($LCBF_t$) used in the ROE formula will be used in the calculation of the deemed LT rate.

The deemed LT debt rate ($LTDR_t$) will be calculated as follows:

$$LTDR_t = LCBF_t + \frac{\sum_i ({}_{30}UtilBonds_{i,t} - {}_{30}CB_{i,t})}{I}$$

Where:

- $LCBF_t$ is the Long Canada Bond Forecast for the prospective test year, as defined in Appendix B for the calculation of the ROE;
- ${}_{30}UtilBonds_{i,t}$ is the average 30-year A-Rated Canadian Utility bond yield rate, from Bloomberg L.P., for business day *i* of the month that is three (3) months in advance of the implementation date for rates **[Series C29530Y]**;
- ${}_{30}CB_{i,t}$ is the benchmark bond yield rate for the 30-year Government of Canada bond at the close of day *i* of the month that is three (3) months in advance of the implementation date for rates, as published by the Bank of Canada **[Cansim Series V39056]**; and
- I is the number of business days for which Government of Canada and A-rated Utility bond yield rates are published in the month three (3) months in advance of the implementation date for rates.

As for other cost of capital parameters, data will be for the month that is three months prior to the effective date for the new rates. For example, for rates effective May 1, January data will be used to calculate the updated deemed LT debt rate.

The use of the deemed LT debt rate will be in accordance with the policy described in section 4.4.1 of this report and based on the evidentiary record in the particular application.

Appendix D: Method to Update the Deemed Short-term Debt Rate

The Board will use a new methodology to estimate the deemed short-term ("ST") debt rate, consisting of the average 3-month Bankers' Acceptance rate as published by the Bank of Canada plus a forecasted average spread of short-term debt issuances over 3-month Bankers' Acceptance rates for R1-low Canadian utilities.

This is a change over the previous methodology, specifically in the spread above the Bankers' Acceptance rate which previously was fixed at 25 basis points. The new methodology will use spread forecasts obtained from Canadian prime banks to better reflect the short-term rates that utilities can obtain short-term financing for.

The calculation of the deemed ST debt rate will be done through a two-step process.

1. Annual calculation of the average spread over 3-month Bankers' Acceptance Rates

Once a year, in January, the average spread of short-term debt issuances over 3-month Bankers' Acceptance rates will be obtained by Board staff contacting major Canadian banks. Up to six quotes will be obtained to calculate the average spread to be used during the calendar year. Ideally, the high and low estimates will be discarded to reduce the influence of outliers, and the average spread will be calculated. In the event that less than four quotes are obtained, the average spread will be calculated without discarding high and low estimates.

If market conditions materially change, the Board could decide that the average spread may need to be updated at some point other than January.

2. Calculation of the Deemed Short-Term Debt Rate

The deemed short-term debt rate ($STDR_t$) for the prospective test year will be calculated as:

$$STDR_t = \frac{\sum_i BA_i}{I} + AnnSpread_t$$

Where:

- BA_i is the 3-month Bankers' Acceptance Rate for day i in the selected month, as published by Statistics Canada and the Bank of Canada [**Cansim Series V39071**];

- I is the number of business days for which published Government of Canada and A-rated Utility bond yield rates are published in the month three (3) months in advance of the implementation date for rates; and
- $AnnSpread_t$ is the average annual spread in short-term debt issuances for an R1-low utility over 3-month Bankers' Acceptance rates for the test year *t*, calculated in step 1 above.

As for other cost of capital parameters, data will be for the month that is three months prior to the effective date for the new rates. For example, for rates effective May 1, January data will be used to calculate the updated deemed ST debt rate.

The use of the deemed ST debt rate will be in accordance with the policy described in section 4.4.2 of this report.

Attachment 9.1

V. COMPETITION FOR CAPITAL IN CANADA VERSUS THE U.S.

A company's access to capital is a key consideration in setting a fair return. Without access to capital (at reasonable cost rates), a utility would be challenged to maintain its basic systems, and ultimately system integrity would be jeopardized, let alone any future capital expansion plans. Companies obtain capital in a variety of ways, through debt or equity issuances, or in the form of equity infusions from their parent. Regardless of where capital is coming from, there is a cost for providing that capital that compensates either the creditor, the investor, or the parent for the risk they take on in providing capital to the entity, and that compensation should be no less than what could be received by an alternative investment target of comparable risk.

This section of the report examines whether capital for utility investment between the Canadian and U.S. markets is integrated, and whether Canadian companies must compete with U.S. companies for capital. To answer this question, consideration has been given to three primary questions: (1) Are there fundamental differences between the securities markets of the U.S. and Canada that would result in corresponding differences in the countries' required returns? (2) Do the investment bases in U.S. and Canadian gas utilities suggest that the markets are integrated? (3) Is capital migrating to jurisdictions with the higher returns? In the following section, those questions will be analyzed and discussed.

International Market Return on Equity – Canada vs. U.S.

Morningstar, Inc. (formerly Ibbotson Associates) identifies several methods for determining the international cost of capital, highlighting differences between countries. Of those methodologies described by Morningstar, four are employed below to ascertain if there are fundamental differences in the required returns between Canada and the U.S. that are attributable to the countries' equity markets themselves. Such differences would address inflation, political risk, exchange rate risk, and other macroeconomic factors.

The first methodology employed is the "International CAPM". Morningstar states that the principles of the CAPM can also be applied to the international market. The definition of the market portfolio can be expanded to include the equity markets of all countries of the

world. Morningstar's International CAPM model uses the country specific risk free rate and Beta, and uses an equity risk premium calculated on a world wide basis.[33] Beta is estimated using the world equity market as the benchmark. Morningstar determined the world equity risk premium to be 7.73 percent, and the Betas for the U.S. and Canada are determined to be 0.99 and 0.96, respectively.[34] Using both countries current respective long term government bonds for the risk free rate results in an ROE for the U.S. of 12.45 percent and for Canada, 11.62 percent, 83 basis points below the U.S.[35]:

U.S. CAPM = 4.80 + 0.99 (7.73) = 12.45%

Canada CAPM = 4.20 + .96 (7.73) = 11.62%

A second approach to estimating the required return in international markets, put forward by Morningstar, is the "Country Risk Rating Model", which takes into account a forward-looking measure of risk for alternative markets. This approach uses a linear regression model on a sample of returns as the dependent variable and the natural log of country credit ratings as the independent variable. This analysis indicates that the U.S. required equity return should be 16 basis points lower than that of the Canadian return, based upon the relationship of the relative country credit rating and historical returns:

U.S. credit rating = 94.5, U.S. required equity return = 10.60%[36]

Canada credit rating = 93.7, Canadian required equity return = 10.76%[37]

A third approach to estimating the international required return on equity, according to Morningstar, uses a spread methodology, between countries. This approach adds a country specific spread to a cost of equity determined from more conventional means. The spread between long term government bonds is added or subtracted to the U.S. cost of equity estimate obtained through a normal CAPM assuming a market Beta of 1.00. This approach results in a 60 basis point spread, where the U.S. long term government bond is 60 basis points above its Canadian counterpart:

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33 Morningstar relied upon the Morgan Stanley Capital International (MSCI) world index as a proxy for world markets, *see* SBBI Morningstar 2007 Yearbook, Valuation Edition, at p. 178.

34 SBBI Morningstar 2007 Yearbook, Valuation Edition, at p. 179.

35 Taking the average monthly bond yield for the preceding 12 months, results in increases in the U.S. and Canada risk free rates of 5 basis points and 4 basis points, respectively, resulting in a negligible impact on the ROE. Hence, for purposes of this analysis, current spot yields are reasonably representative of 12 month averages.

36 SBBI Morningstar 2007 Yearbook, Valuation Edition, at p. 181.

37 Ibid.

U.S. Required Equity Return = 4.80 + 1 (7.13) = 11.93%

Spread = U.S. 30-Year Treasuries – Canada Long Bond = 4.80% - 4.20% = 0.60%

Canadian Equity Return = 11.93% - .60% = 11.33%

The last of the methodologies proposed by Morningstar is a "Relative Standard Deviation Model". In this model, the standard deviation of international markets is indexed to the standard deviation of the U.S. market. Countries with higher standard deviations than the U.S. are given a higher equity risk premium in proportion to their relative standard deviation. Morningstar's study indicates that the Canadian standard deviation relative to the U.S. market is 1.25[38], hence Canada's risk premium should be the product of the U.S. risk premium and the Canada/U.S. index, or 7.13 x 1.25 = 8.91. This increased risk premium would yield a higher Canadian return than that in the U.S. by 117 basis points (13.11 percent - 11.94 percent), derived below:

U.S. Required Equity Return = 4.80 + 1 (7.13) = 11.93%

Canadian Required Equity Return = 4.20 + 1(8.91) = 13.11%

The four Morningstar approaches identified above are summarized in the Table 11:

TABLE 11: INTERNATIONAL COST OF CAPITAL SUMMARY

Morningstar Methodology	U.S. Return	Canadian Return	Difference
International CAPM	12.45%	11.62%	0.83%
Country Risk Rating Model	10.60%	10.76%	(0.16%)
Country-Spread Model	11.93%	11.33%	0.60%
Relative Standard Deviation Model	11.93%	13.11%	(1.18%)
Average – Arithmetic	11.73%	11.71%	0.02%
Average – Geometric	11.71%	11.67%	0.04%

As Table 11 indicates, the four international cost of capital methodologies yield diverse results depending on the drivers of the methodology employed (*i.e.*, bond yields or relative risk metrics), with results ranging from a Canadian required return exceeding the U.S. required return by 118 basis points, to a U.S. required return exceeding the Canadian

38 Ibid., at p. 183.

required return by 83 basis points. However, the arithmetic and geometric average of all approaches indicate nearly identical results for both the Canadian and the U.S. required returns, with the average difference of all methods being between two and four basis points. These results imply that the impact of the currently lower Canadian bond yield is offset by the increased relative risk of Canadian returns (as determined under these methodologies).[39] As a result, there do not appear to be determinative market differences between the U.S. equities market and the Canadian equities market at this time to justify any sustained differences in required returns on equity.

In a 2002 study performed by Dimson, Marsh and Staunton, the authors indicate that when deriving a forward looking projection of required return on equity from a purely historical estimate of the risk premium, it is necessary to "reverse-engineer" the facts that impacted stock returns over the past 102 years, backing out factors that could not be anticipated to be recurring in the future, such as unanticipated growth or diminished business risk through technological advances. To this point, the authors state:

> While there are obviously differences in risk between markets, this is unlikely to account for cross-sectional differences in historical premia. Indeed much of the cross-country variation in historical equity premia is attributable to country-specific historical events that will not recur. When making future projections, there is a strong case, particularly given the increasingly international nature of capital markets, for taking a global rather than a country by country approach to determining the prospective equity risk premium…
>
> ...Indeed it is difficult to infer expected premia from any analysis of historical excess returns. It may be better to use a "normal" equity premium most of the time, and to deviate from this prediction only when there are compelling economic reasons to suppose expected premia are unusually high or low.[40]

The current disparity between Canadian and U.S. long term bond yields is informative at least in part in understanding the recent differences in authorized ROE's in the U.S. and

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[39] According to the Country Risk Rating Model and the Relative Standard Deviation Model Canadian returns should be higher than those of the U.S. Consideration of the lower Canadian bond yield in the International CAPM Model and the Country-Spread Model, indicates that Canadian returns should be lower than U.S. returns. As such, it appears that the higher risk of Canadian returns as evidenced by the credit rating and standard deviation of Canadian returns, is mitigated by the lower bond yield relative to that of the U.S.

[40] Elroy Dimson, Paul Marsh and Mike Staunton, Global Evidence on the Equity Risk Premium, Copyright September 2002.

Canada. Historically, however, as discussed below, these bond yields have been highly correlated, and based on historical performance, the current spread may not be sustainable.

Bond Yields

The correlation between the Canadian and U.S. Treasury bonds was noted by the NEB in its decision establishing an ROE formula for NEB-regulated pipelines. "[T]he Board is of the view that inflationary expectations in the U.S. are likely to put upward pressure on U.S. interest rates. This, in turn, is likely to exert upward pressure on Canadian interest rates."[41]

While the spread between Canadian and U.S. long-term bond yields has averaged three and two basis points over the past five and ten-year periods, respectively (with Canadian bond yields exceeding U.S. yields, on average), Canadian bond yields have decreased relative to U.S. bond yields over the past year. In addition, the forecast ten-year bond rate is 4.15 percent in Canada, as compared to the 4.85 percent forecast for the U.S. ten-year Note.[42] Inasmuch as this spread is expected to continue, it accounts for some of the current difference in ROEs between Canada and U.S. However, as the two yields have historically been very highly correlated, with a minimal spread between them, the difference in yields may not persist over the long run.

41 National Energy Board, Reasons for Decisions, RH-2-94, March 1995, at p. 6.

42 The ROE formula in Ontario uses the average of the three and 12 month forward ten-year Canadian bond forecasts, plus the historical spread between the ten and the 30-year bonds. For an approximation of the ten-year U.S. Note forecast of 4.85 percent, CEA used an average of the three and 12 month forward ten-year Treasury Note as supplied by Blue Chip Economic Indicators, October 10, 2006.

Attachment 9.3

Title:	Federal Surplus or Deficit [-]
Series ID:	FYFSD
Source:	The White House: Office of Management and Budget
Release:	Fiscal Year Budget Data (Not a Press Release)
Seasonal Adjustment:	Not Seasonally Adjusted
Frequency:	Annual, Fiscal Year
Units:	Millions of Dollars
Date Range:	1994-09-30 to 2011-09-30
Last Updated:	2012-02-13 2:46 PM CST
Notes:	Dates represent the end of the fiscal year. Fiscal year series are updated with official OMB figures in January or February. In October, the latest fiscal year is updated with figures from the Treasury Department (September figures from the Treasury's fiscal year to date series).

DATE	VALUE
1994-09-30	-203,186
1995-09-30	-163,952
1996-09-30	-107,431
1997-09-30	-21,884
1998-09-30	69,270
1999-09-30	125,610
2000-09-30	236,241
2001-09-30	128,236
2002-09-30	-157,758
2003-09-30	-377,585
2004-09-30	-412,727
2005-09-30	-318,346
2006-09-30	-248,181
2007-09-30	-160,701
2008-09-30	-458,553
2009-09-30	-1,412,688
2010-09-30	-1,293,489
2011-09-30	-1,299,595

Table 380-0007 Sector accounts, all levels of government, quarterly (dollars x 1,000,000)
Survey or program details:
National Income and Expenditure Accounts - 1901

Geography	Canada	Canada	Canada
Seasonal adjustment	Unadjusted	Unadjusted	Unadjusted
Levels of government	Federal government	Federal government	Federal government
Sector accounts	Saving	Income	Outlay
Q1 1993	-14,177	33,207	47,384
Q2 1993	-9,018	30,476	39,494
Q3 1993	-7,563	31,846	39,409
Q4 1993	-7,713	33,186	40,899
Q1 1994	-14,852	30,038	44,890
Q2 1994	-7,114	32,304	39,418
Q3 1994	-5,380	34,630	40,010
Q4 1994	-6,631	34,939	41,570
Q1 1995	-15,113	33,434	48,547
Q2 1995	-6,300	34,197	40,497
Q3 1995	-5,011	36,211	41,222
Q4 1995	-5,653	36,471	42,124
Q1 1996	-14,070	34,212	48,282
Q2 1996	-2,316	36,376	38,692
Q3 1996	-784	38,156	38,940
Q4 1996	-962	39,210	40,172
Q1 1997	-8,104	37,854	45,958
Q2 1997	2,763	40,816	38,053
Q3 1997	3,863	41,047	37,184
Q4 1997	3,965	42,839	38,874
Q1 1998	-7,097	39,175	46,272
Q2 1998	4,622	42,872	38,250
Q3 1998	4,063	42,612	38,549
Q4 1998	2,178	42,791	40,613
Q1 1999	-7,501	40,991	48,492
Q2 1999	2,795	45,476	42,681
Q3 1999	5,321	45,165	39,844
Q4 1999	5,204	46,052	40,848
Q1 2000	-2,868	46,189	49,057
Q2 2000	6,059	49,997	43,938
Q3 2000	7,189	49,189	42,000
Q4 2000	6,042	50,351	44,309
Q1 2001	-4,371	47,627	51,998
Q2 2001	8,544	51,750	43,206
Q3 2001	4,569	47,852	43,283
Q4 2001	723	46,706	45,983
Q1 2002	-7,481	43,974	51,455
Q2 2002	5,448	48,233	42,785
Q3 2002	4,423	48,155	43,732
Q4 2002	4,690	50,086	45,396
Q1 2003	-6,096	47,662	53,758
Q2 2003	-324	47,968	48,292
Q3 2003	3,567	49,909	46,342
Q4 2003	5,076	50,687	45,611
Q1 2004	-4,734	49,758	54,492

	Canada
	Unadjusted
	Federal government
	Saving
1993	-38,471
1994	-33,977
1995	-32,077
1996	-18,132
1997	2,487
1998	3,766
1999	5,819
2000	16,422
2001	9,465
2002	7,080
2003	2,223
2004	11,116
2005	1,749
2006	13,201
2007	15,792
2008	-2,191
2009	-30,955
2010	-39,630
2011	-29,159

Table 380-0007 Sector accounts, all levels of government, quarterly (dollars x 1,000,000)
Survey or program details:
National Income and Expenditure Accounts - 1901

Geography	Canada	Canada	Canada
Seasonal adjustment	Unadjusted	Unadjusted	Unadjusted
Levels of government	Federal government	Federal government	Federal government
Sector accounts	Saving	Income	Outlay
Q2 2004	3,935	51,705	47,770
Q3 2004	6,434	53,093	46,659
Q4 2004	5,481	53,112	47,631
Q1 2005	-9,522	53,976	63,498
Q2 2005	3,841	54,503	50,662
Q3 2005	2,174	55,163	52,989
Q4 2005	5,256	56,123	50,867
Q1 2006	-2,524	56,104	58,628
Q2 2006	5,988	57,026	51,038
Q3 2006	2,170	57,506	55,336
Q4 2006	7,567	59,938	52,371
Q1 2007	-860	59,817	60,677
Q2 2007	6,391	62,586	56,195
Q3 2007	5,667	60,687	55,020
Q4 2007	4,594	61,133	56,539
Q1 2008	-6,970	60,451	67,421
Q2 2008	-98	60,108	60,206
Q3 2008	3,211	60,824	57,613
Q4 2008	1,666	60,030	58,364
Q1 2009	-13,626	56,179	69,805
Q2 2009	-9,340	52,340	61,680
Q3 2009	-5,905	54,657	60,562
Q4 2009	-2,084	60,144	62,228
Q1 2010	-14,221	59,963	74,184
Q2 2010	-9,062	53,386	62,448
Q3 2010	-11,563	55,705	67,268
Q4 2010	-4,784	59,578	64,362
Q1 2011	-17,686	58,420	76,106
Q2 2011	-4,527	58,510	63,037
Q3 2011	-5,140	61,440	66,580
Q4 2011	-1,806	62,642	64,448
Q1 2012	-11,062	62,552	73,614
Q2 2012	-3,765	60,693	64,458

Canada
Unadjusted
Federal government
Saving

Source:
Statistics Canada. Table 380-0007 - Sector accounts, all levels of government, quarterly (dollars)
(accessed: September 12, 2012)

Attachment 9.4

		[1]	[2]
		30-year Government Bond Yields	
Month	Year	Canada	U.S.
1	1994	7.18	6.29
2	1994	7.35	6.49
3	1994	7.91	6.91
4	1994	8.41	7.26
5	1994	8.63	7.41
6	1994	9.15	7.39
7	1994	9.30	7.58
8	1994	9.08	7.49
9	1994	9.08	7.70
10	1994	9.29	7.93
11	1994	9.33	8.07
12	1994	9.17	7.86
1	1995	9.43	7.84
2	1995	9.00	7.61
3	1995	8.82	7.44
4	1995	8.64	7.35
5	1995	8.37	6.94
6	1995	8.24	6.57
7	1995	8.48	6.71
8	1995	8.67	6.86
9	1995	8.34	6.55
10	1995	8.14	6.37
11	1995	7.96	6.26
12	1995	7.71	6.06
1	1996	7.65	6.05
2	1996	7.85	6.24
3	1996	8.13	6.60
4	1996	8.21	6.79
5	1996	8.18	6.92
6	1996	8.18	7.05
7	1996	8.11	7.02
8	1996	7.79	6.84
9	1996	7.84	7.03
10	1996	7.30	6.81
11	1996	6.77	6.48
12	1996	7.04	6.55
1	1997	7.30	6.82
2	1997	6.98	6.68
3	1997	7.17	6.94
4	1997	7.32	7.09
5	1997	7.08	6.93
6	1997	6.81	6.77
7	1997	6.54	6.51
8	1997	6.54	6.58

Correlation: 95.16%

[1] Source: Bloomberg Professional Service;
GCAN30YR Index;
"Canadian Govt Bonds 30 Year Note"

[2] Source: Bloomberg Professional Service;
USGG30YR Index;
"US Generic Govt 30 Year Yield"

		[1]	[2]
		30-year Government Bond Yields	
Month	Year	Canada	U.S.
9	1997	6.46	6.50
10	1997	6.18	6.32
11	1997	5.98	6.11
12	1997	6.01	5.98
1	1998	5.76	5.81
2	1998	5.76	5.89
3	1998	5.78	5.95
4	1998	5.64	5.92
5	1998	5.66	5.92
6	1998	5.53	5.70
7	1998	5.51	5.67
8	1998	5.69	5.53
9	1998	5.48	5.21
10	1998	5.35	5.01
11	1998	5.44	5.25
12	1998	5.15	5.06
1	1999	5.23	5.15
2	1999	5.37	5.37
3	1999	5.45	5.58
4	1999	5.35	5.54
5	1999	5.58	5.80
6	1999	5.70	6.04
7	1999	5.62	5.98
8	1999	5.86	6.07
9	1999	5.85	6.06
10	1999	6.21	6.26
11	1999	6.13	6.14
12	1999	6.19	6.35
1	2000	6.40	6.62
2	2000	6.02	6.23
3	2000	5.79	6.05
4	2000	5.81	5.84
5	2000	5.80	6.14
6	2000	5.58	5.92
7	2000	5.55	5.85
8	2000	5.48	5.71
9	2000	5.60	5.81
10	2000	5.61	5.80
11	2000	5.61	5.77
12	2000	5.54	5.48
1	2001	5.69	5.53
2	2001	5.69	5.46
3	2001	5.64	5.34
4	2001	5.91	5.64

		[1]	[2]
		30-year Government Bond Yields	
Month	Year	Canada	U.S.
5	2001	6.02	5.78
6	2001	5.90	5.67
7	2001	5.96	5.61
8	2001	5.80	5.48
9	2001	5.78	5.47
10	2001	5.72	5.31
11	2001	5.49	5.11
12	2001	5.67	5.47
1	2002	5.64	5.44
2	2002	5.66	5.39
3	2002	5.91	5.71
4	2002	5.91	5.68
5	2002	5.88	5.64
6	2002	5.75	5.51
7	2002	5.75	5.39
8	2002	5.61	5.07
9	2002	5.40	4.77
10	2002	5.61	4.92
11	2002	5.55	4.95
12	2002	5.46	4.92
1	2003	5.47	4.93
2	2003	5.50	4.81
3	2003	5.49	4.80
4	2003	5.53	4.90
5	2003	5.24	4.51
6	2003	4.96	4.37
7	2003	5.29	4.92
8	2003	5.41	5.29
9	2003	5.31	5.14
10	2003	5.35	5.16
11	2003	5.37	5.12
12	2003	5.25	5.07
1	2004	5.19	4.98
2	2004	5.12	4.92
3	2004	4.97	4.74
4	2004	5.23	5.14
5	2004	5.34	5.42
6	2004	5.41	5.41
7	2004	5.28	5.21
8	2004	5.18	5.06
9	2004	5.10	4.91
10	2004	5.05	4.85
11	2004	4.97	4.88
12	2004	4.88	4.86

		[1]	[2]
		30-year Government Bond Yields	
Month	Year	Canada	U.S.
1	2005	4.79	4.72
2	2005	4.68	4.55
3	2005	4.78	4.79
4	2005	4.64	4.64
5	2005	4.51	4.48
6	2005	4.30	4.28
7	2005	4.31	4.40
8	2005	4.27	4.45
9	2005	4.19	4.46
10	2005	4.28	4.67
11	2005	4.27	4.73
12	2005	4.14	4.65
1	2006	4.13	4.58
2	2006	4.22	4.58
3	2006	4.22	4.73
4	2006	4.46	5.06
5	2006	4.45	5.20
6	2006	4.49	5.15
7	2006	4.51	5.14
8	2006	4.32	4.99
9	2006	4.16	4.85
10	2006	4.18	4.85
11	2006	4.08	4.68
12	2006	4.04	4.68
1	2007	4.17	4.85
2	2007	4.17	4.82
3	2007	4.14	4.72
4	2007	4.22	4.86
5	2007	4.28	4.90
6	2007	4.52	5.21
7	2007	4.52	5.10
8	2007	4.44	4.94
9	2007	4.43	4.79
10	2007	4.43	4.78
11	2007	4.28	4.52
12	2007	4.16	4.53
1	2008	4.11	4.33
2	2008	4.19	4.51
3	2008	4.01	4.38
4	2008	4.11	4.44
5	2008	4.09	4.60
6	2008	4.13	4.68
7	2008	4.10	4.56
8	2008	4.04	4.50

		[1]	[2]
		30-year Government Bond Yields	
Month	Year	Canada	U.S.
9	2008	4.03	4.27
10	2008	4.18	4.16
11	2008	4.13	3.98
12	2008	3.62	2.85
1	2009	3.62	3.10
2	2009	3.68	3.59
3	2009	3.63	3.64
4	2009	3.70	3.76
5	2009	3.93	4.24
6	2009	3.96	4.51
7	2009	3.96	4.40
8	2009	3.95	4.37
9	2009	3.89	4.19
10	2009	3.93	4.19
11	2009	3.94	4.31
12	2009	4.01	4.50
1	2010	4.05	4.60
2	2010	4.04	4.62
3	2010	4.06	4.65
4	2010	4.07	4.69
5	2010	3.83	4.28
6	2010	3.74	4.12
7	2010	3.73	3.99
8	2010	3.57	3.80
9	2010	3.48	3.77
10	2010	3.44	3.87
11	2010	3.58	4.19
12	2010	3.62	4.42
1	2011	3.68	4.52
2	2011	3.80	4.65
3	2011	3.74	4.51
4	2011	3.76	4.50
5	2011	3.57	4.29
6	2011	3.46	4.23
7	2011	3.41	4.28
8	2011	3.08	3.65
9	2011	2.85	3.18
10	2011	2.90	3.12
11	2011	2.73	3.01
12	2011	2.56	2.99
1	2012	2.56	3.01
2	2012	2.61	3.11
3	2012	2.67	3.28
4	2012	2.62	3.18

		[1]	[2]
		30-year Government Bond Yields	
Month	Year	Canada	U.S.
5	2012	2.46	2.92
6	2012	2.33	2.70
7	2012	2.27	2.60
8	2012	2.38	2.77

[1] Source: Bloomberg Professional Service;
GCAN30YR Index;
"Canadian Govt Bonds 30 Year Note"

[2] Source: Bloomberg Professional Service;
USGG30YR Index;
"US Generic Govt 30 Year Yield"