Automatic Adjustment Mechanism
Ontario Energy Board

ONTARIO ENERGY BOARD
DRAFT GUIDELINES ON A FORMULA-BASED RETURN ON COMMON EQUITY FOR REGULATED UTILITIES

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Chapter 1: INTRODUCTION

The purpose of this report is to set out the Board's draft guidelines with respect to the concept of formula-based rate of return on common equity for use in Ontario Energy Board proceedings. The setting of a rate of return on common equity is an important part of the establishment of a just and reasonable return on rate base which provides a major component of the utility revenue requirement under rate base regulation. Section 19 of the *Ontario Energy Board Act* ("the *Act*") requires that the Board use rate base regulation in regulating the rates of the four natural gas distributors operating in Ontario.

Presently, modification to section 19 of the *Act* is being considered by the Legislature which would give the Board greater flexibility regarding the requirement to determine a rate base (i.e., by changing the word "shall" to "may" in section 19). The change to the *Act* is expected to permit the Board to adopt alternative rate making methodologies, such as performance-based rates or incentive rates. In many of these alternatives there is still a requirement to determine the appropriate and reasonable return on investment for utility investors. Therefore, even if the *Act* is changed there is likely to remain a need to determine the cost of equity.

In jurisdictions using rate base regulation the determination of a just and reasonable return for each utility is based on expert evidence and testimony. Each review of a utility's ROE normally involves two or more experts presenting opinions on a fair return on equity. These expert opinions are generally based on the same or similar data and the same financial tests, with the main differences occurring in the weighting of the results of each test and in certain statistical differences with respect to sampling procedures. The expert evidence regarding the appropriate ROE for a utility is usually the most expensive and time consuming portion of a rate hearing. Given the similarity of the evidence and commonality of the tests used by experts in the field, several regulatory tribunals have adopted a formula approach to determining the return on equity for the utilities under their jurisdiction. A formula-based rate of return approach can eliminate duplication and simplify the rate-setting process, generally by the adoption of a formula which uses specific inputs and does not require annual reviews of all rate of return factors.

The Ontario Energy Board has considered the experience in other jurisdictions and has developed its guidelines with respect to the rate of return formula appropriate for OEB proceedings. This report provides a background of the issues surrounding the adoption of a formulaic ROE test, including information on its use in other jurisdictions.

The following chapter contains a review of the current OEB rate of return setting process. This is followed by a general discussion of the concept of a formula-based rate of return. The fourth chapter reviews methods of determining a formula rate of return adopted by several Canadian and United States jurisdictions. Chapter 5 provides an analysis of the pros and cons of adopting the different methods of setting a formula rate of return and outlines the guidelines which have been developed by the Board for the implementation of a formulaic ROE in OEB proceedings.

Chapter 2: CURRENT OEB APPROACH

The Board's objective in setting the rate of return on rate base is to ensure that the utility is provided with a fair return which enables it to meet its obligations and maintain its capability of attracting capital. This ensures the ongoing viability of the utility to provide service to its customers and helps to keep rates as low as possible. In the process of setting rates, the Board confirms the utility's rate base, the amount invested in assets dedicated to service, and the capital structure underlying the financing of these assets, which includes a deemed common equity component. The Board also sets the rate of return investors are eligible to earn and the revenue required by the utility to pay its expenses and earn the allowed rate of return.

The principle behind establishing the rate of return on a utility's debt and equity capital is that it should equal the corresponding rate of return that a comparable firm with a similar capital structure, facing similar aggregate business and financial risks, would expect to experience. In preparing an application for rates the utility takes into account its operating costs, taxes, depreciation and valuation of rate base. The utility then forecasts its required cost of capital. This forecast reflects the utility's estimate of the required return which it needs to generate in order to compensate investors fairly for the use of their capital and to attract new capital if necessary. The return on debt is a relatively straightforward exercise which involves an analysis of the effective cost of both current and planned debt issues. Generally the most contentious issues concerning a utility's cost of capital are the proposed ROE and capital structure.

Between rate hearings there is the possibility that there may be substantive changes to the utility's financial status due to taxation changes, market upheavals or changes in the corporate structure of the individual utility. Should this occur, under the present operating practices, the utility, other intervenors or the Board may initiate proceedings. These proceedings may lead to the Board holding an interim hearing to grant relief to either the utility or its customers.

There are four main approaches that are traditionally used by experts during rates proceedings to establish a fair ROE. The Comparable Earnings ("CE") Test, Discounted Cash Flow ("DCF") Test, Capital Asset Pricing Model ("CAPM") and Equity Risk Premium ("ERP") Test are all used in varying degrees to formulate an opinion regarding a fair return to investors for the test year. Parties have generally relied on a combination of these models to establish a utility's appropriate ROE. In a combined approach, the Board and experts before it have assigned different weights to the results of the various tests in order to give more significance to those models which they consider to be most relevant. In recent hearings, experts have relied principally on ERP, followed by CE and then DCF. The CAPM is typically given the least weight, if it is relied on at all.

2.1 Comparable Earnings Test

The comparable earnings method is based on the concept of the opportunity cost of investing in a specific utility. The investor compares, over a selected period, the rate of return on book equity that is expected from the utility in question with other regulated and non-regulated enterprises of similar

risk and operating characteristics. In addition to data availability, there are a number of criteria which are used to identify comparable companies. These include industrial classification, corporate longevity, bond ratings, coverage ratios, ROE volatility, and dividend policies. Once a suitable group of companies has been selected, an appropriate time period must be determined over which the average return on equity is measured. Once historical ROEs are determined for the comparable firms, an adjustment may be required to account for any differences in risk between the regulated utility and the sample of comparable firms as well as to account for how test-period conditions may differ from those in the past. The CE test is generally used as a yardstick for measuring a utility's proposed rate of return against those of similar investment opportunities.

Advantages and Disadvantages of the Comparable Earnings Test

The main advantage of using the comparable earnings method is its reliance upon actual data which is readily available to, and commonly used by, investors. The financial data facilitates an open comparison of the regulated utility with comparable (usually) non-regulated enterprises. There are three primary disadvantages of relying upon the CE test. The first difficulty involves the assembling of an acceptable list of comparable companies against which to assess the regulated utility. This process is subjective and open to interpretation and criticism. The second concern involves the selection of a suitable time period from which to draw historical evidence. The selected period may possibly bias the results. Thirdly, most of the data contained in the analysis is historical. The historical results provide no assurance of future performance and the analyst's adjustments to address this weakness are themselves largely subjective.

2.2 Discounted Cash Flow Test

The discounted cash flow method is intended to measure the cost of equity from the perspective of attracting new capital. The DCF method discounts the future stream of income that asset will generate. It is an attempt to estimate the present market value of a security based on its expected future earnings. The discount rate is the return on equity that equates the current price of the stock with the present value of its forecasted dividend stream.

The DCF model estimates the present value of a stock using two variables - current dividend yield and the expected long-run growth in the firm's earning power - in addition to the company's cost of equity. The cost of equity is, in turn, estimated by dividing the dividend rate by the market price and then adding a factor which reflects the anticipated long-run growth rate. The use of the DCF method requires the following assumptions: shares trade at prices close to their equilibrium, intrinsic values; the current cost of equity derived from the DCF equation is unique to a set of underlying assumptions specific to a company's strategic direction; and a company's on-going earning power, and not asset/liquidation value, is considered to be the source of value to the investor.

Advantages and Disadvantages of the Discounted Cash Flow Test

The advantages of using the DCF method are that it takes into consideration market and investor expectations and it relies upon published financial data including dividend rates and market prices. A general disadvantage of this model is that previous growth experience is not necessarily indicative of actual or expected future growth. A specific disadvantage to the Board using the DCF approach is that the common shares of the OEB-regulated utilities are no longer traded on the open market and, hence, only non-regulated company data is available to perform the test. This precludes the acquisition of the market data required to undertake a utility-specific discounted cash flow analysis. It is for this and other reasons that the DCF test has not generally been relied on by experts or the Board in determining the ROE for the Ontario LDCs.

2.3 Capital Asset Pricing Model

The capital asset pricing model relies on the assumption that investors diversify their investment risk across numerous portfolio holdings. The risk of the total portfolio is then less than the weighted-average risk of its constituent securities. An individual security's risk can be divided into two parts: (a) specific risks unique to the particular stock/company and (b) general market or systematic risks related to the movement of the overall market. Portfolio theory holds that investors can greatly reduce these company-specific risks through portfolio diversification. If a predominance of investors adopt this approach, then the market will reward investors only for bearing market/systematic risk, and there will be no reward, in the form of a higher expected return, for bearing company-specific risks.

The measure of a stock's sensitivity to market risk is known as "beta". Beta measures the degree to which a stock's return and the performance of the market are synchronized. The more volatile a stock's return, relative to the market, the higher is its beta risk. The CAPM quantifies the additional return the investor requires for the incremental beta risk and formalizes this risk-return relationship. The required return under the CAPM is expressed as the sum of (a) the return from a riskless investment and (b) a risk premium that is proportional to the security's market/beta risk. The CAPM is therefore essentially a variant of the ERP test where the base debt rate is a risk free rate and the security risk premium is gauged relative to beta risk only.

As with the other models reviewed, there are a number of assumptions which are made when using the CAPM. These include requirements for capital markets to be competitive and efficient, and for investors to be rational profit-maximizers and hold diversified portfolios.

Advantages and Disadvantages of the Capital Asset Pricing Model

One attraction of the capital asset pricing model is that historical data for estimating the financial inputs of the equation are readily available for public companies. The beta values of firms that are actively traded on an open market are widely known by the investment community. CAPM weaknesses are primarily attributed to its exclusive reliance on beta risk, when many academics and practitioners believe that other aspects of risk, and other company characteristics, may influence investor return requirements. The CAPM also shares a similar limitation with the DCF model regarding its applicability to OEB proceedings. The fact that the OEB-regulated utilities are not traded on the market precludes the calculation of the beta value required to undertake the CAPM cost of equity analysis directly for these companies. In addition, analysts differ considerably in their estimates of the relevant market-average risk premium, which is a vital input to the CAPM cost-of-equity calculation.

2.4 Equity Risk Premium Test

The equity risk premium test is also 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 ERP 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 ERP evidence and forward-looking considerations.

Advantages and Disadvantages of the Equity Risk Premium Test

An advantage to using the ERP approach is that bond yield data are widely available and publicly known. The ERP method is also conceptually easy to understand. A disadvantage of using the ERP methodology is that the calculation of the premium is contentious since the proper estimation of the historical equity costs, on which it is based, is a matter of debate. In addition, historical-average risk premium calculations are time sensitive and subject to considerable volatility from period to period.

Chapter 3: THE CONCEPT OF A FORMULA-BASED RATE OF RETURN

The concept of a formula-based rate of return refers to a method for determining a utility's ROE using a standard mechanism which can be applied to more than one utility under a regulatory body's jurisdiction.

Advantages and Disadvantages of Formula ROE

The primary advantage of a formula-based rate of return is the simplification of the hearing process. Based upon a numerical equation, formulaic ROEs have the advantage of being relatively free from conflicting interpretation and being readily understood by all participants. Returns based on generic formulas also reduce the need for complex, annual risk assessments, while still reflecting major changes in the capital markets. A formula-based ROE should reduce the length and cost of a hearing by virtue of eliminating the current process of reviewing the LDC's ROE proposal and the intervening parties' response to the company's proposal. It also removes the need for competing factions to hire multiple expert witnesses to support divergent views. A functional ROE formula should be capable of producing a rate of return that approximates the result which would have been produced through the traditional hearing process.

There are a number of potential disadvantages of formula-based ROE mechanisms; however, if adequately controlled for, they can be minimized. Establishing the initial parameters of the generic formula (as implied in the initial ROE and the subsequent adjustment mechanism) 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 results of the formulaic ROE mechanism. The use of an inappropriate initial ROE will either inflate or understate subsequent rate determinations. A second consideration which must be dealt with is that a formula ROE generally relies predominately on the equity risk premium method to the exclusion of other methods and, hence, sacrifices the unique contributions of these other approaches. A further potential challenge in setting a formula-based ROE is adjusting for the impact of timing differences for utilities with different year-ends. Finally, a move to formula-based ROEs may restrict a regulator'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.

Chapter 4: EXPERIENCE IN OTHER JURISDICTIONS

Three regulatory bodies in Canada currently use a formula-based, generic method for determining the rate of return on common equity ("ROE") for natural gas utilities: the British Columbia Utilities Commission ("BCUC"); the National Energy Board ("NEB") and, The Public Utilities Board of Manitoba ("PUBM"). Below is an overview of the experience of each of these jurisdictions with rate of return formulas.

4.1 British Columbia Utilities Commission

The BCUC regulates the rates charged by natural gas and electric utilities under its jurisdiction. The regulatory procedure for establishing just and reasonable rates is similar to that followed by the OEB and has traditionally included a detailed examination of a utility's cost of capital ("COC") evidence during the public hearing process. The BCUC was the first regulatory agency in Canada to examine the applicability of a generic, formula-based approach to setting a natural gas or electric utility ROE as a means of improving the efficiency and effectiveness of the regulatory process.

Procedural Matters

In late 1993, the BCUC issued an Order requesting submissions from all interested parties with respect to the holding of a joint hearing to deal with the rates of return on common equity for Pacific Northern Gas Ltd. ("PNG") and BC Gas Utility Ltd. ("BC Gas"). A pre-hearing conference was held in January, 1994, during which interested parties expressed the view that a joint hearing would be beneficial. Subsequently, West Kootenay Power Ltd. ("WKP") requested and received permission from the BCUC to be included in the joint proceeding.

A further Order was issued by the BCUC which indicated that a public hearing into the appropriate rate of return on common equity and capital structure for BC Gas, WKP and PNG would commence on April 5, 1994 and identified the following issues to be addressed:

a) What is the appropriate rate of return on common equity to be awarded each utility?;

b) What is the appropriate capital structure for each utility?;

c) Should future joint hearings set the capital structure and rate of return on equity for individual utilities or should it be set for a phantom "low risk" utility only?;

d) If the rate of return for the individual utilities are to be set, for what time period should the premium awarded each utility apply, i.e. should the premiums be determined annually or for a longer period of time?;

e) If the premiums are to last for more than one year, how should the rate of return on the phantom utility be adjusted to reflect changes in the financial climate, i.e. changes to the long term bond rate?; and

f) When should the joint hearing on ROE and capital structures be held, e.g., late fall of the preceding year?

The oral portion of the hearing was segmented into two phases. Phase A considered the development of a ROE for a benchmark set of low risk, high grade utilities. It also examined the feasibility of an automatic adjustment mechanism for ROE and addressed the broader issue of the future scope and timing of generic ROE proceedings. Phase B dealt with the detailed issues of risk profile, risk premium levels and appropriate capital structures for each specific utility.

The hearing commenced on April 5, 1994, and the evidentiary portion was concluded on April 15, 1994. On June 10, 1994, the BCUC issued its Decision, the highlights of which have been summarized below.

Benchmark ROE

The BCUC heard evidence from four different expert witness panels concerning the appropriate ROE for a benchmark set of utilities. All of the expert witnesses presented an economic forecast for 1994 and 1995 upon which their specific ROE recommendations were based. Expectations regarding long-term Canada bond yields were quite similar and did not differ substantially from the BCUC's determination of 7.75 percent for 1994.

There was also much unanimity with respect to the general principles that should govern the setting of a utility ROE. The expert witnesses and the BCUC agreed that a fair return is one which (I) permits the attraction of new common equity capital on reasonable terms; (ii) maintains the financial integrity of the utility; and, (iii) is commensurate with the returns being earned by other enterprises of similar risk.

There was a significant difference of opinion among the witnesses, however, concerning which tests should be applied to determine the benchmark ROE and how the results of each test should be determined. A summary of the recommendations of each expert witness panel is shown below in Table A.

Table A
Summary of ROE Recommendations for BCUC Proceeding
(%)

	WKP (Evans)	BC Gas/PNG (Sherwin/ McShane)	Wholesale Customers (Waters)	CAC (Booth/ Berkowitz)
Comparable Earnings				
Test Results	12.25-12.75	11.25-12.50	NA	NA
Weighting	medium	30	NA	NA
Discounted Cash Flow				
Fair Rate of Return	12.40-13.30	12.60	9.90	10.23
Weighting	low	10	50	50
Equity Risk Premium				
Fair Rate of Return	11.90-12.50	12.70	10.50	9.81
Weighting	high	60	50	50
Recommendation	**12.40-12.90**	**12.25-12.75**	**10.00-10.50**	**10.50**

The comparable earnings test was rejected by two of the expert witnesses due to its reliance on accounting data, its sensitivity to sample selection procedures and the view that the relationship between comparable earnings and fair ROE is unproven. The two witnesses who did use the CE test used various decision criteria in selecting a sample of publicly traded companies that were judged to be of similar risk to utilities. Based on historical data over a specified time period, the rate of return on book equity was then estimated for the sample group and various adjustments were made for judgmental factors in arriving at a fair ROE.

All of the experts used the results of the DCF test in arriving at their recommendations; however, the weighting given to this test varied significantly. Erratic trends in investor growth expectations and experienced growth performance, and the difficulty in obtaining objective measurements of investor growth expectations, led Dr. Evans and Dr. Sherwin and Ms. McShane to place little reliance on the DCF test. All of the expert witnesses presented their conclusions regarding investors' required rate of return based upon their analyses of a sample group of companies. ROE estimates using the DCF test ranged from 9.90 to 13.3 percent.

Each expert presented the results of his equity risk premium analysis based on his interpretation of a number of market studies that have been conducted over different time periods. Adjustments were then made to the resulting market equity risk premium for factors such as flotation costs, market trends and the relative risk of low risk utilities versus the market as a whole to arrive at an estimate of the benchmark utility risk premium. Utility risk premium estimates ranged from 1.6 to 5 percent.

Based upon a review of the evidence, the BCUC determined that the required rate of return on equity for a low risk, high grade utility was between 10.5 to 10.75 percent for 1995. In reaching its decision, the BCUC placed primary reliance on the equity risk premium test. The BCUC was of the view that a DCF test based on a sample of low risk industrial customers was of limited use in the prevailing economic climate and also expressed concern regarding potential circularity problems with the test. The BCUC also discounted the results of the comparable earnings test due to the fact that it does not measure the opportunity cost of capital which, in its opinion, is an important consideration in determining the appropriate ROE. The BCUC concluded that the market risk premium was between 4.5 and 5 percent and that high-grade utilities are approximately one-half as risky as the market as a whole. A benchmark ROE of 10.75 percent was ultimately set for rate making purposes which incorporated a 50 basis point cushion to cover the risk of dilution and cost of new share issues.

Utility Capital Structure and ROE

Each of the applicants presented evidence concerning the utility-specific risk premium and capital structure that should be set. A number of intervenor groups also presented evidence with respect to WKP, BC Gas and PNG. The evidence of all parties consisted of a detailed examination of the company's risk relative to the benchmark utility. The general position of each of the utilities was that company risk was either increasing or staying constant and that the common equity component and risk premium should be upwardly adjusted to reflect this trend. Intervenor groups generally held an opposite view and suggested that the utility recommendations were overstated.

The BCUC made specific findings concerning ROE and capital structures for each of the three applicants. In addition, the rates of Centra Gas - Fort St. John District ("Centra-FSJ") and the British Columbia Power and Hydro Authority ("BC Hydro") were also affected by the Decision. In an earlier Decision, the BCUC accepted the premise that the appropriate ROE to be allowed Centra-FSJ would be the simple arithmetic average of the ROEs allowed PNG and BC Gas. In the case of BC Hydro, the BCUC is required to set a rate of return on equity which allows BC Hydro to achieve an annual ROE equal to that allowed on a pre-income tax basis by the most comparable investor-owned energy utility. This comparable utility was later determined to be BC Gas.

Adjustment Mechanism

Evidence was also presented concerning the use of an automatic mechanism to adjust ROE for changes in capital market conditions. Dr. Sherwin and Ms. McShane, on behalf of BC Gas, presented a detailed methodological approach to adjusting ROE based on the equity risk premium technique. All of the other parties generally agreed with the BC Gas proposal and suggested changes to specific elements of the formula, rather than proposing alternative methods. The main areas of disagreement were the nature and quantification of the relationship between long-term Canada bond yields and equity risk premium and the time period over which the adjustment mechanism should apply. In its Decision, the BCUC adopted the basic principles put forward by BC Gas for an automatic adjustment mechanism (i.e. allowed ROE to be varied in response to changes in long-term Canada bond yields). An excerpt from the BCUC Decision which describes the operation of the mechanism can be found at Appendix A of this report.

The BCUC was of the view that it was unnecessary to include an allowance for an inverse relationship between interest rates and the equity risk premium in the formula since it appears the postulated relationship is only significant during inflationary times. In its Decision, the BCUC indicated that the period over which the adjustment mechanism would apply would be contingent on its performance in the upcoming year. The BCUC also noted that the governing legislation permits the utilities or other parties to complain at any time if they are not satisfied with the results of the generic ROE process. The merits of such complaints will be assessed by the BCUC to determine if an ROE hearing is required. In a recent decision, the BCUC indicated that it was satisfied with the performance of the generic ROE method and would continue to use it.

Future Generic ROE Hearings

The BCUC indicated that it also wished to hear evidence concerning the future processes or mechanisms that might be utilized to improve the determination of ROE and capital structure issues in future years. The testimony focussed on whether a generic hearing process should be limited to establishing the ROE for a benchmark set of low risk, high grade utilities or should be extended to include an examination of utility-specific cost of capital issues. Most of the parties were of the view that the setting of utility-specific ROE and capital structure would best be addressed through a separate proceeding. Evidence was put forth on factors such as the extent of potential cost savings, the parties to whom cost savings are likely to accrue, the need for consistent treatment of utilities, the likely quality of the evidence and the impact on the potential for negotiated settlements. The BCUC stated that its predisposition was to follow the model of a generic hearing for the setting of benchmark ROE only, and to utilize a separate regulatory process for the setting of utility-specific ROE and capital structure. However, the BCUC also noted in its Decision that it was unwilling to make an irreversible decision with respect to the timing and/or scope of future generic hearings and that it intended to monitor similar regulatory initiatives that were taking place in other jurisdictions. The BCUC recently advised interested parties of its intention to conduct a general review of the mechanics of its formula-based rate of return process. The purpose of this review is to determine whether any changes to the formula are needed based on the BCUC's experience of the last three years and on developments in other jurisdictions.

4.2 National Energy Board

The NEB approves the tolls for all inter-provincial and international pipelines in Canada. Companies are not specifically required by the *National Energy Board Act* to make formal rate applications that would be the subject of notice to interested parties and probably of formal hearings. However, tariffs must be filed and approved by the NEB and the NEB may request a full rate application and public hearing of an informally filed tariff item if there are important issues of concern.

The COC for pipelines under its jurisdiction is also set by the NEB as part of the tariff review. Due to the flexible nature of the regulatory structure some pipelines have had their COC reviewed on a regular basis as part of company-specific toll proceedings, while other pipelines have only occasionally appeared before the NEB for a detailed COC examination. The NEB had two main concerns with the traditional approach:

- COC evidence tended to be much the same from one hearing to the next, with the financial parameters changing but the techniques and interpretations for determining rates of return on common equity remaining essentially the same. This concern led the NEB to consider what potential economies could be realized from the implementation of a formulaic adjustment mechanism for rate of return on common equity.

- Rates of return for toll hearings relied on financial market data which fluctuated during and between rate hearings, causing the rates of return to vary across companies simply because they were set at different times. In order to address this concern, the NEB was attracted by the concept of a generic hearing where all pipeline companies would make their cases simultaneously using a consistent set of financial parameters.

Procedural Matters

In March 1994, the NEB issued Hearing Order RH-2-94 which outlined its intention to hold a multi-pipeline COC hearing. Eight of the Group 1 pipelines under NEB jurisdiction [Alberta Natural Gas Company Ltd ("ANG"), Foothills Pipe Lines Ltd. ("Foothills"), Interprovincial Pipe Line Inc. ("IPL"), TransCanada PipeLines Limited ("TransCanada"), Trans Mountain Pipe Line Company Ltd. ("TMPL"), Trans-Northern Pipeline Inc. ("TNPI"), Trans Quebec & Maritimes Pipeline Inc. ("TQM") and Westcoast Energy Inc. ("Westcoast")] were directed to file submissions in respect of their COC to be included in tolls commencing January 1, 1995. The following issues were identified in the Hearing Order:

a) What is the appropriate capital structure for each of the pipelines?;

o) What is the appropriate rate of return on common equity for each of the pipelines? Should the same rate of return on common equity be awarded for all pipelines?;

c) How often should the pipelines' cost of capital be reviewed? What are the specific factors that would trigger a subsequent review of the pipelines' cost of capital?; and,

d) Subsequent to the initial proceeding, what simplified procedure should be implemented to effect an annual adjustment to the rate of return applicable to the pipelines between cost of capital proceedings?

The RH-2-94 Hearing Order also indicated that pipelines which presented an uncontested settlement that was acceptable to the NEB two weeks prior to the hearing, on either their capital structure or their rate of return on common equity, would be exempted from having to deal with these matters in the proceeding. One pipeline, TNPI, submitted such a settlement and was exempted from further participation in the hearing.

The oral portion of the hearing was divided into two phases, similar to the BCUC proceeding. The first phase addressed the issue of the appropriate rate of return on equity for a benchmark pipeline as well as the matter of a simplified annual adjustment mechanism which would be applied to pipelines between cost of capital reviews[1]. The second phase of the hearing addressed the pipeline-specific COC issues including capital structure and rate of return where a pipeline or intervenor asked for a rate of return on equity that was different from that of a benchmark pipeline. A total of 29 hearing days were spent on the oral portion of the proceeding.

In March, 1995 the NEB issued its Decision with Reasons for RH-2-94. A summary of the NEB's findings on each issue is included below.

Benchmark ROE

The benchmark pipeline refers to a hypothetical utility whose overall investment risks are characteristic of a low-risk, high grade regulated pipeline. The NEB set the appropriate ROE for the benchmark pipeline after reviewing evidence from six expert witness panels on the application of the comparable earnings, the discounted cash flow, and the equity risk premium techniques. Many of the expert witnesses appearing in the NEB's RH-2-94 proceeding also presented similar testimony at the earlier BCUC proceeding. A summary of the recommendations put forward by each of the expert witnesses is provided in Table B.

[1] The NEB's intent was to conduct detailed examinations of the pipelines' COC only when significant changes had occurred in financial markets, business circumstances or in general economic conditions.

Table B
Summary of ROE Recommendations for NEB RH-2-94 Proceeding
(%)

	TransCanada, Westcoast, Foothills & ANG (Sherwin/ McShane)	IPL & TMPL (Evans)	TQM (Morin)	CAPP (Booth/ Berkowitz)	Ontario & IGUA (Cannon)	COFI/ Methanex/ Cominco (Waters)
Comparable Earnings						
Test Results	11.50-12.00	12.25-12.75	11.53	NA	10.65-11.15	NA
Weight	15	25	equal	NA	40	NA
Discounted Cash Flow						
Fair Rate of Return	12.25	12.50-12.90	10.81-12.56	10.33	9.40-10.75	NA
Weight	10	5	equal	50	20	NA
Equity Risk Premium						
Fair Rate of Return	13.10-13.70	13.30-14.00	13.35-13.98	10.28-10.39	10.20-11.65	11.00-11.50
Weight	75	70	equal	50	40	exclusive
Recommendation	**13.00**	**13.00-13.50**	**13.00**	**10.50-11.00**	**10.75-11.25**	**11.00-11.50**

Four of the six expert witnesses gave some weight to the comparable earnings technique; however, all of the witness panels noted the practical shortcomings of this methodology. These shortcomings included the reliance on accounting rather than market data and the negative impact on earnings of Canadian industrial companies due to the economic recession and ongoing corporate restructuring. However, Dr. Cannon, the witness for the Ontario Ministry of Environment and Energy ("Ontario") and the Industrial Gas Users Association ("IGUA"), relied heavily on the comparable earnings test based on his view that it is less susceptible to interest rate volatility.

All but one expert witness gave some weight to the discounted cash flow technique. The witnesses concurred that the DCF model is theoretically sound, but noted a number of practical limitations in applying the test to industry and utility data. The primary concerns were in obtaining a reliable estimation of investors' expectations regarding dividend growth rates and in the reliance on the utility's share price, which can be subject to unreasonable expectations or fears.

The equity risk premium technique received primary weighting by most of the expert witnesses appearing at the RH-2-94 proceeding. Long Canada bond yield forecasts for 1995 ranged from 8 to 9.25 percent based on each witnesses' interpretation of economic and political factors. Risk premium estimates for the market as a whole ranged from 3.5 to 6.9 percent and were generally lower for intervenors' witnesses and higher for pipelines' witnesses. There was little consensus amongst participating parties regarding the relative risk of the benchmark pipeline compared to the

market as a whole. The range of estimated relative risks was between 45 and 70 percent. Certain parties also presented evidence in support of an additional adjustment for financing flexibility. These witnesses recommended an additional allowance of between 20 and 125 basis points to cover financing costs such as issuance expenses, market pressure and market breaks.

In its Decision, the NEB concluded that the comparable earnings test was not a reliable method to use in setting the benchmark ROE for 1995 due to the adverse effect on corporate profitability from the 1990/91 economic recession and continuing corporate restructuring. The NEB noted that under different economic circumstances the results of the test may be more useful, but assigned little weight to the comparable earnings technique in the RH-2-94 proceeding. With respect to the DCF technique, the NEB accepted the views of those witnesses who pointed out the difficulties in estimating investors' expected dividend growth rate and thus gave little weight to the test. Primary weight was therefore given to the equity risk premium test. The NEB determined that the appropriate forecast for long Canada bonds was 9.25% for 1995 based on published short and long-term interest rate forecasts and the expectation of inflationary pressures. The ERP for the market as a whole was found to be 450-500 basis points. After adjusting for the relatively lower risk of the benchmark pipeline and adding a modest allowance for financial flexibility, the NEB arrived at an all-inclusive equity risk premium of 300 basis point for the benchmark pipeline. Adding this risk premium to the long-term bond rate of 9.25% resulted in a benchmark ROE of 12.25% for 1995.

Unlike the BCUC, the NEB decided that the rate of return on common equity for the benchmark pipeline should be applied to all seven pipelines subject to the proceeding. The NEB's view was that any risk differentials between utilities could best be accounted for through adjustments to the common equity ratio rather than by making company-specific adjustments to the benchmark ROE.

Utility Capital Structure and ROE

Evidence concerning the appropriate pipeline-specific capital structure centred around the various aspects of business risk, the need for financing flexibility and the issue of cross-subsidization. Each of the seven pipelines presented their case for either maintaining or increasing the level of their then current common equity component in order to preserve flexibility in accessing capital markets on favourable terms. The five gas pipelines cited factors such as increased political and regulatory risk, growing gas-on-gas and inter-fuel competition, and the market trend towards short-term contracts as major influences on their respective risk profiles. The risk assessment put forth by the two oil pipelines also referred to growing competitive pressures, political uncertainty and regulatory risk. In addition, supply risk was considered to be a significant factor for oil pipelines relative to natural gas pipelines. Both gas and oil pipelines also suggested that the NEB's RH-2-94 proceeding would result in increased regulatory risk due to the potential for inappropriate ROE's to be earned for extended periods of time.

A number of intervenor groups also led evidence on capital structure which suggested that the risks of pipeline companies were in fact decreasing. These intervenors submitted that factors such as a healthy domestic and import business, ample supply reserves, limitations on alternative transportation and supply, and regulatory shielding mechanisms supported a lower common equity

component. One of the most vocal intervenor groups was the Canadian Association of Petroleum Producers ("CAPP"). which presented a comprehensive series of arguments to dispute each pipeline's position with respect to risk and capital structure.

A number of expert witnesses also provided testimony relating to the relationship between capital structure and cost of capital. The witnesses relied on various theoretical financial models to present their cases since there was a lack of reliable empirical evidence. As a result, the evidence presented was somewhat qualitative and hypothetical in nature.

In its Decision with Reasons, the NEB concluded that determination of business risk is highly judgemental and as such, the implications for common equity ratios cannot be precisely defined. With respect to natural gas pipelines, the NEB considered the degree of operational diversification (i.e., single vs multiple pipelines; transmission vs gathering/processing), the characteristics of the market, the degree of competitiveness and the average length of shippers' contracts to be the most important factors in their evaluation of risk. For oil pipelines, the NEB concluded that the quality and the competitiveness of the markets served by a pipeline are the two most significant risk factors. The NEB concluded by assigning pipelines with similar risk profiles the same equity ratios (eg. TCPL, Foothills, ANG, and TQM deemed at 30%), while others with higher risk profiles were assigned higher equity ratios (eg. Westcoast deemed at 35%).

Adjustment Mechanism

A number of expert witnesses made recommendations to the NEB regarding a simplified procedure for effecting adjustments to the allowed ROE. All parties agreed that if an adjustment mechanism is in place, no hearing to review COC matters would be needed for three to five years, barring any unforeseen market circumstances. All but one of the witnesses were of the view that the appropriate adjustment should be based on the equity risk premium method. A summary of the position of each party is shown below in Table C.

Table C
Summary of Adjustment Mechanism Recommendations for NEB RH-2-94 Proceeding

	TransCanada, Westcoast, Foothills & ANG (Sherwin/McShane)	IPL & TMPL (Evans)	TQM (Morin)	CAPP (Booth/ Berkowitz)	Ontario & IGUA (Cannon)	COFI/ Methanex/ Cominco (Waters)
Bond Yield Forecasting Method	Avg of 3-mnths-out and 12-mnths-out 10-yr Gov't of Canada bond yield forecasts in the Oct. Consensus Forecasts, plus actual 10- to 30-yr spread in third qtr	Avg. of Aug., Sept. and Oct. 12-mths-out and Oct. 3-mths-out 10-yr bond yield forecasts in Consensus Forecasts plus the actual 10-yr to long-term bond spread	Avg 30-yr Gov't of Canada bond yields in Sept.,Oct., and Nov. of current yr	Avg. of June, Aug. and Oct. 12-mths -out and Oct. 3-mths-out 10-year bond yield forecasts in Consensus Forecasts plus 25 bps	Consensus Forecasts or alternate consensus-based forecast, if available	Agree with the mechanism set forth by TransCanada, Westcoast, Foothills and ANG
Adjustment Factor	One-to-one while bond yields are between 7.0-10.0%, 0.5 outside that range	One-to-one over the bond yield range 7.5-9.5% and 2/3 outside that range	0.5 to one	0.8 to one	0.75 to one	0.5 if bond yields are greater than 10%, one-to-one if bond yields are less than 10%
Minimum Change in Forecast	Plus or minus 25 basis points				Plus or minus 25 basis points	Agree with the mechanism set forth by TransCanada, Westcoast, Foothills and ANG
Mechanism Boundaries	Bond yields outside the 7.0-12.0% range, a maximum three to five year duration		Bond yields plus or minus 250 basis points from the current level	Bond yields of plus or minus 200 basis points from current levels or three years	Three years	Agree with the mechanism set forth by TransCanada, Westcoast, Foothills and ANG.

The NEB decided to implement an automatic mechanism, similar to that used by the BCUC, to make yearly adjustments to the approved ROE based on the equity risk premium method. The adjustment mechanism is based on changes in the long-term Government of Canada bond yields, as determined from a formula set by the NEB using published forecasts. Unlike the BCUC, the NEB was of the view that as interest rates change, the risk premium for the benchmark pipeline also changes, though not on a one-to-one basis. The NEB directed that each November, it will subtract the bond yield forecast for the coming test year from the bond yield forecast used in the previous test year. The differences in these forecasts will be multiplied by 0.75 to determine the change in the approved rate of return on common equity for each pipeline. The NEB will notify each of the pipelines of its new approved ROE and direct each company to file new tolls for the coming test year.

The NEB indicated that it considered the mechanism robust over a wide range of interest rates and, unlike the BCUC, did not specify a bond yield range outside of which the mechanism would not operate. The NEB also did not stipulate any minimum required change in forecast bond yield for which the adjustment formula would apply. The NEB indicated that it did not expect to have to reassess the rate of return in a formal hearing for at least three years and that it expected the capital structure for each utility would endure for an extended period of years. The NEB noted, however, that it would be prepared to consider a reassessment of the capital structures in the event of a significant change in business risk, corporate structure or corporate financial fundamentals.

An excerpt from an NEB order showing the calculation of the ROE adjustment mechanism is attached as Appendix B. As indicated in a footnote to Appendix B, the mechanics of the original formula have recently been modified, in response to concerns raised by various parties, to eliminate the rounding provision.

4.3 The Public Utilities Board of Manitoba

The PUBM regulates the activities of Centra Gas Manitoba Inc. ("Centra Manitoba") and Manitoba Hydro, which are the sole respective distributors of natural gas and electricity in the province. The regulatory process is similar to that of Ontario in that just and reasonable rates are established for a test year based on a detailed examination of a utility's cost of service. In 1995, the PUBM moved from an historical test year basis to a future test year basis for the purposes of setting rates. The PUBM sets a ROE for Centra Manitoba only since Manitoba Hydro is a Crown-owned utility.

Procedural Matters

Unlike the experience of the BCUC and NEB, the review of a formula-based ROE by the PUBM was instigated by the utility rather than the regulator. In August, 1994, Centra Manitoba wrote a letter to the PUBM proposing a mechanical formula to adjust its allowed ROE for its current rate application. A full review of its ROE proposal was not necessary, in Centra Manitoba's opinion, since a full ROE hearing had been conducted a year earlier and circumstances had not changed significantly since that time. Centra Manitoba's position was that the prior year's review had provided adequate support and direction to enable parties to evaluate its formula-based ROE proposal. The PUBM accepted Centra Manitoba's position and did not require a full review of the various methodological approaches to determining an appropriate ROE as part of the proceeding.

The Centra Manitoba Proposal

The basic formula put forth by Centra Manitoba was as follows:

ROE = Benchmark long Canada bond rate
+ change in long Canada bond rate from benchmark rate
+ implied spread between long Canada bond rate and ROE

Centra Manitoba estimated the benchmark long Canada bond yield by taking the average of the rates recommended by expert witnesses at the previous hearing. This average consisted of an estimate

from Centra Manitoba's witness based on the prevailing long Canada spot rate and a forecast long Canada bond yield from CAC/MSOS's expert witness. The result was then compared to the forecast long Canada bond rate for the 1995 test year which was determined based on a review of Consensus Forecasts. Centra Manitoba derived an implied spread from the previous PUBM decision by subtracting its estimate of the benchmark long Canada bond yield from the previous ROE approved by the PUBM. The utility also proposed to round the ROE to the nearest 25 basis points, resulting in a requested ROE of 12.25 percent, based on a long Canada bond yield forecast of 9.12 percent for 1995.

Centra Manitoba's expert witness from Scotia McLeod testified that, in her experience, equity returns move in "lock-step" with changes in the benchmark long Canada bond yield for yields of less than 10 percent. The witness also referenced the returns of comparable companies in other jurisdictions, the need to maintain financial integrity and recent trends in long-term interest rates as further support for Centra Manitoba's requested ROE.

Centra Manitoba also asked the PUBM to approve the use of a formula for the 1996 test year, provided that the forecast long Canada bond yield (as per the November, 1994 Consensus Forecast average) was within plus or minus 2 percent of the 1995 forecast.

Position of Intervenors

The Consumers' Association of Canada and the Manitoba Society of Seniors ("CAC/MSOS") filed evidence from its witnesses, Drs. Booth and Berkowitz, which critiqued Centra Manitoba's formula-based ROE proposal and presented a number of alternatives to Centra Manitoba's requested ROE.

The CAC/MSOS witnesses objected to the use of a spot rate for long Canada bonds provided by Centra Manitoba's witness the previous year as a basis for establishing the implied spread. In addition, they challenged Centra Manitoba's contention that a one-to-one relationship exists between changes in long Canada bond rates and ROE. As an alternative, Booth and Berkowitz suggested that an adjustment factor of 80 percent is more appropriate. CAC/MSOS also submitted that the formula-based approach to setting Centra Manitoba's ROE should be postponed and should only be considered in conjunction with a full ROE hearing.

The PUBM Findings

In its decision, released in May, 1995, the PUBM approved a formula-based approach for setting the equity rate of return for Centra Manitoba. The PUBM noted that CAC/MSOS generally concurred with the formula methodology proposed by Centra Manitoba and thus the PUBM was not persuaded by CAC/MSOS's argument to delay implementation of such an approach. The PUBM also rejected much of the evidentiary basis of CAC/MSOS's recommended ROE for Centra Manitoba on the basis of questionable comparative measures and unsubstantiated positions.

The PUBM did agree with CAC/MSOS, however, on the issue of how the implied spread between the long Canada bond rate and ROE should be determined. The PUBM concurred that it was inappropriate to make reference to the spot rate which was in effect in November 1993 to determine the implied spread inherent in the allowed ROE for 1994. An implied spread of 3.0 percent, based on the previous year's long Canada bond forecast of the CAC/MSOS witness, was therefore approved for the purposes of the application. The PUBM noted that it expected a full review of the issue of appropriate implied spread at the next full ROE hearing.

The PUBM noted that prior experience had shown that changes in long Canada bond yields do not necessarily translate into a similar corresponding change in ROEs for Centra Manitoba. Although the PUBM was of the view that an adjustment factor is appropriate, it found that little corroborative evidence had been presented on what the adjustment factor should be. The PUBM noted that CAC/MSOS's witnesses acknowledged that their recommendation of an 80 percent adjustment factor was somewhat arbitrary, but nonetheless accepted the CAC/MSOS proposal for the purposes of setting Centra Manitoba's 1995 ROE.

The PUBM decision stipulated that a full ROE hearing would be required within two years (i.e. no later than in conjunction with the 1997 test year application). In addition, the PUBM found that the formula will apply only as long as the forecast yield on long Canada bonds is within a level of 8 percent plus or minus 2 percent. The PUBM also reserved its right to require a full ROE hearing prior to the 1997 test year, if circumstances were to change significantly.

Centra Manitoba did not file a rate application for the 1996 test year on the grounds that it expected no material change in its revenue requirement. The 1996 revenue requirement was forecast based on a revised ROE calculated using the formula approach previously approved by the PUBM. In December, 1995, Centra Manitoba summarized its position in a letter to the PUBM as follows:

> At the last GRA the issue of adjusting the ROE based on the formula, and the need for an automatic change to revenues was discussed, although Board Order No. 49/95 is silent on the subject. Our position then, as it is now, was that an ROE change, within the approved long Canada band of 6% to 10%, would not automatically adjust rates, but that after consideration of all factors the Company would seek the Board's approval to change or not change rates. By virtue of the gas cost application before the Board, the Company has applied for the change in rates it deems necessary, and will, as stated previously, file a full report outlining 1996 revenue requirement.

As a result of this somewhat unexpected situation, the PUBM declared Centra Manitoba's 1996 rates to be interim. The PUBM subsequently undertook a review of Centra Manitoba's 1996 rates in conjunction with the Company's 1997 test year rate application.

4.4 The U.S. Experience

The use of formula-based ROE in certain U.S. jurisdictions has been aimed at reducing the number of and frequency of rate cases. The interest and impact of using a generic rate of return formula has met with varying degrees of success among federal and state energy regulators that have experimented with it or have put it into operation. A number of commissions, such as the Federal Energy Regulatory Commission and the New York Public Service Commission, have found that the use of negotiated settlements is a more effective means of establishing a fair rate of return. Formulaic ROE mechanisms in these jurisdictions are therefore being abandoned in favour of the multi-party settlement process. Other U.S. states, such as Florida, Alabama and Mississippi, have adopted different variations of rate of return formulas including banded ROE mechanisms and benchmark returns. In these jurisdictions, the setting of ROE is often only one component of a broader, more incentive-based regulatory approach.

Chapter 5: DEVELOPMENT OF BOARD DRAFT GUIDELINES

The OEB has developed draft guidelines on the application of a formula method for the purpose of determining the ROE of the Ontario natural gas distributors based on the Equity Risk Premium test. The guidelines also provide for regular adjustments to the allowed ROE to reflect changes in the forecast of Canadian long bond rates. Implementation of the ERP methodology should initially be undertaken for Consumers Gas as part of the E.B.R.O. 495 proceeding relating to fiscal 1998 rates, effective October 1, 1997. ERP's for Union/Centra (or the merged Union) and NRG will be established as part of each utility's next rate application.

5.1 Rationale for Draft Guidelines

There are two components to the guidelines: (I) adopting a formula basis for determining the ROE annually for all gas distributors; and, (ii) adopting the ERP test for both establishing the base ROE and making annual adjustments. The rationale for each of these components is discussed below.

Rationale for Adopting Formula ROE

There are three primary reasons for adopting the formula approach to setting returns on common equity. The first is the benefits to the hearing process and attendant regulatory costs due to reduced time in the hearings and the elimination of the need for expert consultants. The second is the weight of experience from other Canadian jurisdictions that have reviewed the issue and adopted a formula-based ERP as the appropriate method of setting ROEs. The third reason for adopting a formula approach to determining the ROE is that it may provide a first step towards formulaic rate making such as incentive rates.

With respect to the first reason, the key benefit to the regulatory process is the potential savings from not having to review ROE extensively in every rate case. Currently, the utilities and intervenors

retain experts to provide opinions and supporting evidence on a range of ROE estimates for each utility. These opinions are generally based on the same tests, with differences resulting from different inputs to the tests and different weighting for the results of each test in formulating the recommended ROE. However, the judgements do not alter significantly from year to year or between utilities' rate cases. Therefore the ratepayer is paying for duplication of effort.

A formula ROE improves the efficiency of the hearing process as significant cost and duplication of effort can be avoided in rate hearings of individual utilities on an ongoing basis. Given the level of similarity from year to year in the test inputs and methods, the only significant variations are usually related to changes in interest rates, profit and inflation expectations, and market conditions. These impacts are most noticeable from year to year in the ERP test as its main input is the government bond rate.

There would also be reductions in hearing time related to examining the issue of the appropriate ROE and reduced time for parties preparing to examine and argue the issue. In a typical rate hearing the cost of equity panels takes approximately 5 days and requires considerable time for arguments due to the technical nature of the issues. Time savings would also be realized by the Board panels under a formulaic approach since deliberation on ROE matters would no longer be required.

The second reason for adopting the change to a formula approach is the fact that, of the three Canadian energy regulators that have considered such a change, all have successfully adopted the formula approach, and in particular, the ERP test. The BCUC and NEB held hearings at which parties were invited to provide their own views on the appropriate formula approach to ROE and generally the parties supported adoption of a formula to reduce duplication of effort and improve efficiency. Parties also saw the formula approach as a way of ensuring consistency among utilities and between fiscal periods.

The final reason for moving to a formula approach to ROE is the potential for changes towards performance-based rates or incentive rate making. If the *Act* is changed, as is currently contemplated in the bill before the legislature, the Board may decide to consider new rate making methods. Many of the incentive and performance-based methods still require an allowed ROE or range for the ROE. Therefore a formula approach that was already in place would provide some experience with the use of formulas to set rates and eliminate the need to develop an ROE formula at the time of changing to an alternate rate making framework.

The Board also considered the applicability of various alternatives to a formula approach. The alternatives to adopting a formula approach are to: maintain the status quo; establish a benchmark ROE using a formula and regularly hear evidence on the appropriate utility-specific adjustment; and/or rely on a settlement process. The first of these reasons was not entertained because of the Board's desire to reduce costs and improve efficiency in the regulatory process. Maintaining the status quo would perpetuate the current duplication of effort and incurrence of significant costs associated with the hearing of ROE evidence.

With regard to the second alternative, the Board notes that the BCUC and NEB both calculate the ROE for a fictional benchmark utility as the starting point for the use of their methods of formula ROE. However, the Board is of the opinion that the inclusion of this step would not be particularly relevant to Ontario's current situation given that: (i) there are now only 3 gas utilities regulated by the OEB; (ii) the cost of capital impacts of a newly merged Union/Centra will likely require a detailed, independent review anyway; and, (iii) possible industry restructuring may result in significant changes to the risk profiles (and therefore allowed ROEs) of the LDCs. In the Board's view, it is both unnecessary and impractical to rely on a review of risk profiles relative to a hypothetical benchmark utility.

As noted earlier, the literature on regulatory treatment of ROE in the United States indicates that a number of jurisdictions have rejected formula or generic ROE determination in favour of reliance on negotiation between the parties. However, in the Board's view, the settlement approach does not capture the maximum savings given the fact that evidence from all the experts would still be required in order to provide parties with the basis for their negotiation. In recent Board hearings the ROE has in fact been agreed to by the parties; however, there is always a risk that the Board will determine that evidence should be heard which may lead to arguments on the issue. Also, under this option the Board would still be the arbiter if the issue were not settled and therefore evidence would have to be presented and all efficiencies would be lost. The Board has therefore concluded that the formula approach is the best way to ensure savings are achieved by eliminating the need to solicit, distribute and hear evidence, negotiate, cross-examine and argue the issue of ROE.

Rationale for Choosing ERP

In arriving at its conclusion to adopt the ERP as the method of establishing and adjusting the ROE for the natural gas distributors, the Board has considered all the major available financial tests. The Board has also considered the possibility of using a combination of the current methods and giving a particular weight to each. A discussion of these alternatives and of the reasons for adopting an exclusive ERP method follows.

In recent hearings the experts retained by the utility and intervenors have all used similar methods for determining a ROE estimate; it is predominantly the statistical data and weighting given to the results of the tests that differs. In Chapter 2 there is a discussion of the pros and cons of each of the four methods currently employed before the Board for the purposes of determining ROE. Each expert typically relies on each of the methods in varying degrees. As is pointed out in that discussion, all four methods are subjective in some fashion.

In the case of the Comparable Earnings approach there are two principal concerns. The first and most obvious issue is the definition of a representative sample of industrials. Experts often differ on the size of the sample and on the particular companies to be included in the sample. In order to use this approach as an ongoing tool there must be a specific set of businesses in the sample. To ensure that consistency of the sample is maintained, the Board would have to undertake an ongoing analysis of the selected firms so that any of the sample companies that became inappropriate could be replaced. Thus, all potential replacement companies would also have to be tracked. Such a

process would entail a significant amount of research and monitoring of the marketplace by the Board. Other key areas of discrepancy between the experts regarding the CE test are normally the time period over which to measure the historical returns of the sample and the adjustments to the historical average returns to reflect forward test year circumstances. Dealing with these issues would add a further level of judgement that would have to be exercised by the Board and would likely lead to frequent challenges from interested parties.

In the case of both DCF and CAPM analyses the fundamental issue would be the lack of market data regarding expected growth and beta risk resulting from the fact that the major gas utilities in Ontario are no longer publicly traded. In the Board's view this lack of data adds a significant degree of subjectivity to the results of both of these tests. The Board also notes that neither test has been relied on very heavily by the experts, or the Board, in recent OEB proceedings.

Applying ERP unquestionably involves judgement and subjectivity; however, it is the Board's view that the requirement for ongoing subjective judgements can be limited by the careful initial setting of the formula. Once risk premiums are determined the only change would be to the forecast bond rate. In the Board's view, the risk premiums will only change if there is a significant change in the utilities' business operations or capital structure, or if there is a material change in the markets. While it is not the Board's opinion that ERP is a more accurate method of determining the ROE, the Board believes that, in comparison with the other ROE tests, the results of the ERP approach generally require fewer judgmental adjustments.

The Board also notes the fact that a formulaic ERP methodology has been effectively implemented in three other Canadian jurisdictions. The pros and cons of each alternative approach were well-canvassed at the NEB and BCUC proceedings and the regulating bodies all came to the same general conclusion regarding the appropriateness of the ERP test. The reasons given by parties and the two regulators in support of ERP relate to simplicity and ease of adjustment due to the minimal number of inputs. The Board's analysis of the ERP tests used by the NEB, BCUC and PUBM shows a high degree of commonality in the approach to setting a generic return on common equity. This analysis is summarized in Appendix C. Given that these three regulating bodies have concluded, after extensive hearings and expert evidence, that the appropriate method is ERP, the Board's formula-based ERP guidelines are a logical and justifiable choice for setting the ROEs for Ontario LDCs.

In developing its guidelines, the Board also considered the alternative of adopting the current approach of experts before the Board which uses a weighted combination of the tests, rather than relying exclusively on the ERP or any other individual test. Given that all the tests cover different pieces of the information relevant to the consideration of a utility's ROE, and that no test is definitive, a combination would provide a more complete picture. Generally, the experts provide a minimum of two and normally three test results. The results are then weighted to give primary reliance to the test each has the greatest confidence in as an estimator of the ROE. In recent cases the ERP has normally been given a weight of 40% to 60%, demonstrating its high acceptance among experts as a reasonable estimator of the ROE.

The Board rejected the use of a weighted combination of tests for two principal reasons which related to the ability to make ongoing adjustments to the ROE. The primary disadvantage with using a combination is that the CE and DCF methods currently used in estimating a ROE are difficult to adjust regularly without considerable judgement and forecasting. This factor, along with the other disadvantages associated with each test that were mentioned earlier - including the minor weight historically accorded to the CAPM test - has led the Board to conclude that it simply would not be practical to go forward with a formula approach based on a combination of these methods. The other disadvantage of using a combination of tests involves the weighting of the results. The issue of weighting would be difficult for the Board because of the variance in parties' confidence with each test's results. There is considerable disagreement among the experts regarding the weight to be given each test, and a high degree of judgement appears to be required in making the choice of weights. Rather than compound the judgement and subjectivity involved by combining tests, the Board's guidelines minimize the number of qualitative considerations by relying on the ERP method.

5.2 The Mechanics of the Equity Risk Premium Approach

The mechanics of the Board's formula-based equity risk premium approach involve an initial setup phase and an ongoing adjustment mechanism. A description of the key steps in both of these processes is provided below.

THE INITIAL SETUP PHASE:
The purpose of the initial setup phase is to establish a just and reasonable return on equity for each of the Ontario LDCs, for a given test year long Canada forecast, which will be the base against which subsequent adjustments to the formula-based ROE can be made. The Board expects that this process will begin with Consumers Gas' E.B.R.O. 495 rates case for its fiscal 1998 test year.

Step 1: Establish the forecast of the long Government of Canada yield for the test year
The starting point in the equity risk premium approach is to determine what the government long term bond rate is forecast to be for the test year. It is generally accepted that 30-year long-term Government of Canada bond yields represent a reasonable base rate for the ERP test. The challenge, therefore, is to establish an unbiased and objective forecast of long Canada bond yields. The Board believes that an administratively simple and effective way to do this is through the use of some form of consensus forecast. Since individual economists' opinions vary with respect to projected economic conditions and interest rates, a consensus approach, which averages the forecasts from a number of respected economists, is a logical means of balancing divergent views and reducing forecast risk.

Other Canadian jurisdictions that use a formulaic rate of return rely on the information found in Consensus Forecasts, published in London, England. Sixteen economic forecasters are surveyed each month and an arithmetic mean of their forecasts establishes the consensus. Consensus Forecasts contains projections for 10-year Government of Canada bond yields for both 3 and 12 months forward. For the purpose of setting a forecast government rate, other jurisdictions use the

average of these two Consensus Forecasts yields as the base 10-year long Canada rate[2]. The Board is of the view that the forecasting approach for 10-year long Canada bond yields used in other Canadian jurisdictions is a reasonable one and believes that a consistent application of Consensus Forecasts is appropriate for Ontario.

Since Consensus Forecasts, as well as most other published forecasts, only report prospective long Canada rates for 10-year bonds, an adjustment must be made to reflect the anticipated spread between 10 and 30-year long Canada's. In the Board's view this spread should be estimated by taking the average of the actual spreads observed during the most recent month, as reported in the Financial Post.[3] By taking the average spread on the results from the entire month, rather than some shorter period of time, the impact of erratic, short-term trends is lessened and results are less likely to be distorted. When this estimated spread between 10 and 30-year long Canada bond yields is added to the consensus forecast of 10-year bond yields a reasonable proxy for the test year base government rate is obtained.

Step 2: Establish the 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 resulting ROE should not compromise the utility's financial integrity and should be consistent with the returns being earned by other regulated utilities of similar risk. However, it will not necessarily be consistent with the returns being earned by comparably risky non-regulated enterprises.

As indicated earlier, the Board guidelines stipulate that the primary methodological approach to be used in evaluating the appropriate ROE should be the equity risk premium test. The Board recognizes that while the equity risk premium test is conceptually quite simple, the quantification of the test can be rather complex. Factors such as business cycle trends, inflationary expectations and changing investor requirements result in significant variation with respect to how the risk premium test is derived. Clearly, the use of informed judgment is required, and it is because of this element of judgement that the opinions of expert witnesses regarding the test's conclusions often differ.

The Board anticipates that, in assessing the initial implied risk premium and appropriate ROE for Consumers Gas, interested parties may consider all relevant issues with respect to the application of the equity risk premium test. This may include matters such as the nature of the relationship between interest rates and the implied risk premium, the need to adjust "bare bones" ROE for financing flexibility and the riskiness of Consumers Gas' equity relative to long Canada bonds and to the overall stock market. In addition, parties may wish to consider the results of the DCF test and

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[2] The November issue of Consensus Forecasts is used in other jurisdictions due to the fact that the utilities operate on a calendar-year basis. Since Consumers Gas has a September 30 fiscal year-end, the August issue would probably be used.

[3] For example, the average spread for August would be calculated by adding the spreads reported for each business day in August and dividing by the total number of business days in the month.

the Comparable Earnings test as a means of checking the validity of the equity risk premium test results.

Step 3: Establish Consumers Gas' capital structure

The initial setup phase of a formula-based rate of return mechanism may also involve a review of Consumers Gas' capital structure for rate making purposes. As part of this review, parties may wish to consider anticipated changes (if any) in the business and financial risk of Consumers Gas so that an appropriate common equity ratio can be set. The Board notes, however, that Consumers Gas' capital structure has been the subject of ongoing review for a number of years and that the approved common equity ratio has not changed in recent years. Thus, interested parties and/or the Board may determine that current circumstances deem it unnecessary for a detailed review of Consumers Gas' capital structure and that current common equity levels are appropriate for the initial setup phase. The Board's guidelines also assume that the base capital structure will remain relatively constant over time and that a full reassessment of Consumers Gas' capital structure will only be undertaken in the event of significant changes in the company's business and/or financial risk.

Step 4: Set initial ROE and capital structure for other LDCs

Due to the differences in fiscal year-ends between utilities there will be a time lag of approximately three months before the initial ROE and capital structure for Union/Centra can be set. Since Union/Centra operate on a calendar-year basis, Step 1 above, will need to be repeated to reflect the most recent consensus forecast for long-Canada bond yields. The implied equity risk premium and capital structure for an amalgamated Union/Centra will then be determined by reviewing the impact of the merger on the combined utility's business and financial risks.

With respect to NRG, the Board is of the view that a rigorous independent evaluation of its initial cost of capital would not be necessary, given NRG's relatively small size and limited resources. Since NRG has the same year-end as Consumers Gas, the Board believes that a more cost effective approach to setting NRG's initial ROE and capital structure would be to limit the review to an analysis of NRG's risk relative to Consumers Gas.

THE ADJUSTMENT MECHANISM:

Once the initial ROE has been set for each of the utilities, as per the above-mentioned steps in the initial setup phase, 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 mechanics of the Board's automatic adjustment mechanism are described below. 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 rate

The Board's formula-based equity risk premium 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 Board's guidelines suggest that 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 allowed ROE. This adjustment factor will then be added to the utility's previous test year ROE and the sum should be rounded to two decimal points. An illustration of the adjustment formula is shown below.

Allowed ROE for test year 1		12.25%
Test year 2 long-Canada forecast (30-year)	8.30%	
Test year 1 long-Canada forecast (30-year)	9.25%	
Change in interest rates	-0.95%	
Adjustment factor (0.75 to 1)		-0.7125%
ROE for test year 2		11.5375%
Approved ROE for test year 2 (rounded to nearest 2 decimal points)		11.54%

The Board recognizes that there is a significant difference of opinion amongst the experts concerning the relationship between interest rates and the equity risk premium. Ratios contained in the evidence from generic rate of return proceedings in other Canadian jurisdictions ranged from 0.5:1 to 1:1. In addition, some experts contend that the nature of the ratio will vary depending on the level of forecast bond yields. Based on a review of this rather unscientific evidence, the Board is persuaded that a non-linear relationship between interest rates and equity risk premiums does in fact exist and believes that an adjustment factor of 0.75:1 is fair and reasonable, though admittedly somewhat arbitrary. The Board is also of the opinion that it is unnecessary to specify a bond yield range outside of which the mechanism will not apply. The Board notes that inflation is expected to remain relatively stable in the near future, and expects that any significant changes in inflation, or other market factors affecting bond yields, would likely trigger a full cost of capital review from the Board in any event.

5.3 Term of the Rate of Return Formula

The Board believes that the rate of return formula should be reviewed as conditions arise that may call into question its validity (e.g., a change in the relative taxation of the income from debt and equity investments, or a fundamental change in business or financial market conditions). To set a particular time period may be artificial and necessitate an unnecessary review or stifle a review at another time when an adjustment would be appropriate. Parties to a proceeding 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 will be the Board's decision as to the time for a review.

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

The actual quantification of the elements within the formula should be done as described earlier, where a comparison of the long term Government of Canada bond yield between the previous and the forecast year is done. The Board is of the view that an adjustment to the utility-specific risk premiums should be done only when there is a clear indication that relative risks have changed. The Board also believes that the capital structures should be reviewed only when there is a significant change in financial, business or corporate fundamentals.

APPENDIX A

Excerpt from BCUC Formula-Based Rate of Return Decision

The Commission has indicated that the forecast for 1994 long Canada yields on which it has based its Decision is 7.75 percent. The Commission will obtain from the November, 1994 Consensus Forecast (Consensus Economics, London, England) the yields on 10-year Government of Canada bonds projected 3 and 12 months hence. The average of the two point estimates will serve as a proxy for the forecast yield on 10-year Canada bonds for the upcoming year. To obtain an estimate of the yield on 30-year bonds, the Commission will calculate the spread between the yields on a benchmark 10-year and a benchmark 30-year Government of Canada bond based on the last six days of November for which there are estimates, as these appear in the Financial Post. Should the Commission decide that capital markets are too volatile to rely on these data, the Commission will ask for further submissions from all interested parties as to the appropriate spread between 10- and 30-year bonds. The 1995 forecast of long-term Canada bond yields will be subtracted from the 1994 forecast as specified in this Decision. If the change in the forecast long-term Canada bond yield is less than 50 basis points, there will be no change in the allowed ROE. If the change in the forecast of long-term Canada bond yield is greater than 50 basis points, but the absolute forecast of the long-term Canada bond yield is less than 13.0 percent, the ROE will be adjusted on a one for one basis, rounded to the nearest 25 basis points. If the absolute forecast of the yield on long-term Canada bonds is greater than 13.0 percent, the Commission may require the utilities to submit new evidence as to the appropriate rate of return on common equity for a set of low risk, high grade utilities. The Commission rejects the proposal put forward by BC Gas that a decline in long-term Canada bond yields of more than 100 basis points or an increase of more than 200 basis points will result in the abandonment of the formula.[4]

[4] BCUC Decision re: Return on Common Equity, June 10, 1994, pp.39-40

APPENDIX B

Excerpt from NEB Formula-Based Rate of Return Decision[5]

The National Energy Board will adjust the rate of return on common equity for each applicant pipeline subject to this order as of the first day of January 1996 and again as of the first day of January in each subsequent year according to the following:

a) a bond yield forecast for the test year will be derived by calculating the average of the 3 months out and 12 months out 10-year Government of Canada bond yield forecast published in the November issue of Consensus Forecasts (Consensus Economics Inc., London, England) and adding thereto the current 10-year to 30-year Government of Canada bond yield spread derived by calculating the daily average difference between the 10-year and 30-year Government of Canada bond yields as published in the Financial Post (Financial Post) in the month of October in the current year; and

b) the bond yield forecast calculated in (a) shall be subtracted from the test year bond yield forecast for the immediately preceding test year and the difference multiplied by a factor of 0.75 to determine the adjustment to rate of return on common equity; and

c) the product derived in paragraph (b) shall be added to the rate of return on common equity applicable in the preceding test year; and

d) the sum resulting from paragraph © shall be rounded to the nearest 25 basis points[6].

e) each applicant pipeline shall file a revised tariff of tolls in accordance with the calculation issued by the Board to be effective on the first day of January in each calendar year

[5] NEB Reasons for Decision re: RH-2-94 Cost of Capital, March 1995, p36.

[6] Prior to the determination of ROE for 1997, the NEB received a number of letters from parties concerned about the compounding effects of rounding. The NEB subsequently directed parties to comment on whether, in paragraph (c), the product derived in paragraph (b) should be added to the preceding test year approved ROE (i.e., the amount rounded to the nearest 25 basis points) or to the unadjusted ROE (i.e., the amount prior to rounding). After considering the submissions of parties, the NEB decided to use the unadjusted ROE from the previous year as a base. In addition, the NEB has now removed rounding in its entirety from the calculation of test year ROE.

APPENDIX C

Comparison of Key Features of Formula-Based ROE in Other Jurisdictions

	Benchmark ROE	Utility Capital Structure and ROE	Adjustment Mechanism	Future GRR Hearings
BCUC	- reliance on equity risk premium test - market risk premium = 4.5-5% - benchmark utility risk premium = 2.25-2.5% - 50 bp cushion to cover risk of dilution and flotation costs	- specific findings made for each of 3 applicants - ROEs of Centra-FSJ and BC Hydro also tied to GRR	- avg of 3 and 12 mths out 10-yr Canada bond yields in November Consensus Forecast plus actual 10- to 30-yr spread from last 6 days in November - one-to-one adjustment factor rounded to nearest 25 bps for changes > 50 bp and bond yields < 13%; no adjustment for changes < 50 bp - no set period specified over which adjustment mechanism will apply (depends on performance) - complaint mechanism	- no firm decision (monitoring other jurisdictions) - predisposed to use GRR for setting of benchmark ROE only (separate regulatory process for utility specific ROE and capital structure)
NEB	- primary weight given to equity risk premium test - market risk premium = 4.5 to 5% - all-inclusive equity risk premium of 300 bp for benchmark utility (includes allowance for financing flexibility)	- ROE for benchmark pipeline applied to all applicants - pipelines with similar risk profiles assigned same equity ratios	- avg of 3 and 12 mths out 10-yr Canada bond yields in November Consensus Forecasts plus actual 10- to 30-yr spread for mth of October - 0.75 to 1 adjustment factor rounded to nearest 25 bps - no bond yield boundaries or minimum changes in forecast specified - adjustment mechanism to apply for at least 3 yrs, barring unforeseen circumstances	- GRR and utility capital structure to endure for extended period of years - reassessment only in the event of significant change in business risk, corporate structure or corporate financial fundamentals
PUBM	N/A	- ROE and capital structure set for Centra Manitoba only - implied spread between long Canada bond rate and ROE of 3% approved for test year	- avg of 3 and 12 mths out 10-yr Canada bond yield in November Consensus Forecasts plus average of the 10- to 30-yr spread for last 6 trading days in November - 0.80 to 1 adjustment factor - formula only applies to forecast bond yields of 8% +/- 2%	- full ROE hearing required within 2 years

COMPENDIUM TO DRAFT GUIDELINES ON A FORMULA-BASED RETURN ON COMMON EQUITY FOR REGULATED UTILITIES

March, 1997

DRAFT GUIDELINES ON A FORMULA-BASED RETURN ON COMMON EQUITY FOR REGULATED UTILITIES

PURPOSE

The Ontario Energy Board ("the Board") intends to move to a formula-based approach using the Equity Risk Premium method for determining the fair rate of return on common equity ("ROE") for Ontario natural gas utilities. The following guidelines have been developed to facilitate the implementation of a formulaic ROE mechanism. The guidelines have two phases: an initial setup and an ongoing adjustment mechanism.

THE INITIAL SETUP

The initial setup will establish a just and reasonable return on equity for each of the Ontario LDCs, given a test year long Canada forecast, which will be the base against which subsequent adjustments to the formula-based ROE can be made.

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

The forecast yield for long-term Government of Canada bonds will be 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, as reported in the Financial Post, 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 equity risk premium test.

THE ADJUSTMENT MECHANISM

Once the initial ROE has been set for each of the utilities, as per the above-mentioned steps in the initial setup phase, 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 rate*

The formula-based equity risk premium 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 Board suggests that 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 allowed ROE. This adjustment factor will then be added to the utility's previous test year ROE and the sum should be rounded to two decimal points. An illustration of the adjustment formula is shown below.

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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 to a proceeding 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 will be 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.

An adjustment to the utility-specific risk premiums should be done only when there is a clear indication that relative risks have changed. The Board believes that the capital structures should be reviewed only when there is a significant change in financial, business or corporate fundamentals.