C A N A D A

PROVINCE DE QUÉBEC
DISTRICT DE MONTRÉAL

N° : R-3397-98

RÉGIE DE L'ÉNERGIE

SOCIÉTÉ EN COMMANDITE GAZ MÉTROPOLITAIN

requérante

et

L'ASSOCIATION DES CONSOMMATEURS INDUSTRIELS DE GAZ (CI-APRÈS "ACIG")

intervenante

RÉPONSES DU DR. WILLIAM R. WATERS AUX DEMANDES D'INFORMATIONS DE GAZ MÉTRO, DE LA RÉGIE DE L'ÉNERGIE ET DU GRAME/UDD

Montréal, le 13 octobre 1998

PIÈCE ACIG-2, doc. 2

Responses to Information Requests to IGUA from SCGM

1. **Reference:**

On pages 13-16, Dr. Waters discusses the relative business risks of SCGM.

Questions:

1.1 Are the three components Dr. Waters refers to for the "business risk" of equal weight? If not, please quantify the respective weight of the three components in relation to the "business risk".

1.2 Please quantify the weight of the three components you refer to for the "business risk" in relation to "total risk".

1.3 Compare the first two components of the "business risk" as identified by Dr. Waters for SCGM to the same two average components for Canadian gas distribution utilities. Provide the references supporting your answer.

Responses:

1.1 With respect to the risks stemming from the "regulatory process", in the context of this question, it is appropriate to view its effect on each of the other components.

In general, the impact of the regulatory process on "operating risk" is in terms of the procedures sanctioned by the regulator with respect to the utility's achievement of a fair rate of return in each particular test period. The issue is two-fold: first, the willingness of the regulator to reset the allowed rate of return on a timely basis when financial market conditions dictate a change to it and, second, the procedures sanctioned by the regulator to ensure that the return which is set has a high likelihood of, in fact, being achieved. The latter aspect is heavily influenced by the opportunities provided to the utility to defer higher than anticipated expenses and to recoup shortfalls in revenues resulting from the vagaries of weather and the like.

The impact of the regulatory process on the long term risks borne by investors is much more speculative than its impact on the year-to-year achievement of the rate of return. This is the case because investors' perceptions of the regulator's impact on these risks are generally anticipatory. For example, the unanticipated decommissioning of plant and equipment has seldom occurred in Canada, nor has the loss of major segments of load occurred in circumstances where the lost revenue could not be offset by a restructuring of the rates charged to the remaining existing customers and to new customers. In any event, except under circumstances where the new rates that would be required to keep investors whole would be economically unsustainable, investors' experience with the regulation of utilities in Canada would suggest that every effort would be made by the regulator to ensure that the utility remained viable.

It is Dr. Waters' conclusion from the complex interactions between the regulatory process and the operating risks on the one hand and between the regulatory process and the long term risks on the other that it is impossible to provide a meaningful quantification of the three components identified. However, Dr. Waters does give greater weight to the long term risks than to the year-to-year operating risks.

1.2 This question effectively asks for the weight given to the risks associated with the use of leverage in the utility's capital structure. Quantification of this factor's contribution to "total risk" is typically undertaken (at least as a first approximation) by establishing the difference between 1) the risk that investors would be exposed to, as measured by the beta value (i.e., the systematic volatility) of the utility's leveraged common equity (i.e., of the company's common share prices) and 2) the beta value which would materialize if the company's financial leverage were deemed to be zero. This approach cannot be applied to Gaz Métro since its "shares" are not publicly traded. Finally, it should be noted that, even if the so-called "unlevered beta" could be calculated, there exists doubt as to whether this single indicator of risk exposure would be sufficient to properly capture the increment in risk associated with the chosen capital structure.

For the reasons given above, Dr. Waters is unable to make the requested comparison of relative risk.

1.3 For the reasons given in response to question 1.1, Dr. Waters is unable to make the requested comparisons. However, based on his examination of Gaz Métro's success in achieving its allowed rate of return on common equity over the period beginning in 1989 (Table 14 of his evidence) it is his view that Gaz Métro is at the low end of the regulated utility risk spectrum with respect to these risks.

2. Question:

Are there any investor-owned regulated utilities in 1) Canada, 2) in North America with an allowed rate of return on common equity that is equal to, or less than, what Dr. Waters recommends in this proceeding? If so, provide a list of such utilities with the long term Canadian Bond prevailing at this time.

Response:

There are, to Dr. Waters' knowledge, no utilities in Canada or the U.S. for which the allowed rate of return is less than the 8.25-9.00 percent range recommended by Dr. Waters for Gaz Métro. However, it should be noted that Dr. Waters' recommendation has been made in a period in which long term interest rates are at their lowest levels in more than a quarter century. Given that this decline has continued with little interruption over the past eight years in both Canada and the United States (see Dr. Waters' evidence, Figure 1A) and given the increasing emphasis on the use of the equity risk premium methodology, allowed rates of return have, as would be expected, demonstrated a meaningful downward trend.

Two very recent awards, made in the context of current forecasts of long term interest rates are:

1. The 9.25 percent ROE established in August 1998 by the Newfoundland and Labrador Board of Commissioners of Public Utilities for Newfoundland Light & Power Co. Limited (down from 10.75-11.25 percent established in October 1996) on the basis of evidence filed in April 1998. The Board used a forecast long term interest rate of 5.75 percent for the 1998 test year.
2. The 9.51 percent ROE established in August 1998 by the Ontario Energy Board for The Consumers' Gas Company Ltd. (down from 10.30 percent established in August 1997).

3. Question:

Please confirm that Dr. Waters has consistently used raw or unadjusted betas in his previous testimonies before Canadian regulatory boards. If not, please explain. Please provide literature references in support of the use of raw betas.

Response:

Dr. Waters has used, in conjunction with four other risk measures, "raw" beta values for the purpose of determining a utility's relative (but not absolute) location on the risk spectrum. It should be noted that Dr. Waters has not used beta values *per se* in determining a utility's absolute level of risk. Again, this value is based on a utility's position established from a set of five risk measures.

Perhaps most importantly, it should be noted that Dr. Waters' use of beta values at this stage of his analysis is based on the beta values for *portfolios* of utility stocks. This is an important element of his risk analyses since the use of portfolio rather than individual stock beta values basically eliminates the effect of outlier or atypical achieved rate of return observations.

A vast number of studies dating back to the late 1960's exist on the use of unadjusted *portfolio* beta values in determining risk positioning and the pricing of risk in capital markets. Indeed, portfolio based studies provide the fundamental support for the capital asset pricing model and its variants.

Responses to Information Requests to IGUA from SCGM

4. Question:

Please revise Table 8 using arithmetic returns instead of geometric average returns.

Response:

Arithmetic returns data are contained in Appendix VI of Dr. Waters' testimony.

5. **Question:**

On pages 19-20 of his evidence, Dr. Waters refers to the benchmarks established by the Canadian bond rating agencies.

a) Please provide a copy of the benchmarks by CBRS and DBRS.

b) Is the CBRS interest coverage benchmark based on pre-tax interest coverage or after-tax interest coverage?

c) Is the DBRS interest coverage benchmark based on pre-tax interest coverage or after-tax interest coverage?

d) Does Dr. Waters agree that bond rating agencies examine interest coverage ratios over multiple years in assessing credit quality? Alternatively, does Dr. Waters say that bond rating agencies focus on "spot" interest coverage ratios?

Responses:

a) Attached as part of Attachment A (pp. A-1 to A-35 inclusive) is a publication by CBRS entitled "CBRS Methodology of Rating Debt Securities of Regulated Utilities (Gas, Electric, Pipelines and Telcos)" prepared for a conference presentation May 26/27, 1994. In Appendix IV of this document it is stated that "...These revised benchmarks replace the Utility Financial Benchmarks published in CBRS's 1991 Utility Sector Industry Study".

Also attached as part of Attachment A (pp. A-36 to A-41 inclusive) is the "Utilities" segment of a DBRS publication dated November 24, 1989.

b) The CBRS interest coverage benchmark is based on pre-tax interest coverage.

c) The DBRS interest coverage benchmark is based on pre-tax interest coverage.

d) Dr. Waters agrees that bond rating agencies provide several years of historical interest coverage ratios in their reports. They also provide similar historical data for several other indicators of creditworthiness. In addition, they provide a variety of qualitative observations. Dr. Waters believes that all of this information is taken into consideration by the bond rating agencies in establishing their credit ratings.

6. **Question**

Please provide a copy of the documents referenced in the footnotes on pages 11, 19, 26, 27, 40 and 48.

Response:

Please see Attachment B which contains copies of the following documents:

Inclusive page numbers in Attachment B	Testimony reference	Document
B-1 to B-3	page 11	Consensus Forecasts, August 10, 1998.
B-4 to B-20	page 19	"Electric Utility Bond and Preferred Stock Ratings: A Moody's Overview"
B-21 to B-25	page 26	"To Conclude: Keep Inflation Low and, in Principle, Eliminate It"
B-26 to B-38	pages 26-27	"Inflation Expectations and Real Return Bonds"
B-39 to B-76	page 40	"The Cross-Section of Expected Stock Returns"
B-77 to B-83	page 40	"Is Beta Dead Again?"
B-84 to B-95	page 48	"The Behaviour of Equity and Debt Risk Premiums"
B-96 to B-106	page 48	"Estimating the Equity Risk Premium from Downside Probability"

Responses to Information Requests to IGUA from SCGM

7. Question

Please provide your return on equity recommendations and the return on equity authorized for each case in which you have testified in the last five years. Please also provide the prevailing yield on long-term Canada bonds at the time of preparing these testimonies.

Response:

See the schedule below.

	Forecast long Cda yield	Recommended return on equity	Authorized return on equity
	%	%	%
1993			
West Kootenay Power	8.0-8.5	11.0-11.50	11.500
TransAlta Utilities	8.0-8.5	10.75-11.25	11.875
Alberta Power Limited	8.0-8.5	10.75-11.25	11.875
Northwestern Utilities Limited	8.0-8.5	10.75-11.25	11.875
NOVA	8.0-8.5	10.75-11.25	11.750
Foothills Pipe Lines	7.75-8.25	10.5-11.5	11.500
Westcoast Energy	7.5-8.0	10.0-10.75	11.500
1994			
TransCanada PipeLines Limited	7.25-7.75	10.0-10.5	12.250
BC Utilities	7.25-7.75	BC Gas: 10-10.5 PNG: 10.75-11.25 WKP: 10.25-10.75	10.650 11.500 11.000
NOVA	8.0-8.5	10.5-11.25	11.750
Multipipelines	8.25-8.75	11.0-11.5	12.250
1997			
Alberta Electric Utilities	8.00	10.50	10.75-11.75
Stentor companies	6.5-6.75	9.50-9.75	11.000
1998			
Newfoundland Light & Power	5.75-6.25	8.25-9.00	9.25

Sources:
Board/Commission decisions and Evidence of W.R. Waters.

8. Question

Please provide a summary of Dr. Waters' rate of return on common equity conclusions and recommendations for SCGM in the following format:

Response:

			Recommendation
Comparable Earnings			not relied upon
DCF applied to Utilities			not relied upon
Equity Risk Premium			
	low	high	
Market Risk Premium (MRP)	4.5%	4.5%	
Relative Risk Adjustment (RRA) to MRP for Risk of Utilities	0.5*	0.5*	
Equity Risk Premium for Utilities (MRP x RRA)	2.25%	2.25%	
Long-Canada Yield	5.75%	6.25%	
Cushion	0.25%	0.50%	
Total	8.25%	9.00%	
Overall Recommendation			**8.25-9.00%**

*The value ranges from 0.56 to 0.61 if the "cushion" of 0.25 to 0.50 percent is included in the Equity Risk Premium. (See testimony of Dr. Waters, pp. 55-56.)

Responses to Information Requests to IGUA from SCGM

9. Reference: Page 2, lines 24-26

"Long term Canada bonds are yielding under 5.75 percent as of early September 1998. Earlier this year a level of 5.35 percent was reached, the lowest in more than a quarter century."

Question

1. Parle-t-on ici des obligations long terme du Canada 10 ans ou 30 ans?

2. Pourriez-vour foumir une copie des references qui vous amene a cette affirmation?

Please note that the responses are based on the following English renditions of the questions posed:

1. Are you referring here to 10 year or 30 year long term Canada bonds?

2. Please provide a copy of the data on which you have relied in making this statement.

Responses:

1. The comment relates to the average yield on the longest maturities available throughout the period examined. In general, the longest maturities have been in the vicinity of 20 years. It is only within the last few years that 30 year maturities have been issued.

2. Please see the Schedule attached which contains data for the Bank of Canada "ten years and over" series.

Schedule to Accompany Response to SCGM Question #9 to IGUA

Date	10 years and over	Date	10 years and over	Date	10 years and over
Mar-70	7.93	Mar-81	13.48	Mar-92	9.28
Jun-70	8.23	Jun-81	15.03	Jun-92	8.87
Sep-70	7.88	Sep-81	17.66	Sep-92	8.53
Dec-70	6.99	Dec-81	15.27	Dec-92	8.54
Mar-71	6.76	Mar-82	15.06	Mar-93	8.27
Jun-71	7.30	Jun-82	16.03	Jun-93	7.96
Sep-71	7.15	Sep-82	13.48	Sep-93	7.55
Dec-71	6.56	Dec-82	11.69	Dec-93	7.12
Mar-72	7.24	Mar-83	11.70	Mar-94	8.25
Jun-72	7.45	Jun-83	11.56	Jun-94	9.29
Sep-72	7.48	Sep-83	11.76	Sep-94	9.04
Dec-72	7.12	Dec-83	12.02	Dec-94	9.16
Mar-73	7.30	Mar-84	13.06	Mar-95	8.70
Jun-73	7.74	Jun-84	13.81	Jun-95	8.02
Sep-73	7.72	Sep-84	12.63	Sep-95	8.11
Dec-73	7.70	Dec-84	11.66	Dec-95	7.43
Mar-74	8.19	Mar-85	11.93	Mar-96	7.94
Jun-74	9.46	Jun-85	10.86	Jun-96	7.98
Sep-74	9.67	Sep-85	10.96	Sep-96	7.48
Dec-74	8.77	Dec-85	10.06	Dec-96	6.77
Mar-75	8.47	Mar-86	9.54	Mar-97	6.97
Jun-75	8.88	Jun-86	9.42	Jun-97	6.49
Sep-75	9.72	Sep-86	9.45	Sep-97	5.99
Dec-75	9.49	Dec-86	9.23	Dec-97	5.80
Mar-76	9.39	Mar-87	8.98	Mar-98	5.54
Jun-76	9.35	Jun-87	9.78	Jun-98	5.45
Sep-76	9.16	Sep-87	11.14		
Dec-76	8.47	Dec-87	10.34		
Mar-77	8.83	Mar-88	10.13		
Jun-77	8.72	Jun-88	10.13		
Sep-77	8.61	Sep-88	10.46		
Dec-77	8.77	Dec-88	10.36		
Mar-78	9.17	Mar-89	10.49		
Jun-78	9.23	Jun-89	9.60		
Sep-78	9.15	Sep-89	9.91		
Dec-78	9.68	Dec-89	9.69		
Mar-79	9.91	Mar-90	10.91		
Jun-79	9.73	Jun-90	10.74		
Sep-79	10.38	Sep-90	11.54		
Dec-79	11.32	Dec-90	10.51		
Mar-80	13.45	Mar-91	9.88		
Jun-80	11.29	Jun-91	10.36		
Sep-80	12.98	Sep-91	9.59		
Dec-80	12.67	Dec-91	8.97		

10. Préambule:

Your Table 15 illustrates the evolution of the corporate spreads on long term bonds. You have shown an increase in the Gaz Met spread from 58 to 77 basis points between December 97 and September 98.

Question

Could you provide, in format similar to information provided in Table 15, the spreads for the 30 year Gaz Met bond between December 1997 and September 1998.

Response:

Please see the schedule attached.

Please note that values have been shown only for the period June 29 - October 12, 1998. Values for the first five months of 1998 were not available from the source utilized in constructing Table 15.

It should be noted that the Gaz Métro issue maturing in 2027 matures 29 years hence whereas the remaining term for the bond issues of other utilities listed in Table 15 range from only 12 ½ years (Consumers' Gas) to 22 years (TransCanada PipeLines). To provide greater comparability to the Gaz Métro issue identified in the question, yields for a new set of utility bonds have been provided.

SCHEDULE TO ACCOMPANY RESPONSE TO SCGM QUESTION NO. 10 TO IGUA

	June 29/98	Oct. 12/98
A. Yields		
Gaz Metro, 7.20%, Nov. 19, 2027	6.15	6.75
Consumers' Gas, 6.65%, Nov. 03, 2027	6.02	6.55
TCPL, 7.90%, Apr. 15, 2027	6.17	6.90
Westcoast, 6.75%, Dec. 15, 2027	6.14	6.60
Canada, 6.00%, June 1, 2027	5.53	5.40
B. Premium over Government of Canada issue		
Gaz Metro, 7.20%, Nov. 19, 2027	62	135
Consumers' Gas, 6.65%, Nov. 03, 2027	49	115
TCPL, 7.90%, Apr. 15, 2027	64	150
Westcoast, 6.75%, Dec. 15, 2027	61	120
C. Premium over Gaz Metro 2027 issue		
Consumers' Gas, 6.65%, Nov. 03, 2027	(13)	(20)
TCPL, 7.90%, Apr. 15, 2027	2	15
Westcoast, 6.75%, Dec. 15, 2027	(1)	(15)

Source: Toronto Globe and Mail, various issues.

Response to Information Request to IGUA from UDD and GRAME

8. Vous recommendez, dans le document R-3397-98, ACIG-2, doc. 1 (p. 2 et p.45), que la SCGM se voit accorder un taux de rendement de 8,25 a 9,0%. Votre expert fait une excellente démonstration, qui nous apparait valable et très pertinente, à l'effet que ce taux de rendement est raisonnable et justifié. Considérez-vous justement de libérer des ressources pour investir dans les mesures environnementales sans avoir à accroître les tarifs pour les clients de la SCGM tel que les membres de votre association?

Please note that the response is based on the following English rendition of the question posed:

> You recommend, in document R-3397-98, ACIG-2, doc. 1 (p.2 & 45) that the SCGM should be awarded a rate of return of 8.25 to 9.0%. Your expert gave us an excellent demonstration, which was valid and appropriate, that the rate of return is reasonable and justified. Do you think that a rate of return of 8.25 to 9.0% will allow [SCGM] to "free-up" some resources to invest in "environmental measures" without collecting fees from the customers of SCGM such as the members of your association?

Response:

> The recommended rate of return on common equity is Dr. Waters' estimate of the rate of return required to maintain the financial integrity of Gaz Métro's common equity under all but the most adverse of financial market conditions over the prospective test year. However, as Dr. Waters has noted at pages 2 and 57 of his testimony, SCGM's deemed capital structure is such that it would be appropriate to award the lower end of his recommended rate of return. Accordingly, if a higher value were awarded, SCGM's prospective revenues would include, in Dr. Waters' view, a portion that could be directed to environmental matters without affecting SCGM's financial integrity.

Référence: Témoignagne du Dr. Waters
ACIG-2, document 1, page 50 et le tableau 18

Demande:

1. Veuillez expliquer votre démarche afin d'atteindre le "computed equity risk premium" de 3,70% et 3,90% de la BCUC et NEB de soût 1998 á la troisième section.

Please note that the response is based on the following English rendition of the question posed:

1. Please explain your computation of the "computed equity risk premium of 3.70% and 3.90% for the BCUC and the NEB for August1998 in the third section.

Response:

Schedule 1 which follows below emulates the NEB and BCUC methods for computing the forecast Government of Canada long term interest rate underlying the determination of the rate of return on equity ("ROE") for the subsequent 12 months. (The method is described in the response to Question no. 2.)

Schedules 2 and 3 show the computation of the ROE as of August 28, 1998 using the NEB and BCUC methodologies respectively.

Please note that Table 18 contained a small error in the computation of the NEB award that would have prevailed if their computation had been made as of August 28, 1998. The corrected version of Table 18 is included with this response.

Schedule 1
Computation as of August 28, 1998 of Forecast Long Term Government of Canada Bond Yield, Based Upon NEB and BCUC Methodologies

	Value forecast to prevail at end of: Nov/98	Aug/99	Mean
10 year Government of Cda bond yield (1)	5.50%	5.70%	5.60%
Spread between 10 year and 30 year Canada bond yields at August 28/98 (5.80-5.71) (2)	0.09	0.09	0.09
			5.69%

Notes: (1) Consensus Economics Inc. Consensus Forecasts for Survey date August 10, 1998, p. 17.

(2) Toronto Globe and Mail, August 29, 1998. The spread has been calculated on the basis of the value for one day, August 28, 1998.

Schedule 2
If NEB Undertook the Analysis August 28, 1998

1. Forecast long term bond yield (as per Sch. 1)	5.69%
2. Previous forecast (Nov/97)	6.53
3. Reduction since previous forecast	0.84
4. Resulting reduction in equity risk premium (75% of Line 3)	0.63
5. Previously approved ROE	10.21
6. Less: reduction in equity risk premium	0.63
7. New ROE	9.58
8. Less forecast long term yield (Line 1)	5.69
9. Computed equity risk premium	3.89%

Based on National Energy Board letter dated December 5, 1997 re File 4750-A000-11.

Schedule 3
If BCUC Undertook the Analysis August 28, 1998

1.	Forecast long term bond yield (as per Sch. 1)	5.69
2.	Less BCUC Benchmark Forecast	9.25
3.	Initial Adjustment Factor	(3.56)
4.	Sliding Scale Adjustment Factor (80% of Line 3)	(2.85)
5.	Allowed ROE	
6.	Benchmark ROE	12.25
7.	Sliding Scale Adjustment Factor	(2.85)
8.	Resulting ROE	9.40
9.	Less: Forecast Long Term Bond Yield	5.69
10.	Computed Equity Risk Premium	3.71%

Based on BCUC letter Dated December 2, 1997, Letter No. L-73-97, Appendix A, Page 1.

TABLE 18 (Revised October 13, 1998)

MOST RECENT ROE AWARDS BY THE BRITISH COLUMBIA UTILITIES COMMISSION AND THE NATIONAL ENERGY BOARD AND ALTERNATIVE AWARDS UNDER VARIOUS ASSUMPTIONS

	British Columbia Utilities Commission	National Energy Board
1. Most recent award		
Based on data as of	November 1997	November 1997
Assumed 30 year bond yield	6.39 %	6.53 %
Computed equity risk premium	3.57	3.68
Awarded ROE	9.96 % rounded to 10.00%	10.21 %
2. Most recent award if original equity risk premium of 3.0% had been used		
Assumed 30 year bond yield	6.39 %	6.53 %
Original equity risk premium	3.00	3.00
Resulting ROE	9.39 % rounded to 9.50%	9.53 %
3. Award consistant with current financial market expectations		
Based on data as of	August 28, 1998	August 28, 1998
Assumed 30 year bond yield	5.69 % [a]	5.69 % [a]
Computed equity risk premium	3.71 [b]	3.89 [d]
Resulting ROE	9.40 % [c] rounded to 9.50%	9.58 % [e]
4. Award if current financial market expectations used with original equity risk premium of 3.0%		
Assumed 30 year bond yield	5.69 % [a]	5.69 % [a]
Original equity risk premium	3.00	3.00
Resulting ROE	8.69 % [f] rounded to 8.75%	8.69 % [f]

[a] Revised from 5.73% to 5.69%.
[b] Revised from 3.70% to 3.71%.
[c] Revised from 9.43% to 9.40%.
[d] Revised from 3.90% to 3.89%.
[e] Revised from 9.63% to 9.58%.
[f] Revised from 8.73% to 8.69%.

Responses to Information Requests to IGUA from La Régie

Référence: Témoignagne du Dr. Waters
ACIG-2, document 1, page 49

Préamble:

Mécanisme de rendement ("ROE tracking mechanism")

Demande:

2. Veuillez élaborer sur le fonctionnement des mécanismes de rendement ("automatic tracking mechanism") employés à la BCUC et l'ONE.

Please note that the response is based on the following English rendition of the question posed.

2. Please elaborate on the functioning of the automatic tracking mechanism used by the BCUC and the National Energy Board.

Response:

The National Energy Board ("NEB") introduced its "automatic tracking mechanism" approach to setting the rate of return on common equity ("ROE") in its Reasons for Decision RH-2-94 dated March 1995. In that Decision, the NEB established an ROE of 12.25 percent for the year 1995 for each of the gas pipelines under its jurisdiction. (Differences in risks among these pipelines were reflected in differences in allowed common equity ratios.) In the "overview" which accompanies the Reasons for Decision at page ix, it was stated that:

> "The 12.25% determination was based on a finding that 9.25% is a reasonable estimate of the yield on long-term Government of Canada bonds in 1995 and that a reasonable all-inclusive equity risk premium for the benchmark pipeline is 300 basis points." (emphasis added)

The NEB's point of departure for establishing the ROE in each future year was its forecast of the yield that would prevail on 30 year Government of Canada bonds in that year. Specifically, at page ix, it was stated that:

> "The test-year bond yield forecast will be the average of the 3-months-out and 12-months-out 10-year Government of Canada forecast published in the previous year's November issue of Consensus Forecasts (Consensus Economics Inc., London, England) plus the actual 10-year to 30-year bond yield spread in October of that year."

The NEB did not take the view that the ROE should be adjusted by the amount of the difference between the forecast Government of Canada 30 year bond yield and the value adopted in the current year. Instead, the NEB decided to multiply the change in the forecast yield by a factor of 0.75. The result is that the ROE would be lowered by only 75 basis points for each 1.0 percent reduction in long term bond yields below 9.25 percent. Conversely, the ROE would be increased by only 75 basis points for each 1.0 percent increase in long term bond yields above 9.25 percent. Illustrative results produced by the NEB's adjustment mechanism are shown below.

Interest rate forecast	Rate of return on common equity	Rounds to approved rate of return	Implied all-in equity risk premium
7.00%	10.56%	10.50%	3.56%
8.00%	11.31%	11.25%	3.31%
9.25%	12.25%	12.25%	3.00%
10.00%	12.81%	12.75%	2.81%
11.00%	13.56%	13.50%	2.56%
12.00%	14.31%	14.25%	2.31%
13.00%	15.06%	15.00%	2.06%

Source: Reasons for Decision, RH-2-94, p. 32.

The NEB did not provide a rationale for its adoption of an 0.75 adjustment factor in preference to a one-for-one adjustment factor. (Three of the six sets of rate of return witnesses had recommended a one-for-one adjustment over varying ranges of interest rates.)

Essentially, the rationale for an equity risk premium that changes with the level of interest rates is that the premium incorporated in long term bond yields to compensate investors for accepting purchasing power risk (discussed in Dr. Waters' testimony at pp. 26-28) varies with the level of interest rates.

The questions that arise are: 1) What is the functional form of the relationship? 2) Does the purchasing power risk premium fall systematically at a constant rate as long term interest rates fall? 3) Is there a point at which it reaches, for all practical purposes, zero? 4) Is there a range of interest rates over which the purchasing power risk premium is essentially a constant?

In the context of the operation of a mechanistic approach to setting the ROE, Dr. Waters views the fourth proposition as the most reasonable, with the third proposition applicable at very low interest rates. Moreover both of these propositions are supported by the empirical analysis reported upon by Dr. Waters at pp. 28-33 of his testimony.

The British Columbia Utilities Commission (the "BCUC") introduced its "automatic tracking mechanism" approach to setting the ROE for BC Gas Utility

Ltd., Pacific Northern Gas Ltd. and West Kootenay Power Ltd. in its Return on Common Equity Decision dated June 10, 1994. For the 1995 year, the BCUC introduced the mechanism described earlier which was subsequently adopted by the NEB with the following significant exception: In contrast to the NEB, the BCUC adopted a "one-for-one" rather than an "0.75-for-one" adjustment of the ROE to changes in the forecast long term interest rate.

By way of letter dated December 2, 1996, the BCUC invited interested parties to comment on the desirability of modifying the tracking mechanism. In its letter, the BCUC stated:

> "...the Commission has determined that the current automatic adjustment mechanism is performing favourably and should be retained for the purposes of setting the 1997 ROE. The Commission is requesting comments from other parties with respect to their views on the mechanism. In making this request, the Commission notes that parties now have three years of experience with the mechanism and that other regulatory bodies in Canada have adopted similar mechanisms. Two areas of particular interest are: i) whether the forecast of long Canada bonds must change by at least 50 basis points from the previous year's forecast before a change to the ROE is triggered; and ii) whether the relationship between a change in the forecast of long Canada bonds and a change in the ROE should be on (sic) a one-to-one basis, as is currently the case, or on a sliding scale, as is the case in the mechanisms be (sic) used by the National Energy Board and the Manitoba Public Utilities Board. The Commission also wishes to receive comments on any other concerns related to the mechanism which parties may have."

After reviewing the responses, the BCUC issued Order Number G-49-97 dated April 24, 1997 setting out several changes to its mechanism, effective with the ROE to be determined for 1998. The three changes of most significance in the context of this discussion were:

1. That the "benchmark" rate for long term Government of Canada bonds be set at 9.25 percent instead of 7.75 percent.
2. That the ROE change by 80 basis points in response to each 100 basis points change in the forecast long term Government of Canada bond yield and
3. That the automatic adjustment mechanism apply to a range of 6.0 to 12.0 percent for the forecast long term bond yield.

The Board's Order did not contain reasons. However, the change from "one-to-one" to "0.80-to-one" appears to be in response to the B.C. utilities'

assertions that they were at a disadvantage relative to utilities regulated by the NEB and the Manitoba Public Utilities Board with respect to raising funds in financial markets. (All other things being equal, the "0.80-to-one" formula provides higher rates of return than the "one-to-one" formula in times of declining interest rates.)

It is Dr. Waters' view that this position is without merit. The switch to the "0.80-to-one" formula would result in a one-time increase in share price if investors recognize that future ROE awards, should interest rates decline, will be higher than under the previous formula. Conversely, investors would have to consider that future ROE awards would be lower under the new formula if interest rates were to increase. However, the resetting of the "benchmark" interest rate from 7.20 percent to 9.25 percent did provide investors with a windfall gain inasmuch as that adjustment, of itself, increased the allowed ROE by some 41 basis points. This, in turn, would have resulted in an increase in share prices, all other things being equal.

Absent the windfall increase, the share prices of the two publicly traded B.C. utilities had exceeded their book values by significant amounts, thereby signifying that investors had already viewed the prospectively allowed ROE's (and implicitly the adjustment mechanism) as exceeding their required rates of return. Given that perspective, no further incentive is required to attract additional investors should the utility wish to issue additional shares. The even higher share price resulting from unnecessarily higher ROE's being awarded under the revised mechanism would result in the utilities having to issue fewer shares to raise a given amount of funds. However, neither the existing nor the new shareholders would benefit, since both the existing and the new shares would be priced to yield only the investors' required rate of return.