PUB/CAC MSOS (McCormick) I-1

Subject: Debt Maturities

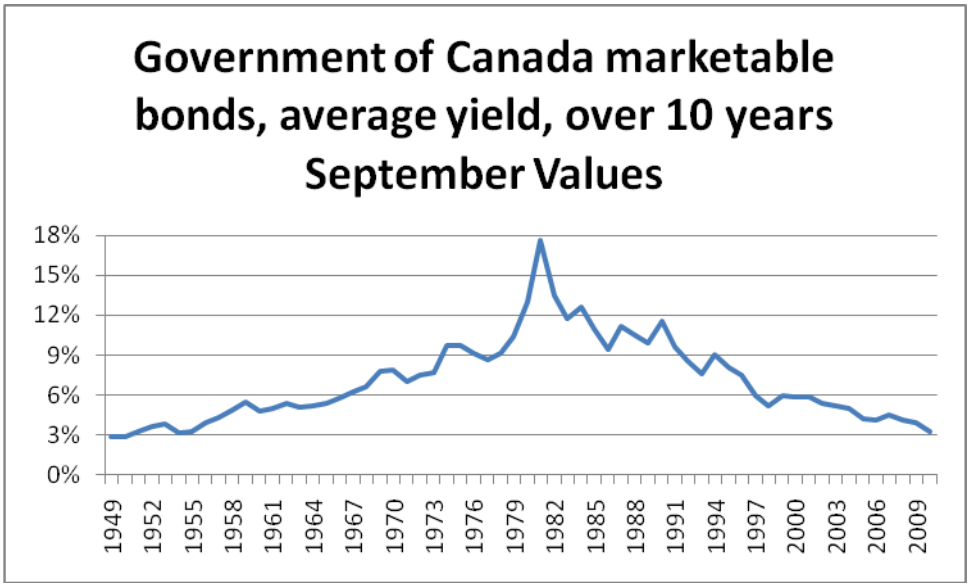
Reference: Page 10 &13 Q7/Q10

QUESTION:

For the purposes of this proceeding, please elaborate on the refinancing risks faced by concentrating maturities in a short time period in the context of MH's current debt practices and demonstrate how staggered maturities mitigates this risk.

ANSWER:

Concentrating maturities in a short time period concentrates that refinancing risk in that period. That exposes the customers to risk that the period of concentrated maturities may be within a period of an interest rate spike. It is very difficult if not impossible to identify when the next interest rate spike will occur. Clearly, if one could perfectly forecast the dates of the next interest rate spike, it would be simple to avoid issuing any debt that might mature in a period of high interest rates. The graph below provides the September values for Bank of Canada, average yield on Government of Canada marketable bonds with maturities over 10 years, for the period 1949 to 2010.



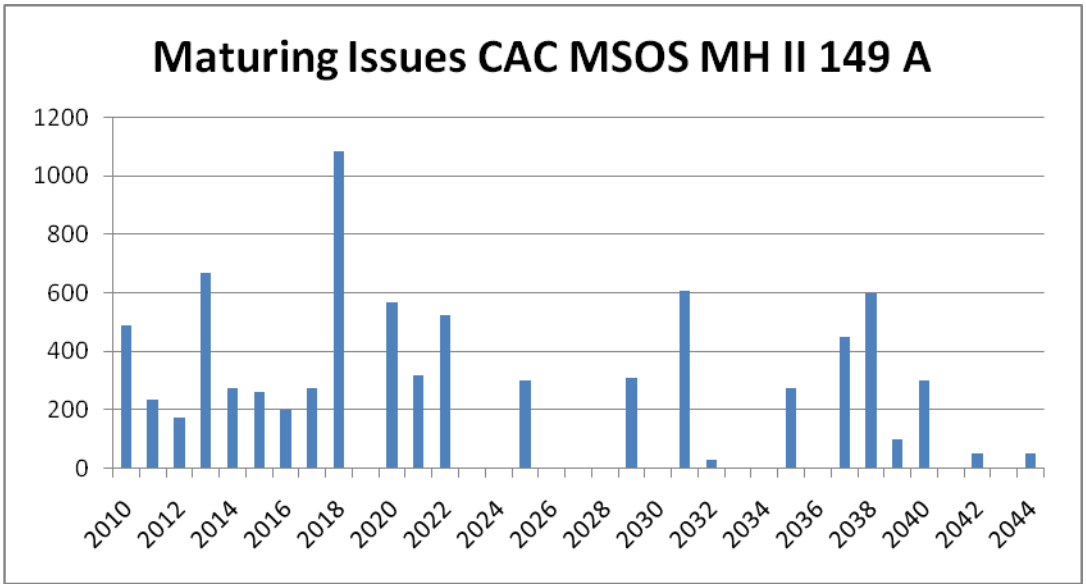
There was a particularly nasty period of high rates during the years 1980-1984. While issuers would have wished to avoid a September 1981 maturity, when this data series reached its pinnacle

of 17.66%, having a concentration of maturities in 1981 would have burdened consumers with high financing costs for many years.

Staggered maturities mitigate against the risk of financing a large amount of debt at one time when interest rates may be unattractive. For example, if an issuer structured its long term debt so that an approximately equal amount of debt would mature in each of the next 25 years, only 4% of the debt would require refinancing in a year of pinnacle interest rates.

Mr. McCormick addressed debt maturity concentration in Q14 of my Centra evidence and he will not repeat those observations here. Manitoba Hydro, being many times larger than Centra has a more complex debt position. MH also has engaged in a considerable number of "forward interest rate swap" transactions. In fact some $3.0 billion of the $8.5 billion, about 36%, of the debt issues listed in CAC/MSOS/MH II-149 (a) are related to a "forward interest rate swap" transaction. As such, there may be interest rate commitments for periods differing and often longer than the underlying debt. For that reason, it may be appropriate to show, as the maturity date, the date which is the termination of the "forward interest rate swap" transaction.

The graph below shows the maturing principal to 2044 as identified in CAC/MSOS/MH II 149 (a). That IR reply is based on the obligation date of the relevant debt series. While we have described the year as a maturity date, for some series it may be the date at which the interest rate swap obligation ends. To see the maturities of debt series before the effect of interest rate swaps see CAC/MSOS/MH II 149 (c). In Appendix 48, we can see some of the complexity of the MH interest rate swap positions in the Series FC-3 transaction. Series FC-3 was a $200 million 4.8% coupon issued to yield 3.9060% until maturity in 2014, but as a result of a "forward interest rate swap" transaction, the interest obligation now continues to 2018 at a rate of 7.1689% rather than the 3.9060% initial yield. While this particular swap does not appear to provide the "lower cost alternative" indicated by MH in the quoted passage found at line 14 of page 39 of Mr. McCormick's evidence, for the purposes of the chart below series FC-3 is shown as a 2018 maturity.



The graph above shows a concentration of maturities in 2018, representing approximately 13% of the debt indicated in that IR. The 2018 maturity is almost 5 times the annual average of maturing debt in the 2010 to 2044 period. The graph also indicates several periods including 2023-24 and 2026-28 where there are no maturing issues. Clearly, 2018 will be an important year for refinancing risk and consumers will hope that an interest rate spike does not occur during that year, burdening them with pinnacle interest rates for years to come.

In this proceeding, Mr. McCormick addressed his evidence toward the discontinuity of building the financial forecast, upon which consumer rates would be determined, based on the assumption that all future debt would be the more expensive 30 year fixed rate debt, rather than a mix of fixed and floating rate debt and a range of maturities which in times of a normal yield curve would be less costly for consumers. While other experts have addressed aspects of risks in greater detail, Mr. McCormick is unaware of any policy with respect to concentration of debt maturities or "forward interest rate swap" dates that has appeared in the record. The updated Coalition/MH I-85 (g) found in CAC/MSOS/MH I-146(b) is silent as to the issue of concentration of debt maturity on swap limits. As such, Mr. McCormick can only infer that the debt program of Manitoba Hydro operates on a market timing basis unfettered by policy limits. As this question addressed "MH's current debt practices", it would seem clear from the graph above, that those practices condone or allow putting 13% of one's refinancing "eggs in one basket", being 2018.

PUB/CAC MSOS (McCormick) I-2 (a)

Subject: Fixed & Floating Rate Debt

Reference: Page 10 Q7, Line 16

QUESTION:

a) Please provide a similar analysis assuming scenarios of 15% and 30% floating.

ANSWER:

At line 12 on Page 10, Mr. McCormick describes the case presented as "a case in which approximately 20% of the $1,800,000,000 "New Debt" would be issued as floating rate debt". As such Mr. McCormick assumes that the 15% and 30% cases requested relate to that reference point.

In the paragraphs following the table at line 16 on page 10, Mr. McCormick described the results for each year, at page 10 on line 20, and at lines 5 and 9 on page 11. To facilitate understanding of the results, Mr. McCormick has added one column to the table to show the value of the debt which he assumes would be issued as floating rate instruments. The enhanced table for the original scenario is repeated below, with the requested cases.

PUB 1-35 (e) Forecast Fixed Debt	Amount	Fixed Rate	Full year	Floating Rate	Fixed minus Float	Savings assuming 25% Floating	New Floating Debt
2009/10	$ 400	4.60%	$18.4				$ -
2010/11	$ 800	4.65%	$37.2	1.70%	2.95%	$ 5.90	$ 200
2011/12	$ 600	5.20%	$31.2	3.65%	1.55%	$ 2.33	$ 150
	$ 1,800		$86.8			$ 8.23	$ 350
							19.4%
	2010/11 annualized savings on 10/11 debt					$ 5.9	
	2011/12 annualized savings on 11/12 debt						$ 2.3
	2011/12 annualized savings on 10/11 debt						$ 2.0
							$ 4.3

The 15% case

PUB 1-35 (e) Forecast Fixed Debt	Amount	Fixed Rate	Full year	Floating Rate	Fixed minus Float	Savings assuming 19.3% Floating	New Floating Debt
2009/10	$ 400	4.60%	$ 18.4				$ -
2010/11	$ 800	4.65%	$ 37.2	1.70%	2.95%	$ 4.55	$ 154
2011/12	$ 600	5.20%	$ 31.2	3.65%	1.55%	$ 1.79	$ 116
	$ 1,800		$ 86.8			$ 6.35	$ 270
							15.0%
			2010/11 annualized savings on 10/11 debt			$ 4.6	
			2011/12 annualized savings on 11/12 debt				$ 1.8
			2011/12 annualized savings on 10/11 debt				$ 1.5
							$ 3.3

The 30% case

PUB 1-35 (e) Forecast Fixed Debt	Amount	Fixed Rate	Full year	Floating Rate	Fixed minus Float	Savings assuming 38.6% Floating	New Floating Debt
2009/10	$ 400	4.60%	$ 18.4				$ -
2010/11	$ 800	4.65%	$ 37.2	1.70%	2.95%	$ 9.10	$ 309
2011/12	$ 600	5.20%	$ 31.2	3.65%	1.55%	$ 3.59	$ 231
	$ 1,800		$ 86.8			$ 12.69	$ 540
							30.0%
			2010/11 annualized savings on 10/11 debt			$ 9.1	
			2011/12 annualized savings on 11/12 debt				$ 3.6
			2011/12 annualized savings on 10/11 debt				$ 3.1
							$ 6.7

PUB/CAC MSOS (McCormick) I-2 (b)

Subject: Fixed & Floating Rate Debt

Reference: Page 10 Q7, Line 16

QUESTION:

b) Please recalculate the analysis assuming a 300 basis point increase in interest rates commencing in 2011/12 over the next 3 years (100 basis points a year) and comment on the results specific to these debt issues, over the next five and ten years.

ANSWER:

Mr. McCormick understands that the requested analysis is to calculate the interest savings, if any over an additional three years compared to the forecast rates for fixed rate issues in each of 2010/11 and 2011/12. Clearly, as the escalation of the floating rate is at a fixed 1% per year, the net savings will eventually be removed, if, as and when, the 1% increase accumulates to very high floating rate levels. In the table below, the floating rate has surpassed both the 2010/11 and 2011/12 forecast fixed rates in 2013/14. Even in this example, covering the period to and including 2014/15, there are still measurable interest rate savings to consumers of $2.2 million, because of the significant net savings in the first time period.

	2010/11			2011/12		
Interest rates	Fixed Rate	Floating Rate	Net Savings	Fixed Rate	Floating Rate	Net Savings
2010/11	4.65%	1.70%	2.95%			
2011/12	4.65%	3.65%	1.00%	5.20%	3.65%	1.55%
2012/13	4.65%	4.65%	0.00%	5.20%	4.65%	0.55%
2013/14	4.65%	5.65%	-1.00%	5.20%	5.65%	-0.45%
2014/15	4.65%	6.65%	-2.00%	5.20%	6.65%	-1.45%
			0.95%			0.20%
Principal			$ 200			$ 150
Net Savings			$ 1.9			$ 0.3

The 2014/15 example floating rate of 6.65% is a relatively high floating rate. Mr. McCormick observes that in the last 10 years, the daily series V39071 of 3 month BA interest rates reached a 5.98% maximum in mid 2000, and during that 10 year period averaged 3.05%. If we look back further, we can see rates over 8% in 1995, and Mr. McCormick does acknowledge that spikes will occur, although they do not appear to be threatening in the near to medium term.

Mr. McCormick also observes that interest rate caps may be purchased to avoid the risk of escalating short term interest rates. In the Emera information provided in reply to PUB/CAC MSOS I-13, one can see at page 44 that Emera, in 2007, capped its floating rate risk in respect of approximately 40% of its floating rate debt. The cap was at a weighted average 4.8%, well below the escalating rates assumed for 2013/14 and 2014/15. Similar disclosure is found at page 45 of the 2006 disclosure documents and page 38 of the 2005 disclosure documents. In this proceeding, we have not tested MH's policy with respect to the use of interest rate caps as a method of addressing interest rate risk, but have observed that they do employ interest rate swaps.

With respect to the reasonableness of 5.65% floating rate in 2013/14 and a 6.65% floating rate in 2014/15, Mr. McCormick provides the more current short and long term rates found in a table on page 4 of Appendix 76, the IFF-10. He observes that the short term rate is now expect to hit a maximum at the same 4.65% rate as the former estimate of the long term rate for 2010/11, which has also been reduced.

	MH CDN New Short Term Debt Rate	MH CDN New Long Term Debt Rate
2010/11	1.10%	4.20%
Prior estimate	1.40%	4.65%
2011/12	2.10%	4.35%
Prior estimate	3.60%	5.20%
2012/13	3.30%	5.25%
Prior estimate	4.30%	5.70%
2013/14	3.85%	5.55%
Prior estimate	4.45%	6.10%
2019/20	4.65%	6.60%
Prior estimate	4.45%	6.10%

Assuming the accuracy of the forecast rates in Appendix 76, Mr. McCormick observes that the use of short term debt for $200 million of principal would lead to consumer savings through 2013/14 and thereafter consumers would have the same floating rate as the long term rate forecast to be available in 20/10/11.

PUB/CAC MSOS (McCormick) I-3

Subject: Cost of Debt

Reference: Page 13 Q10

QUESTION:

Please provide an analysis that indicates the difference in the cost of 50 and 30-year debt versus 10 or 15 year term debt to indicate the average range in the cost differential among the issues.

ANSWER:

There are very few debt issues of that 50 year length. Data for interest rates on 50 year debt is not broadly available and, as such, Mr. McCormick cannot provide the analysis requested. Mr. McCormick also has not assembled time series of data for 10, 15 and 30 year Manitoba yields. In an effort to be responsive, it is possible to present some current Manitoba specific yield data and an analysis of the 10 year to long Canada bond term spreads.

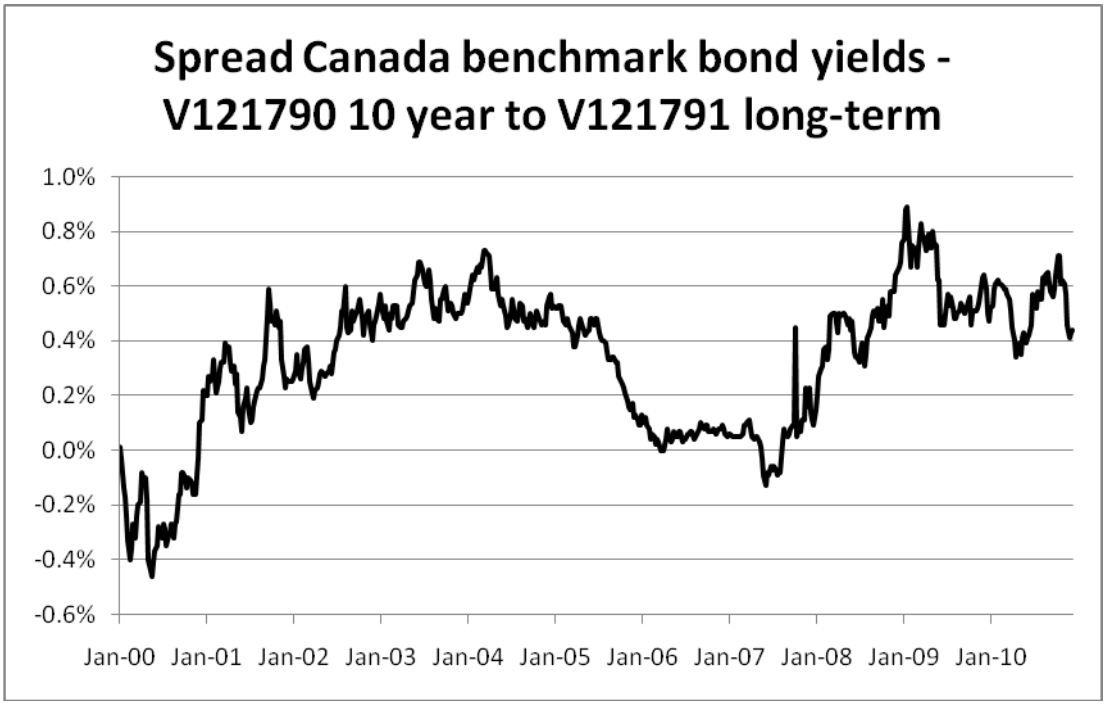
Bloomberg, a well regarded source for financial data, provides certain yield indices for Government of Canada bonds, Province of Manitoba bonds and various classes of issuers by rating or in some cases by industry such as utilities. In CAC/MSOS/MH I-134(b) we see an example of some of their available data for Government of Canada and Province of Manitoba bonds, presented in a document PUB/Centra 2-198. The Bloomberg data series presented there include 10, 15, 20, 25 and 30 year terms to maturity, but nothing longer.

With respect to the data presented in that IR, Mr. McCormick would observe that the Canada and Manitoba yield curves are normal (increasing) from 3 months to 20 years. From 20 years through 25 years and to 30 years the curve is slightly inverted. This occurs from time to time due to changing investor interest and relative scarcity of longer term bonds.

The table below provides a current Canada bond yield, the Manitoba yield, the credit spread between Canada and Manitoba, and the term spread for various Manitoba terms compared to the yield for the 30 year term.

	F101 Canada	F302 Manitoba	Manitoba Canada Spread	Manitoba Term Spread to 30 Years
3 month	1.0288%	1.0892%	0.0604%	3.2580%
5 year	2.4206%	2.7771%	0.3565%	1.5701%
10 year	3.2622%	3.8642%	0.6020%	0.4830%
15 year	3.5538%	4.2178%	0.6640%	0.1294%
30 year	3.5553%	4.3472%	0.7919%	0.0%

For Canada bonds we can provide a Bank of Canada data comparison of the yields of the 10 year to the long Canada benchmark bond. A 15 year series is not available on line. The graph below presents the spreads between the yields of the weekly 10 year series V121790 and the long term series V121791, for the period January 5, 2000 to December 15, 2010.



During this period, the average 10 year to long term spread was 33 basis points. It ranged from a negative spread of 46 basis points, in May 2000, to a maximum of 89 basis points during January 2009. The median value during this period was somewhat higher than the average value at 43 basis points.

In other points of this proceeding we have touched upon issues related to the choice of periods for data analysis. Clearly, the period of analysis will affect the conclusion. Were we to use data from the 2001 to 2010, excluding the data for the year 2000, our average, minimum and median values would change. During that shorter period, the average 10 year to long term spread was 38 basis points, rather than 33. The minimum was a negative spread of 13 basis points, rather than negative 46. The median value during this period was again higher than the average value at 45 basis points.

Were we to adopt the 2005 to 2009 period which was used in one aspect of the NBF analysis, the values would change again. During this shortest period, the average 10 year to long term spread was 31 basis points. The minimum was a negative spread of 13 basis points. The median value during this period was again higher than the average value at 34 basis points, but lower than the median values of 43 or 45 basis points in longer periods of comparison.

PUB/CAC MSOS (McCormick) I-4

Subject: Interest Rate Forecasting

Reference: Page 14 Q11

QUESTION:

Please provide an estimate of the expected impact on revenue requirement based on a 20% floating and 80% fixed debt.

ANSWER:

This question would be better addressed to MH who has control of IFF model, as they could precisely segment the specific impact of the individual changes which have occurred in the financial assumptions between the IFF-09 and IFF-10.

Mr. McCormick observes that for year ending in 2012, IFF-09 reported Financing Expense of $509 million, while IFF-10 shows Financing Expense of $499 million, a saving to consumers of $60 million and a drop of about 12%. For the 2011 to 2020 period the change in Financing Expense between IFF-09 and IFF-10 totals $474 million dollars.

In considering the $60 million saving in 2012, we must recall that this is not a cash interest number, but is affected by interest capitalization policies and a host of other adjustments many of which are identified in PUB/MH I-35 (a). The $60 million change is also affected by the updated forecast methodology which seems to employ more current inputs, in addition to the assumption that a 20% portion of the new debt will be floating rate.

So for 2012, the $60 million saving includes the benefit of new long term debt being forecast to cost 4.35% as opposed to 5.2% in prior forecasts. The $60 million saving also includes the benefit of the forecast long term floating rate debt being charged a 2.1% forecast rate rather than a 3.6% floating rate used in prior forecasts. The $60 million saving also includes the benefit of the 20% of the new formerly forecast long term fixed debt being charged a 2.1% forecast short term or floating rate rather than a 5.2% long term rate used in prior forecasts.

In essence, the change in terms of direction would be the a reduction of the revenue requirement by a factor equal to the difference between the average annual ST rate and the LT rate by 20% of the new long term debt number.

The table below looks at the interest rate savings for the two years, using the short term rates from

IFF-09 rather that the recent rate for short term borrowings derived on page 10 of Mr. McCormick's evidence and assuming that 20% of the debt in those two years was issued with a floating rate.

PUB 1-35 (e) Forecast Fixed Debt	Amount	Fixed Rate	Full year	Floating Rate	Fixed minus Float	Savings assuming 20% Floating	New Floating Debt
2010/11	$ 800	4.65%	$ 37.2	1.40%	3.25%	$ 5.20	$ 160
2011/12	$ 600	5.20%	$ 31.2	3.60%	1.60%	$ 1.92	$ 120
	$ 1,400		$ 68.4			$ 7.12	$ 280
							20.0%
		2010/11 annualized savings on 10/11 debt				$ 5.2	
		2011/12 annualized savings on 11/12 debt					$ 1.9
		2011/12 annualized savings on 10/11 debt					$ 1.7
							$ 3.6

The table below looks at the interest rate savings for the two years, using the short term rates from IFF-10 rather that the recent rate for short term borrowings derived on page 10 of Mr. McCormick's evidence and assuming that 20% of the debt in those two years was issued with a floating rate.

PUB 1-35 (e) Forecast Fixed Debt	Amount	Fixed Rate	Full year	Floating Rate	Fixed minus Float	Savings assuming 20% Floating	New Floating Debt
2010/11	$ 800	4.65%	$ 37.2	1.10%	3.55%	$ 5.68	$ 160
2011/12	$ 600	5.20%	$ 31.2	2.10%	3.10%	$ 3.72	$ 120
	$ 1,400		$ 68.4			$ 9.40	$ 280
							20.0%
		2010/11 annualized savings on 10/11 debt				$ 5.7	
		2011/12 annualized savings on 11/12 debt					$ 3.7
		2011/12 annualized savings on 10/11 debt					$ 4.1
							$ 7.8

PUB/CAC MSOS (McCormick) I-5

Subject: Interest Rate Forecasting

Reference: Page 20 & 29 Q16 & Q22

QUESTION:

Please indicate what interest rate forecasts (short and long term) should be utilized for 2010/11 and 2011/12. Please provide supporting calculations.

ANSWER:

Mr. McCormick observes that he has not been retained to develop a methodology to select the most robust group of forecasters from the cornucopia of those available. He also notes that he does not have access even to the range of forecasters which are listed in the Consensus Economics publications on the record.

He would also observe that the actual interest costs for the 6 months ended September 30, 2010 are known as we have the financial results now available in Appendix 83. The actual interest costs for the 9 months ended December 31, 2010 will be known in a matter of weeks, clearly before the completion of the oral portion of the hearing. As such, he would not undertake to forecast data which is or will be immediately available.

In terms of the 3 month T-bill rates the average for the period April 1, 2010 to December 14, 2010, as indicated by the Bank of Canada series V39065, was 68 basis points. For the same period for the 10 year Canada average rate was 3.16%, series V39055.

One of the many possible methodologies for estimating short term debt rates is set out in the table below. We have employed data from the CIBC, Scotia, Royal and TD which are publically available and provide end of period estimates. For end of period estimates we have averaged the forecast value with the most recent current rate as a proxy for the starting value, to estimate a period average rate for the first period. To our average of these four sources we have also incorporated the period average estimate of the BMO to arrive at the final estimate of 1.01% for

the average 3 month T-bill interest rates for the first quarter of 2011 and 1.61% for the fiscal year 2011/12.

	3 month T-bill	Dec-23 2010	2011 1Q11	2011 2Q11	2011 3Q11	2011 4Q11	2012 1Q12	Average 2011/12
Dec-10	CIBC	0.98%	0.85%	1.20%	1.65%	1.90%	1.85%	1.49%
Dec-10	RBC	0.98%	1.10%	1.50%	2.00%	2.05%	2.55%	1.84%
Dec-10	Scotia	0.98%	1.05%	1.10%	1.10%	1.70%	2.20%	1.43%
Dec-10	TD	0.98%	1.00%	1.05%	1.50%	2.00%	2.25%	1.56%
	Average of Forecasts		1.00%	1.21%	1.56%	1.91%	2.21%	1.58%
	Average 1Q11		0.99%					1.58%
Dec-10	BMO		1.08%	1.21%	1.50%	1.83%	2.33%	1.72%
			1.01%					1.61%

For long term debt we have repeated the same process to arrive at the final estimate of 3.21% for the first quarter of 2011 and 3.53% for the fiscal year 2011/12.

	GOC 10 Year	Dec-23 2010	2011 1Q11	2011 2Q11	2011 3Q11	2011 4Q11	2012 1Q12	Average 2011/12
Dec-10	CIBC	3.18%	3.35%	3.60%	3.55%	3.50%	3.60%	3.52%
Dec-10	RBC	3.18%	3.35%	3.35%	3.00%	3.80%	3.95%	3.49%
Dec-10	Scotia	3.18%	3.15%	3.30%	3.35%	3.40%	3.45%	3.33%
Dec-10	TD	3.18%	3.40%	3.65%	3.75%	4.00%	4.10%	3.78%
	Average of Forecasts		3.31%	3.48%	3.41%	3.68%	3.78%	3.53%
	Average 1Q11		3.25%					3.53%
Dec-10	BMO		3.07%	3.17%	3.42%	3.67%	3.86%	3.53%
			3.21%					3.53%

The National Bank forecast was not included in these tables, as in the information available to Mr. McCormick, they had not provided a data point for the end of the first quarter of 2012.

While Mr. McCormick would prefer to use actual MH interest cost data, he notes that for the 2010-11 financial year, 3 month T-bill rates for the period April 1, 2010 to December 14, 2010, average 68 basis points and the forecast of 1.01% for the final quarter would average to approximately 76 basis points. The same process applied to the 10 year Canada rate would be 3.17%.

PUB/CAC MSOS (McCormick) I-6 (a)

Subject: Forecasting Methodology

Reference: Pages 19-24 Q19

QUESTION:

a) Please describe the parameters that should be developed in determining which forecasters should be excluded for forecasting purposes and why.

ANSWER:

Availability, appropriate data content, and, accuracy are Mr. McCormick's parameters.

Before embarking on a task, it is important that there be a shared purpose. Mr. McCormick, in focusing on borrowing costs would define that purpose to be to achieve the most accurate estimation of the full cost of borrowing that is to be charged to consumers. Estimating the full cost of borrowing is a complex process since MH's debt arrangements are complex.

Some inputs of the borrowing cost should be relatively easy to estimate. A large portion of the $8.5 billion of debt shown in the schedules attached to CAC/MSOS/MH II-149 (a) and (c) are fixed rate obligation maturing beyond the GRA period, and as such they are for the purposes of this hearing known costs.

Many of the others are more difficult to estimate, including the principal amount and maturity of the fixed rate debt as it may vary from the indicated 30 year term and financing dates. If needed debt is not financed at on a fixed long term basis, it may be financed as commercial paper at very low rates or on a floating rate basis. In that exercise, one must form an opinion on the prevailing rates, the credit spread and the cost of financing, each of which are variable.

It is only in the forecasting of the base rates, 3 month T-bills and 10 year Canada bonds that we step outside MH to rely upon the estimates of others. There are many forecasters from which to choose. Mr. McCormick does not recall any explanation by MH in this or the Centra proceeding explaining why the forecasters upon which it relies were selected.

In selecting forecasters, Mr. McCormick would first restrict his recommended sample of forecasters to those who provide data in a manner that fits the task. In developing the illustration contained in PUB/CAC MSOS (McCormick) 1-5, Mr. McCormick did not use the National Bank data, owing to the fact that they did not publish the full series of time periods for 2011/12. A

longer series of data is likely available to clients of the firm.

In selecting forecasters, Mr. McCormick would target accuracy. He would wish to know whether one forecaster was perennially high or low. Beginning on page 25 in Q 21 of his evidence, he identifies as a possible goal "the least forecasting error over a certain period". He also observes that by choosing two forecasters, one of which was slightly high and the other of which was slightly low, the average error might be reduced to a very low level.

Even with a highly accurate forecast for the base rates, 3 month T-bills and 10 year Canada bonds, the variations of credit spread, including T-bill rates to BAs, and rate spreads caused by term variances will move us away from the goal of having consumers pay only the prudently incurred interest costs. As such Mr. McCormick prefers a interest rate deferral mechanism.

PUB/CAC MSOS (McCormick) I-6 (b)

Subject: Forecasting Methodology

Reference: Pages 19-24 Q19

QUESTION:

b) For the purposes of this proceeding, please explain why only statistically independent forecasts should be used. Please file Q13 of your evidence to the Centra proceeding.

ANSWER:

There were two general problems with the use of the dependent forecasts.

First, they are frequently "stale dated" or superseded. The BC budget and Federal budget forecasts are only available once or twice a year. The likelihood that the sources upon which they relied having updated their forecasts with new perspectives is very high.

Second, even when the dependent forecasts were current, blending their data points into the mix results in an overweighting of some forecasters estimates and an underweighting of the forecasts of other parties. This overweighting of some forecasters over others appears to lack any foundation or logical justification.

If the purpose of the forecast is to assist proper planning by the company and wise and thoughtful decision making by the Board, a robust forecast should be the goal. So to randomly select forecasters and to arbitrarily weight their forecasts seems an inferior methodology. The logical problems of mixing a host of sources of uneven dates into one great stew, is one of balance.

With respect to the Consensus forecast, the additional problem may be one of symmetry, in that the data that they publish may not have the frequency required by the models into which MH would wish to incorporate the comparative data points.

Mr. McCormick observes that there were two questions posed by the Board with respect to Q.13. So as to complete the record in this proceeding, those two questions and his replies to them will follow the text of Q.13. The text of Q.13 is set out below:

Q.13 Have you other concerns with the existing methodology?

A. Yes, I do think that there may be some troublesome aspects coming out of the brief description of the methodology, but we have yet to receive a full description and some of my views are based on inferences drawn from the information in this application which may have been affected by matters specific to this application. I have already mentioned that much of the data was not timely when the forecast was made, and I have observed that much of the data used in developing the forecasts had been superseded by their respective authors by the time the forecast was approved by the Board of Centra. I am also troubled with the relative weighting of data sources in the undisclosed methodology.

In CAC/MSOS/Centra 2-76 k, we are told that "Each year Centra applies a consistent economic forecasting methodology that utilizes high quality inputs from numerous independent forecasters"[30] and "Centra adopts a longer term view which incorporates high quality data sources and sound forecasting methodologies." We are not told how they undertake any data adjustments.

Since several of the utility regulators in Canada rely on the Consensus Forecast of 10 year Canada bond rates to set equity returns it is obvious that a Consensus Forecast is a quality source, when used on a timely basis and with consistent data. While the names and numbers of contributors to the Consensus Forecast have changed over time they typically include the six major Canadian banks among the perhaps 15 or 16 named contributors to the Consensus Forecast. As the Consensus Forecast uses the "mean"[31] we know that estimates of each of the contributors were equally weighted. Since the Consensus Forecast contributors are asked to contribute specific data and they publish some of their information monthly, we can reasonably assume that the independent forecasts are all contributed relatively contemporaneously and on a similar basis as to the period forecast.

Assuming the 2008 BC budget forecast is the forecast to which Centra was referring in PUB/Centra 2-198, we see the forecasts of 6 banks for 2 years, averaged and then extended over a greater time period. All the banks named in the BC budget were named in the monthly Consensus Forecast[32]. Effectively, each of those banks estimates would contribute $1/6^{th}$ of the value of the BC forecast, just as each of the 16 contributors to the consensus forecast would contribute $1/16^{th}$ of the "mean" value of the consensus forecast. Essentially, the BC forecast, if drawn from the budget, is not an independent forecast authored by the government of BC, as the forecast in the BC budget depends on the forecasts of the six banks.

As banks regularly update their forecasts, and as five of the 12 sources referenced in PUB/Centra 2-198, provided data with a March 2008 date, it is likely, that at least one of those sources is a bank which had data included in the October Consensus Forecast, and was also one of the banks to which the BC budget makes

[30] As the BC budget forecast depends on six other forecasts for inputs, it may not be strictly "independent" as that word would be used in a statistical sense.
[31] See the various monthly attachments contained in CAC/MSOS/Centra 2-75 j.
[32] Examples of which can be found in CAC/MSOS/Centra 2-75j

reference. As such, this methodology appears to corrupt or taint the fresh and pure "milk" of that bank's March interest rate forecasts, with both the "stale dated milk" of that bank's January forecast included in the BC Budget, and the likely now rancid "milk" of the data point from that bank which was included in the October Consensus Forecast.

This methodology also seems to provide an interesting reweighting of the contributions of the various forecasters. In PUB/Centra 2-198 we see that the forecast rate approximates the average of the various forecasts. The contribution of the bank, referred to in the previous paragraph, to the rate in the Economic Outlook is enhanced relative to some of the other contributors to the Consensus Forecasts relied on by regulatory bodies. That bank has its own current forecast as a data point, plus 1/6 of an old January forecast included as part of the BC budget, plus 1/16 of the October Consensus forecast, all included in the calculation[33]. Assuming that the forecasts of the Caisse, Desjardins, EDC Economics, Economap, JP Morgan, Merrill Lynch, and the University of Toronto are not included in the forecasts of other named contributors, their contribution to the Economic Outlook is reduced dramatically. Each of those forecasters represented $1/16^{th}$ of the Consensus Forecast relied upon by regulatory agencies, and collectively $7/16^{th}$ of the forecast. Remembering that the Consensus Forecast was one of 12 "independent"[34] forecasts and had 16 contributing forecasters, in arriving at the "Economic Outlook 2008" for 10 year Canada yields, each of these forecasters would represent $1/16^{th}$ of $1/12^{th}$ of the "Average of Forecasters". As such, these forecasters go from being $7/16^{th}$ of the consensus estimate to being $7/192^{nd}$ of the "Economic Outlook 2008" forecast.

In light of the use of both independent and dependent forecasts, a mix of forecasts authored over a six month period beginning in October 2007, and the use of the resulting forecast in January 2009 after much of the underlying data has been superseded, I was somewhat surprised to learn that "The Corporation does not review the relative success of each forecast included in its forecast of T-bill rates by comparing their historical forecasts with actual market results."[35] In as much as Centra has selected a sample of the available forecasters, I believe it would be a good practice to review the estimates of forecasters so as to be assured that the selection of forecasters would best approximate the result. I believe it would be worth knowing whether one included forecaster was perennially low or high if that result was causing a variance which could be avoided by its exclusion. It would be a simple matter to test, for example, whether the accuracy of the forecast was enhanced by using or excluding the "stale dated" data sources.

[33] This would total 1.23.
[34] CAC/MSOS/Centra 1-2 c, and CAC/MSOS/Centra 2-76 e and k, among others.
[35] CAC/MSOS/Centra 2-76f.

The text of the PUB questions related to Q.13 is set out below:

PUB/CAC/MSOS I - 17

Reference: Evidence of J.D. McCormick, Page13 Q 13.

Given the reliance on the Consensus Forecast of 10 Year Canada Bond rates by Regulators and that the forecast includes 15 to 16 contributors including the six major banks, should the Consensus forecast be used by the Board for rate setting purposes?

Mr. McCormick supports the formula approach for determining the equity rate of return.

Mr. McCormick notes that in the monthly publication of forecasts by Consensus Economics the 3 month T-bill and 10 year Canada rates are forecast for 3 months and 12 months out. If this is the only data they release, these two point-in-time forecasts may make it difficult to forecast interest rates for these instruments over a 2 year period as they would require one to engage in significant extrapolation. Fortunately, the six major Canadian banks, among others, frequently publish quarterly forecasts.

Mr. McCormick notes that Manitoba Public Insurance in its 2009 Rate Application, Revenue Forecast Data Book 2008 –TI.18 at page 19[8] appeared to use data from the five banks and "Global". Manitoba Public Insurance provided quarterly data for 3 Month and 10 Year instruments and, unlike Centra, linked the forecaster's name and data estimates in its filing.

PUB/CAC/MSOS I - 18

Reference: Evidence of J.D. McCormick, Page 15 Q13.

Please elaborate on what testing of forecasts should be undertaken and suggested parameters to be utilized to exclude a forecast from the methodology

Mr. McCormick in his evidence made several suggestions for matters that might be checked in reviewing the forecasting methodology which resulted in the Centra interest rate forecasts included in this application. First, is the data timely, or has it been superseded? Second, is the data directly comparable, or in this case is some of the "End period" data being treated as period average data? These two items are relatively simple to test or confirm.

Assuming that we have timely and comparable forecast data upon which to base our forecast the determination of the "best" forecasting methodology is virtually unlimited. It would be open to Centra to choose only one source, or, some group of sources to weigh in the development of its own forecast for a GRA application.

To keep things relatively simple let us assume that there were only forecasts available from the 6 major Canadian chartered banks, Centra had a number of

[8] http://www.mpi.mb.ca/english/newsroom/RateApp/2009-2110/2009round3_ebook/VolII/35_VolumeII_TI18.pdf

years of forecasts available and the actual interest rate data, and, that Centra wished only to choose the "best" forecast from one source. In that instance, Centra might compare each successive forecast against the actual results for each of the forecasters and then select the one forecaster that had the smallest variance between forecast and actual results. The process could be repeated to determine whether a combination of forecasters averaged in some way might provide a more robust forecast which would have more closely tracked the actual results. Forecasters who are perennially high or low or do not otherwise contribute to a reduction of tracking error would be excluded.

Mr. McCormick notes that there were other sources contributing to the Consensus Forecast that were not used as independent data points in the Centra forecast methodology. He would hope that any initial testing of forecasts to be included would begin with a large group of candidates.

PUB/CAC MSOS (McCormick) I-6 (c)

Subject: Forecasting Methodology

Reference: Pages 19-24 Q19

QUESTION:

c) Please estimate the impact on the forecast of interest rates by excluding the forecasts of Federal Finance, Province of BC and Consensus Economics.

ANSWER:

The impact on the forecast interest rates will vary from time to time as the forecast values of Federal Finance, Province of BC and Consensus Economics vary from values forecast by other forecasters. The impact will also depend on the market conditions and the period of time that has elapsed from the date of the Federal Finance, Province of BC and Consensus Economics to the dates of the more current monthly forecasts of many of the other forecasters.

While Mr. McCormick has access to current forecasts from some of the Canadian chartered banks, he does not have access to the recent forecasts of IHS, Infometrica or Spatial Economics with which to build a current example. In an effort to be responsive, he has taken data from a table from the June 1, 2009 Manitoba Hydro PUB/Centra 2-198 update in the Centra proceeding. That table included forecast data points supplied by a number of forecasters including Federal Finance and the Province of BC.

The Table below provides the average for all forecasters.

Canada 90 Day T-Bill Rate (%)	Date	2009	2010	2011
BMO Nesbitt Burns	Mar-09	0.4%	1.0%	
CIBC	Mar-09	0.4%	0.6%	
Federal Finance	Nov-08	1.9%	2.7%	4.2%
National Bank	Mar-09	1.3%	3.1%	
Province of British Columbia	Feb-09	0.9%	1.7%	2.9%
Royal Bank	Mar-09	1.1%	2.0%	
Scotiabank	Mar-09	0.3%	0.6%	
TD Bank	Mar-09	0.4%	1.0%	
Conference Board	Dec-08	2.2%	3.9%	4.5%
IHS Global Insight	Mar-09	0.4%	0.7%	2.4%
Informetrica	Feb-09	2.4%	3.3%	3.8%
Spatial Economics	Nov-08	2.6%	3.1%	4.0%
Average of All Forecasters		1.19%	1.98%	3.63%

The table below provides the average for all independent forecasters, by removing the November 2008

Federal Finance estimate and the much more current Province of BC February 2009 estimate.

Canada 90 Day T-Bill Rate (%)	Date	2009	2010	2011
BMO Nesbitt Burns	Mar-09	0.4%	1.0%	
CIBC	Mar-09	0.4%	0.6%	
National Bank	Mar-09	1.3%	3.1%	
Royal Bank	Mar-09	1.1%	2.0%	
Scotiabank	Mar-09	0.3%	0.6%	
TD Bank	Mar-09	0.4%	1.0%	
Conference Board	Dec-08	2.2%	3.9%	4.5%
IHS Global Insight	Mar-09	0.4%	0.7%	2.4%
Informetrica	Feb-09	2.4%	3.3%	3.8%
Spatial Economics	Nov-08	2.6%	3.1%	4.0%
Average of Independent Forecasters		1.15%	1.93%	3.68%

In the table above we only see a slight change in the average values as we drop for 12 forecasts to 10 forecasts, and most of that change arises not from the lack of independence of the Federal Finance and the Province of BC forecasts, but the lack of timeliness of the Federal forecast.

The table below removes those forecasters which have not provided the most timely forecasts, the conference Board, Infometrica and Spatial Economics.

Canada 90 Day T-Bill Rate (%)	Date	2009	2010	2011
BMO Nesbitt Burns	Mar-09	0.4%	1.0%	
CIBC	Mar-09	0.4%	0.6%	
National Bank	Mar-09	1.3%	3.1%	
Royal Bank	Mar-09	1.1%	2.0%	
Scotiabank	Mar-09	0.3%	0.6%	
TD Bank	Mar-09	0.4%	1.0%	
IHS Global Insight	Mar-09	0.4%	0.7%	2.4%
Average of Most Current Forecasters		0.61%	1.29%	2.40%
Change from all forecasters in %		0.58%	0.69%	1.23%
Percentage change from initial value		-48%	-35%	-34%

The table above now shows a 2009 average forecast of 61 basis points, a drop of 58 basis points from the first table, and an overall change of 48% in the estimate. Similarly, the table above now shows a 2010 average forecast of 1.29%, a drop of 69 basis points from the first table, and an overall change of 35% in the estimate.

A similar analysis using the 10 year Canada rate would also show material changes in the forecast averages, again main due to the exclusion of less timely forecasts.

PUB/CAC MSOS (McCormick) I-7

Subject: Interest Rate Deferral Account

Reference: Page 30

QUESTION:

a) Please describe how the interest rate deferral mechanism would operate, including increases to the account and how it is to be drawn down.

b) Should a deferral account attract interest? If so, at what rate?

ANSWER:

To the extent that the actual interest cost in a year varies from the forecast for interest costs contained in the revenue requirement for that year, the difference, either positive or negative, would be captured in a deferral account in that year to be addressed in the following test period. Should, for example, MH have under estimated its interest costs for any reason including, interest forecasting errors, changes in its need for borrowings due to acceleration or deferral of capital spending, variances in the choice of maturity for short or long term debt, that aggregate cost variance would be refunded to or recovered from customers in the following test period.

Since the period of adjustment is short, financing the shortage or excess would not be onerous to MH. As such, should the Board determine that this deferral account should attract interest, so as to parallel some other MH deferral accounts, the interest rate for this account should be at a short term rate. Mr. McCormick would recommend the average rate on MH commercial paper program as it may vary over the relevant year. Data on commercial paper or short term rates is presented in CAC/MSOS/MH II-152(c).

PUB/CAC MSOS (McCormick) I-8

Subject: Independent Forecasts

Reference: Page 30 Q23

QUESTION:

Please provide a listing of suggested forecasts that MH should consider incorporating including the reason MH should include the forecast.

ANSWER:

Mr. McCormick has no such listing of recommended forecasts, nor does he have a particular brand loyalty with respect to the choice of forecasters.

From the consumers' point of view, a major purpose of the interest rate forecasts is the correct determination or estimation of the future interest costs which should be included in the rates that they will be required to pay. As such, there is no specific number of forecasters that could be arbitrarily set in advance of developing a methodology to provide a robust forecast from the host of forecasts available. The focus of the discussion in this and the Centra proceeding was to identify and test the efficacy of the MH procedures in use to develop its forecast. It would appear that some progress has been made in MH indicating that it will no longer use dependent forecasts. As yet, MH has not proposed a methodology to select those forecasters having with some measure of success in their forecasts to be the group from which it will derive its forecasts.

While MH does not review the accuracy of the forecasters which it relies upon nor others which might improve its forecast accuracy, other organizations do. An October 21, 2010 press release, available on the BMO web site, noted that BMO Financial Group's chief economist, Dr. Sherry Cooper, will receive this year's prestigious Lawrence R. Klein Award for economic forecasting accuracy. The award, named for Nobel Prize Winner Dr. Lawrence R. Klein, is being presented to Dr. Cooper for having the most accurate economic forecast among the Blue Chip Economic Indicators survey for the years 2006 to 2009. Among other things, Dr. Cooper and her team correctly pinpointed key indicators at both the beginning of the recession and the beginning of the recovery. The press release does not discuss the specific accuracy of the 3 month T-bill or 10 year forecasts by BMO.

CAC/MSOS/MH I-139(a) provides a Consensus document with a list of some 16 forecasters

offering for T-bills and 10-year Canada yields. That document identifies a number of forecasters not used by MH which might be worthy of consideration for inclusion in the MH forecast methodology in addition to those it has viewed as worthy and relied upon in its forecasts. There may very well be other forecasters not included in the MH or Consensus lists with great accuracy who would also be worthy of inclusion.

As (1) MH appears disinclined to embrace some comparison of the relative forecast accuracy of the forecasts of those it has adopted and those it has chosen not to use its forecast methodology, (2), MH has an asymmetric advantage in that it sets the forecast methodology and retains any benefit of excess forecast interest included in the rates, and, (3), as Mr. McCormick has identified a number of flaws in the NBF report which apparently went unchallenged for many months, he is less than confident of MH having the enthusiasm to the develop a methodology which will build a more robust interest rate forecast. This view causes him to believe that an interest rate deferral mechanism is the better route to achieving the goal of having consumers pay only the prudently incurred interest costs.

PUB/CAC MSOS (McCormick) I-9

Subject: ST Credit Spreads

Reference: Page 35 Q30

QUESTION:

Please provide an estimate of the potential interest cost savings to ratepayers to reflect the reduction to the T-bill to BA spread

ANSWER:

The annual savings to consumers of a 10 basis point reduction in the assumed spread, will depend on the amount of debt and the proportion of debt that is in short term or BA based debt instruments. The table below calculates the annual saving for various long term debt levels in years drawn from IFF-10, for the 15%, 20%, 25% and 30% floating rate levels.

Debt	Year	Percent Floating			
	IFF-10	15%	20%	25%	30%
$ 8,524,000,000	2011	$1,278,600	$ 1,704,800	$2,131,000	$2,557,200
$10,296,000,000	2014	$1,544,400	$ 2,059,200	$2,574,000	$3,088,800
$13,858,000,000	2017	$2,078,700	$ 2,771,600	$3,464,500	$4,157,400
$17,090,000,000	2019	$2,563,500	$ 3,418,000	$4,272,500	$5,127,000

PUB/CAC MSOS (McCormick) I-10

Subject: ST Credit Spreads

Reference: Page 37 Q30

QUESTION:

Please indicate what period an average credit spread should be based? Should the recent credit crisis be excluded from the determination of the average or alternatively adjusted or weighted in some manner?

ANSWER:

Mr. McCormick is unsure as to which credit spread is sought to be estimated.

If we are speaking of the credit spread in 2030 or some similar far distant period, Mr. McCormick would recommend a very long period of data to determine the mean or median value to which we will gravitate. Mr. McCormick would prefer that the estimation of that value in that far distant period would be based on data at least as long as the forward period, in this example 20 years, but would prefer an even longer period if data for that even longer period was available.

PUB/CAC MSOS (McCormick) I-11

Subject: ST Credit Spreads

Reference: Page 37 Q32

QUESTION:

Please provide a table indicating the current Manitoba specific spreads for the 3-month, 6 month and 1 year and provide the average and compare with spread proposed by MH.

ANSWER:

	F101 Canada BFV curve	F302 Manitoba BFV Curve	Spread
3 months	1.0288%	1.0892%	0.0604%
6 months	1.0288%	1.1825%	0.0569%
1 year	1.3792%	1.4238%	0.0446%
Average	1.1779%	1.2318%	0.0540%

The data in the table above is drawn from Bloomberg and it provides a well recognized estimate of the market yields for short term obligations of Canada and Manitoba. The spreads, which average around 5 basis points, are credit spreads and do not include the costs of borrowing. The 20 basis point spread discussed in CAC/MSOS/MH I-135(f) is a forecast credit spread between 3 month T-bills and BAs. As described in that IR, the 20 basis point spread appears to be the forecast of the credit spread from the Canada credit to a bank credit, and does not incorporate the cost of borrowing nor the spread over or under 3 month BA rates to which MH may agree when it undertakes a placement or an interest rate swap.

To provide the Board with some additional context as to the debt market conditions as these replies are being prepared, Mr. McCormick has also included the data for the 5, 7, 10 and 30 year terms, in the table below, and notes that the Bank of Canada was indicating a 3 month BA rate of 1.21%.

	F101 Canada BFV curve	F302 Manitoba BFV Curve	Spread
5 year	2.4206%	2.7771%	0.3565%
7 year	2.8134%	3.3301%	0.5167%
10 year	3.2622%	3.8642%	0.6020%
30 year	3.5553%	4.3472%	0.7919%

While the credit spreads up to one year are in the 5 basis point range, credit spreads for longer terms become an increasingly large portion of the total rate. For the 5 year term, the spread of

0.3565% is about 13% of the indicated interest rate or yield of 2.7771%. At 30 years, the spread of 0.7919% is about 18% of the indicated interest rate or yield of 4.3472%.

The table in CAC/MSOS/MH II-148(b) segments the MH long term debt into maturity periods of less than 10 years, 10 to 20 years, and greater than 20 years. The IR table, for the years 2004 to 2009, shows a proportion of debt maturing in the greater than 20 year period between 12.8% and 17.2% of total debt. The extract below shows the MH forecast methodology increasing the long term debt in the greater than 20 year range to 55.2% of total debt mainly at the expense of the cheaper maturities in the less than 10 year range.

CAC/MSOS/MH II-148 (b)	less than 10	10 to 20	greater than 20
March 31, 2010	66.4%	8.7%	24.9%
March 31, 2014	33.6%	11.2%	55.2%

The difficultly of translating the proposed spreads both in the short term and long term is the multiplicity of financing options available to MH.

With respect to short term spreads, Mr. McCormick's goal of having consumers pay only the prudently incurred costs of borrowing is complicated by several factors which are discussed on general terms in CAC/MSOS/MH I-143 (a). With respect to short term debt, one type of variance may arise since, MH may draw a variable amounts under its Commercial Paper Program, which may average approximately $100 million, (which might be about 6% of the $1.5 billion of short term debt) and, as we learn in CAC/MSOS/MH I-135 (b) and (e), the rates may be lower than T-bills for a number of reasons including terms being shorter than 3 months. CAC/MSOS/MH II-152 (c) provides information on spreads on certain short term borrowings. Secondly, spreads on financings vary considerably as we see in CAC/MSOS/MH II-149 (a) from a negative spread of 17.5 basis points in respect of series C077-3 to series BM with a spread of 3.29%. Spreads on some outstanding BA based loans have been identified in CAC/MSOS/MH I-157 (i).

PUB/CAC MSOS (McCormick) I-12 (a & b)

Subject: Floating Rate Debt

Reference: Page 41 & 42 Q33 Figures 3 & 4

QUESTION:

a) Please extend the graphs to include 2010 data (if available) and file a table of respective data points reflected in the graph. Please provide the supporting calculations.
b) Please provide any further commentary or observations on the updated graphs in part (a).

ANSWER:

The limiting feature in Figures 3 & 4 was the Manitoba Hydro data found in CAC/MSOS/MH I-146 (d), which ended with December 2009 data and has not been updated. Bank of Canada data in the graphs is quarterly data for the period March 2004 to December 2009, but as it is readily available, the table below includes the values to September 2010. As this IR reply is due on December 27, 2010, it is not possible to extend the Bank of Canada data to the final quarter of 2010.

The table below provides the Bank of Canada data which supports the curves presented in Figures 3 and 4, and the calculated values. It also includes the Manitoba Hydro data on percentage of floating rate debt found in CAC/MSOS/MH I-146 (d) as of April 8, 2010.

	V122527: Bankers' acceptances - 3 month	Long Term Canada / 3 Month BA	V122544: Canada benchmark bond yield, long-term	Long Term Canada / 3 Month T-bill	V122531: Treasury Bills - 3 month	Manitoba Hydro % Floating Rate
Mar-04	2.09%	2.41	5.04%	2.55	1.98%	21.9%
Jun-04	2.09%	2.55	5.33%	2.65	2.01%	19.3%
Sep-04	2.49%	2.02	5.04%	2.06	2.45%	18.6%
Dec-04	2.56%	1.92	4.92%	1.99	2.47%	19.3%
Mar-05	2.67%	1.79	4.77%	1.86	2.56%	18.8%
Jun-05	2.59%	1.66	4.29%	1.73	2.48%	17.9%
Sep-05	2.99%	1.41	4.21%	1.47	2.86%	18.2%
Dec-05	3.53%	1.14	4.02%	1.19	3.37%	18.0%
Mar-06	3.98%	1.06	4.23%	1.10	3.86%	16.6%
Jun-06	4.46%	1.05	4.67%	1.08	4.32%	17.5%
Sep-06	4.32%	0.94	4.07%	0.98	4.15%	17.7%
Dec-06	4.31%	0.95	4.10%	0.99	4.16%	18.2%
Mar-07	4.31%	0.98	4.21%	1.01	4.16%	19.0%
Jun-07	4.58%	1.00	4.56%	1.03	4.42%	19.5%
Sep-07	4.88%	0.92	4.50%	1.13	3.97%	20.0%
Dec-07	4.75%	0.88	4.18%	1.08	3.86%	18.5%
Mar-08	3.58%	1.11	3.96%	2.30	1.72%	20.5%
Jun-08	3.20%	1.27	4.05%	1.56	2.60%	20.2%
Sep-08	3.39%	1.22	4.13%	2.15	1.92%	21.4%
Dec-08	1.41%	2.45	3.45%	4.16	0.83%	20.9%
Mar-09	0.51%	7.33	3.74%	9.59	0.39%	20.4%
Jun-09	0.32%	12.22	3.91%	16.29	0.24%	19.7%
Sep-09	0.30%	12.80	3.84%	17.45	0.22%	20.8%
Dec-09	0.32%	12.72	4.07%	21.42	0.19%	19.8%
Mar-10	0.48%	8.48	4.07%	14.54	0.28%	
Jun-10	0.77%	4.74	3.65%	7.30	0.50%	
Sep-10	1.21%	2.75	3.33%	3.83	0.87%	

PUB/CAC MSOS (McCormick) I-13

Subject: Peer Review

Reference: Page 56 & 57

QUESTION:

Please file the cited excerpts from the Sask Power and Emera Annual Reports

ANSWER:

Please refer to Exhibit 1 to PUB/CAC MSOS (McCormick) I-13. This Exhibit includes information from Emera annual reports and the quarterly reports referenced in Mr. McCormick's evidence.

Please refer to Exhibit 2 to PUB/CAC MSOS (McCormick) I-13 for annual and quarterly information related to SaskPower.

PUB/CAC MSOS (McCormick) I-14 (a)

Subject: Optimal Range

Reference: Page 66, Q56

QUESTION:

a) Please discuss how the inclusion of a period with negative correlation might impact the modeling of the optimal range of floating debt.

ANSWER:

Simply put, inputs into any analysis often have an impact on the results.

In reply to PUB/CAC MSOS (McCormick) I-3, Mr. McCormick observes how the range and average and median values of the spread between 10 year Canada bonds and the benchmark long Canada bond vary with the choice of time period. Were one to wish to achieve a particular outcome in a modeling exercise, to the extent that a model is responsive to a particular inputs parameters, one could select a period for analysis which would provide the inputs which lead to the desired result. In that discussion, ignoring the year 2000 data would give a different impression of the behaviour of term spreads as the spreads were particularly negative, at negative 46 basis points, at one time during the year 2000.

The passage to which we are referred on page 66 is part of Mr. McCormick's evidence in which he comments on modeling undertaken by NBF. After a considerable number of IRs to attempt to learn more about the parameters of the NBF model, in Q 56 Mr. McCormick describes the description of the model as "quite opaque". As such, he is unable to discuss how a positive or negative correlation would affect the results of the particular NBF model.

The particular discussion of historical interest rate behaviour in the 1999-2003 and 2004-2009 periods in the NBF report, including Table 4 and Figure 3, is about one page in length. As such, one might have anticipated that this information was important in the development of their conclusions. It is there on page 12 that we learn that of the negative correlation of short and long interest rates in the 2004-2009 period. Later in the document, near Tables 11 and 12, we are advised that the analysis will use a different period, 2005-2009, a subset of the 2004-2009 negative interest rate correlation period, but were not provided the correlations for the shorter period.

With those two different periods, in CAC/MSOS/MH I-154 (c), we asked for the correlation in the 2005-2009 period and that the authors of the model "discuss implications on the resulting determination of the optimal range of floating rate debt as a result of choosing a period with negative correlation as opposed to positive correlation between short term interest rates and long term interest rates." The authors replied, in part, "*the model did not incorporate a relationship between short term and long term interest rates and is independent of any such correlation."*

Mr. McCormick is of the view that issuers would wish to avoid a high component of short term and floating rate debt during inverted yield curves but would enjoy the interest cost savings to a generous component of short term and floating rate debt in period of normal yield curves. The phrases inverted yield curve and normal yield curve describe the "*relationship between short term and long term interest rates."*

PUB/CAC MSOS (McCormick) I-14 (b)

Subject: Optimal Range

Reference: Page 66, Q56

QUESTION:

b) With respect to modeling the optimal level of floating debt, how should the credit crisis period be treated, to ensure it is properly included in the modeling? Would the extensions of the time frame be appropriate or some other adjustments?

ANSWER:

Mr. McCormick has not attempted to model MH's optimal level of floating rate debt. He has attempted to test the MH various assertions about its efforts to "structure the optimum balance of short and long-term debt denominated in both Canadian and US currencies" and to test the MH interest rate forecast methodologies.

The questions above relate to the issue of adequacy of data for a particular modeling assignment. The question of sufficiency of data arises in any modelling assignment. To a degree the question will be answered when one identifies what is to be modeled.

If one wished to model something that might happen in the very short term, say, the probable BA rate some 34 days hence on January 31, 2011, one could consult the various bank forecasts which, although supplying data for March 31, would provide an indication of the anticipated direction of interest rate moves. One might also estimate the likely 34 day change from current by reviewing time series data to determine the minimum, maximum, average and median values. To be really fancy, we might look for change cycles in rising or falling markets and segment the data to correspond to our recent market experience. While the Bank of Canada has 10 years of data readily available on line, and longer data available, for something 34 days in the future analyzing the full history, or even the last 5 years, may seem like overkill.

Were we to attempt to model to devise a policy that would last through good and bad economic cycles, Mr. McCormick would suggest that we model very long periods of time, and not be captive to the events of the last 5 years.

PUB/CAC MSOS (McCormick) I-15

Subject: Optimal Range

Reference: Page 67, Q57 Fn162

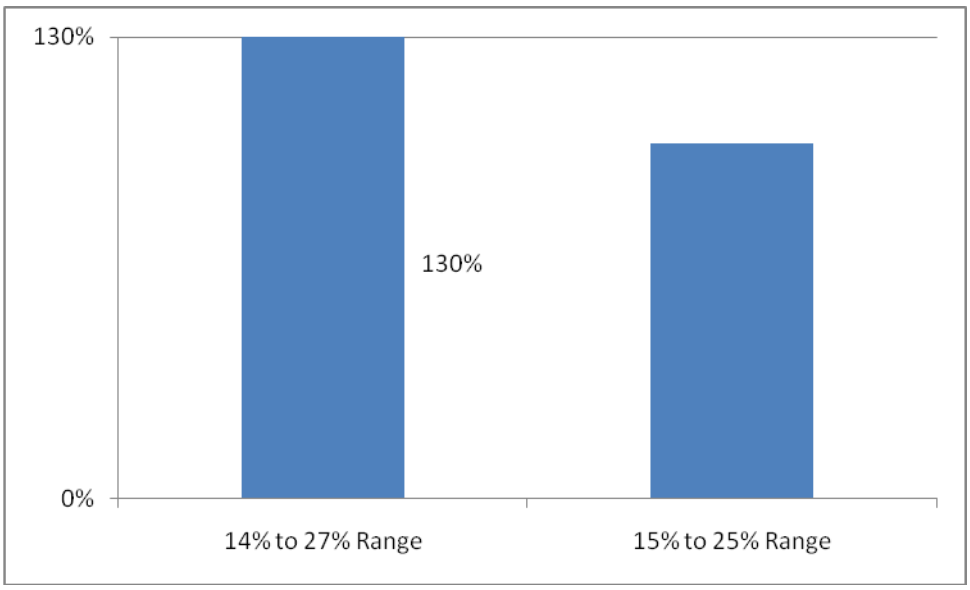
QUESTION:

Please provide a graphical illustration demonstrating that the floating debt range of 15-25% difference from the 14-27% range in the NFB analysis.

ANSWER:

Mr. McCormick observes that the nature of the "graphical illustration" sought is undefined. As such, he is unsure as to whether the question seeks an enhanced graph similar to Figure 1 of the NBF report with the narrower 15-25% range identified, or some other representation. Neither MH nor NBF have supplied sufficient information to allow Mr. McCormick to recreate Figure 1 with the additional information.

As discussed in footnote 163 of his evidence, CAC/MSOS/MH I-151 provides the intersection points of the 15-25% range and the 14-27% range. The 14-27% range spans a 49 unit range from 51 to 100 units on the return axis. It appears that the 15-25% range spans a 37.7 unit range from 56.6 to 94.3 units on the return axis. Whether describing the range in nominal percentages, (27%-14%)/ (25%-15%) =1.3, or in units of the return axis, (49)/ (94.3-56.6) =1.3, the graph below shows the proportion of the 2 ranges.



PUB/CAC MSOS (McCormick) I-16

Subject: Optimal Range

Reference: Page 67, Q57

QUESTION:

If the revenue requirement was set utilizing the recommended optimal range of short term debt, please discuss whether it would still be appropriate to have a deferral account to capture any differences in forecast interest costs from actual

ANSWER:

Mr. McCormick prefers the near perfect symmetry of a deferral account even with the all the improvements in MH's forecasting. It was only in the event that "the the Board is disinclined to adopt an interest cost deferral mechanism"[9] that he proposed a specific level of the floating rate component of the debt structure for this GRA.

This question is largely a policy based question.

The consumer interest is maximized when consumers are called upon to pay only the prudently incurred financing costs of the utility. Consumers pay the prudent costs of the utility and the utility has the capacity of pay its obligations. As such, symmetry between actual costs and the revenue requirement should be an obvious goal. In that regard, a deferral account would result in the highest level of symmetry between the goal and the actual practise.

As the proponent of its revenue forecast and its interest and debt forecast methodology, in the absence of a close regulatory review or a deferral account, a utility has the advantage of bringing forward a generous estimate of its interest costs and should the actual costs be lower, it keeps the surplus. A forecast based on new issues being 30 year term fixed rate debt, in the more common period of a normal yield curve, provides a significant revenue advantage to a utility (1) with a policy of issuing up to 30%, of the usually cheaper, floating rate debt, and (2) a practise of debt instruments of shorter term.

A more accurate forecasting methodology, based on a more realistic portfolio mix of fixed and floating rate debt and a more realistic mix of terms to maturity of the forecast issues, will narrow the forecasting variance. Those new, more realistic, parameters will still remain captive to the

[9] See the final recommendation of Q.60 in Mr. McCormick's evidence.

same forecasting errors which Mr. McCormick discussed in Q21 of his evidence. Whatever the forecast parameters, there will still be variances as few if any forecasters get it completely right.

In the Centra proceeding, we demonstrated material problems in the interest forecasting methodology used by MH. In this proceeding, we have challenged the policy inconsistency, of the forecasting assumptions that all future debt would be the very expensive 30 year long term issues, with the policy to maintain up to 30% floating rate debt. In some ways the process has been akin to peeling layers off an onion. We have yet to fully address the assumptions (1) that all future fixed debt will have a 30 year term, and (2) that the floating rate interest costs are best described by the 3 month BA plus analysis.

Finally, the question refers to "the recommended optimal range of short term debt" which Mr. McCormick views as an uncertain phrase. To be clear, his primary recommendation for this GRA, is the adoption of an interest cost deferral mechanism. While he believes that all forecasts should be made with the corporate policies in mind, in the absence of an interest cost deferral mechanism, he would then recommend the revenue requirement be based upon either a 25% or 27% floating rate debt component. As he understands the views of NBF, they consider any point within the 14% to 27% range as optimal. While economic conditions may change over the next few years and in future times of a flat or inverted yield curve, Mr. McCormick might recommend some lower value, he does not share the view that a 14% position would be equally optimal as a 27% position at this time.

PUB/CAC/MSOS (Matwichuk) I - 17

Reference: Page 15, Q16 Table 2

a) Please indicate which forecast was utilized for each year and in particular 2009.

Answer:

a) The forecast amounts were based on information available to Mr. Matwichuk. Below is a table of concordance for Table 2.

Year	Forecast
2002	IFF-01
2003	IFF-01
2004	IFF-02
2005	IFF-03
2006	IFF-04
2007	IFF-05
2008	IFF-06
2009	IFF-07
2010	IFF-09

PUB/CAC/MSOS (Matwichuk) I - 17

Reference: Page 15, Q16 Table 2

b) Please restate the table to incorporate a comparison of actual versus forecast with the IFF utilized for forecasts presented for rate setting purposes from fiscal 2001 to 2010 and comment on the variances.

Answer:

b) As complete data was unavailable, Mr. Matwichuk is unable to provide the requested information in the time period provided to respond. He will endeavour to obtain the data and respond with a restated Table 2 at a later date.

The intent of Table 2 was not focused on the specific forecasts ultimately used for rate setting purposes, but simply to demonstrate that the annual variances from a Manitoba Hydro forecast to the actual result for domestic revenue were relatively small. This is in contrast to annual variances from a Manitoba Hydro forecast to actual result for export revenue contained in Table 2 where the variances are relatively larger. This difference is not surprising given that domestic sales occur in regulated environment where load, in GWh, has tended to increase year over year by less than 3% (on average 2.4%) over the years 2001 to 2010. For the most part, domestic sales appear to follow a more predictable trend.

PUB/CAC/MSOS (Matwichuk) I - 18

Reference: Page 16, Q16 Table 3 Forecast Exports

a) Please update the table to incorporate[d] [sic] 2009/10 forecast versus actual results and comment on the results.

Answer:

a) The question requests Table 3 to be updated for 2009/10. The data, 2001 – 2009, in Table 3 was obtained from the response to CAC/MSOS/MH I-125(b). During the drafting of evidence Mr. Matwichuk attempted to find 2010 data elsewhere that is compatible and consistent with the data contained in CAC/MSOS/MH I-125(b). Unfortunately, it was not possible as the basis on which Manitoba Hydro provided the data for actual export sales in response to CAC/MSOS/MH I-125 (b) was not disclosed. Further, the actual amounts provided in that IR response did not tie into the actual amounts reported in the Manitoba Hydro annual reports and the forecast amounts did not appear to tie into the IFF forecasts. By way of example of the latter, the "Forecast Export Sales" of $529,069,000 in 2007 does not seem to be present in IFF05, as claimed in CAC/MSOS/MH I-125(b). Similarly, the "Forecast Export Sales" of $490,314,000 in 2008 and $459,468,000 in 2009 does not seem to be present in IFF06 and IFF07, respectively. While the writer wishes to be helpful to the Board, data for 2010 that is compatible and consistent with those contained in CAC/MSOS/MH I-125(b) does not appear to be either on the record or readily available and that is why Table 3 was presented as it was in the evidence, ending with the year 2009.

Nevertheless, the available data indicates that actual export revenue amounts vary considerably more from forecast than do actual domestic revenue amounts from forecast.

PUB/CAC/MSOS (Matwichuk) I - 18

Reference: Page 16, Q16 Table 3 Forecast Exports

b) Please restate the table to incorporate a comparison of actual versus forecast with the IFF utilized for forecasts presented for rate setting purposes from fiscal 2001 to 2010 and comment on the variances.

Answer:

b) As complete data was unavailable, Mr. Matwichuk is unable to provide the requested information in the time period provided to respond. He will endeavour to obtain the data and respond with a restated Table 3 at a later date.

PUB/CAC/MSOS (Matwichuk) I - 19

Reference: Page 20, Q19 Net Income Variability Attachment 1

Please update the analysis in Attachment 1 to incorporate the results for the fiscal years 2001 to 2004 and provide any commentary.

Answer:

c) As complete data was unavailable, Mr. Matwichuk is unable to provide the requested information in the time period provided to respond. He will endeavour to obtain the data and respond with a restated Attachment 1 at a later date.

PUB/CAC/MSOS (Matwichuk) I - 20

Reference: Page 21 Q21 Fn 40

Please file the respective regulatory Order from the Public Service Commission of Maryland in an electronic format.

Answer:

Most efficiently, the Order can be found at the website of the Public Service Commission of Maryland under the following link:

http://webapp.psc.state.md.us/Intranet/Casenum/submit_new.cfm?DirPath=C:\Casenum\9200-9299\9208\Item_59\&CaseN=9208\Item_59

A ".pdf" version of that order, in its entirety, can be downloaded by clicking on "59.pdf".

PUB/CAC/MSOS (Matwichuk) I - 21

Reference: Page 28 Q31 RSR's in Other Jurisdictions

Please provide a listing of Gas or Electric utilities, which have incorporated an RSR mechanism and provide a description of the mechanism, RSR target, funding and how the balance is drawn upon or utilized.

Answer:

RSR's are used by some gas, electric and water utilities. Utilities that are affected by uncontrollable weather, climate and related conditions have been known to use a Rate Stabilization Reserve. These reserves can take many forms. Below is a description of two such RSRs with different approaches.

The recommended RSR is similar to a Rate Stabilization Account ("RSA") used by Gaz Metro Limited Partnership ("Gaz Metro") in Quebec. Gaz Metro states the following with respect to its RSA:

> With respect to temperature and wind velocity variances, an amount of $1.5 million to be recovered from customers was recorded in the rate stabilization accounts during fiscal year 2009, due to warmer-than-normal temperatures partially offset by stronger-than-normal wind velocity. During fiscal year 2008, an amount of $14.4 million to be recovered from customers had been recorded as a result of warmer-than-normal temperatures partially offset by stronger-than-normal wind velocity.
>
> Where inventory variances are concerned, an amount of $11.7 million to be recovered from customers was recorded in the rate stabilization accounts in fiscal year 2009 compared to $1.5 million during fiscal year 2008.
>
> The regulatory mechanism provides that Gaz Metro-QDA will recover these fluctuations in the rate stabilization accounts from customers or return them to customers by adjusting its annual rates starting in the second subsequent year, over five years in the case of temperature and wind, and over one year in the case of inventory variances.[1]

You will note that the Gaz Metro RSA operates with deposits into and withdrawals from the RSA on an annual basis where there are variances caused by weather related events (i.e. temperature and wind). The deposits and draw downs of the RSA occur annually and are each amortized over a five year period and the net amortization is credited or charged to rates. Other than the impetus (temperature and wind related variances), the recommended RSR in this proceeding operates in a similar fashion. There is no target or target range for a balance in the Gaz Metro RSA. That again, is a commonality with the RSR recommended in this proceeding.

[1] Gaz Metro Limited Partnership, 2009 Annual Report, page 33

Another example is the Rate Stabilization Account for the City of Seattle, City Light Department ("Seattle City Light"). Seattle City Light's owns and operates power generation and its generation is approximately 91% sourced from Hydro. The city recognized the volatility of its wholesale power sales associated with water levels and wholesale pricies, and an RSA was implemented in March 2010. The intent of Seattle City Light's RSA is to absorb fluctuations in City Light's annual electric revenue in any given year due to deviations in net wholesale electric revenue from the amount assumed in the adopted budget for that year. In this sense, it is very similar to the proposed RSR for Manitoba Hydro.

The Seattle City Light RSA differs from that of Gaz Metro and the recommended RSR in that it maintains a target balance and is a cash fund. Initially, the target was set using a range of $100 million to $125 million. Also, it was to be initially funded from five sources:

i) a contingency reserve account;

ii) cash from operations in 2010 in excess of that required for operations and debt service;

iii) revenue from the sale of surplus property in 2010 and 2011 not already recognized in City Light's 2010 Adopted Budget;

iv) allowable savings in 2010, 2011, and 2012 from refunding bonds in 2010;

v) other sources of revenue as determined by the City Council.

For amounts outside the target range, and where the fund is lower than $90 million, the fund is replenished with a graduated customer surcharge (depending on the level of the fund below $90 million). When the fund exceeds $125 million, amounts can be used to reduce debt and/or offset capital expenditures.

When actual wholesale revenues exceed forecast, those funds are transferred to the RSA. When actual wholesale revenues are less than forecast, the difference is transferred out of the RSA to replenish the City Light Department. I further understand that the RSA for Seattle City Light is a restricted asset (i.e. a funded account). There are a number of issues of complication or sophistication in the Seattle City Light RSA that are not part of the RSR recommended in this proceeding.

Whereas the Seattle City Light RSA is more akin to the Manitoba Public Insurance RSR, the Gaz Metro RSA is more akin to the RSR recommended in the evidence.

Other electric utilities that use (or used) an RSR include Commonwealth Edison Company, Idaho Falls, City of Roseville (CA USA) and City of Lodi (CA USA). Often the RSR is implemented in electric utility environments which rely on hydro-electric generation. There are also water utilities which use an RSR, largely due to the variability in water levels For example, City of Philadelphia and Tampa Bay Water.

PUB/CAC/MSOS (Matwichuk) I - 22

Reference: Page 29 Q 33 Table 4

a) Please provide a similar table utilizing the actual Export Revenue versus forecast from Table 3.

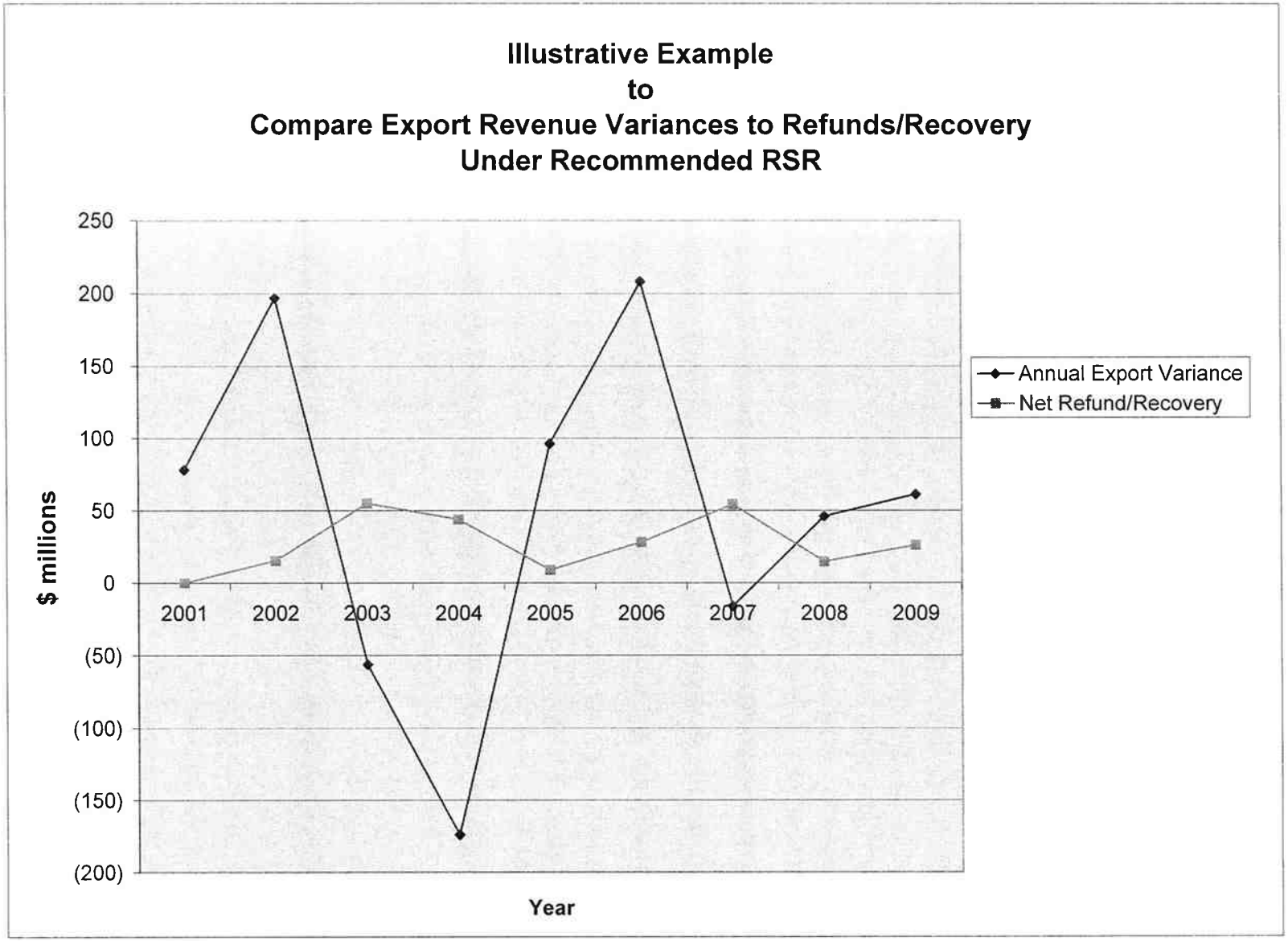
Answer:

a) Please see attached table in PUB/CAC/MSOS (Matwichuk) 22 (a) – Attachment 1. The attachment contains a table showing an illustrative example of the mechanics of the recommended RSR utilizing the variances between actual Export Revenue versus forecast from Table 3 ("Variance" column), consistent with the mechanics used in Table 4 of the evidence.

Please also see PUB/CAC/MSOS (Matwichuk) 22 (a) – Attachment 2 containing a chart showing a comparison of the annual export variances (Attachment 1, line 4) to the annual net refunds/recoveries (Attachment 1, line 16) that would result from the use of the recommended RSR utilizing the variances between actual Export Revenue versus forecast from Table 3 ("Variance" column). The chart shows that one of the outcomes of the recommended RSR is a smoothing effect on rates arising from the more significant financial impact of both favourable and unfavourable events.

Recommended Rate Stabilization Reserve
Illustrative Example of RSR Mechanics
Using Variance of Actual Net Export Revenue From Forecast Net Export Revenue
Data from Table 3 of Evidence of M.G. Matwichuk

		2001	2002	2003	2004	2005	2006	2007	2008	2009
						($ millions)				
1	**Balance beginning of year**	0	78	259	148	(69)	18	197	127	158
2	Variance re Export Revenue (Actual > Forecast in Table 3)	78	197	0	0	96	208	0	46	61
3	Variance re Export Revenue (Actual < Forecast in Table 3)	0	0	(56)	(174)	0	0	(16)	0	0
4	Variance for the year	78	197	(56)	(174)	96	208	(16)	46	61
5	Balance after variance for the year	78	275	203	(26)	27	226	181	173	219
6	**Annual Amortization to reduce (include in) domestic rates:**									
7	Amortization of variance in 2001	0	16	16	16	16	16	0	0	0
8	Amortization of variance in 2002	0	0	39	39	39	39	39	0	0
9	Amortization of variance in 2003	0	0	0	(11)	(11)	(11)	(11)	(11)	0
10	Amortization of variance in 2004	0	0	0	0	(35)	(35)	(35)	(35)	(35)
11	Amortization of variance in 2005	0	0	0	0	0	19	19	19	19
12	Amortization of variance in 2006	0	0	0	0	0	0	42	42	42
13	Amortization of variance in 2007	0	0	0	0	0	0	0	(3)	(3)
14	Amortization of variance in 2008	0	0	0	0	0	0	0	0	9
15	Amortization of variance in 2009	0	0	0	0	0	0	0	0	0
16	**Net refund to / (recovery from) domestic customers**	0	16	55	44	9	28	54	15	26
17	**Balance end of year**	78	259	148	(69)	18	197	127	158	193


Illustrative Example
to
Compare Export Revenue Variances to Refunds/Recovery
Under Recommended RSR
250
200
150
100
50
0
(50)
(100)
(150)
(200)
$ millions
2001
2002
2003
2004
2005
2006
2007
2008
2009
Year
Annual Export Variance
Net Refund/Recovery

PUB/CAC/MSOS (Matwichuk) I - 22

Reference: Page 29 Q 33 Table 4

b) Should a portion of existing retained earnings be segregated to fund the RSR? If so, what mechanism would you suggest in determining the amount to be transferred?

Answer:

b) Under the recommended RSR, there would be no need to segregate any of the existing retained earnings. If the actual net export revenue is greater than forecast, an RSR amount will be created as a liability (refund to domestic customers). If the actual net export revenue is less than forecast, then the RSR amount will initially be a receivable (recovery from domestic customers). In either case the forecast amount of the export revenue will be recorded as part of the net income.

The recommended RSR is designed to be supplemented when actual net export revenues in excess of forecast net export revenues (as defined in the evidence) and be drawn down when actual net export revenues are less than the forecast net export revenues.
It is not intended that there be a target RSR level. Rather, the RSR would simply be supplemented and drawn down each year as prevailing conditions would dictate relative to the relevant forecast for rates of that year.

As shown in Table 4 of the evidence and PUB/CAC/MSOS (Matwichuk) 22 (a) – Attachment 1, the annual supplements and annual draw downs would each be amortized into rates in subsequent years using a five year amortization period.

The intent of this design is to deal with the concern of misaligned risk tolerances and to explicitly address how to properly use the financial gains from favourable events to ensure that the domestic ratepayers receive the benefits of those events in the same manner as they bear the losses from unfavourable events. Please see the response to PUB/CAC/MSOS (Matwichuk) 22 (d) for further details.

A case could be made for a portion of existing retained earnings be segregated to fund or initially fund an RSR. Existing retained earnings are largely an accumulation of earnings above those forecast for ratemaking purposes. Under the segregated/targeted fund approach, like that of Seattle City Light or Manitoba Public Insurance (see response to PUB/CAC/MSOS (Matwichuk) I-21), it may give rise to a need to transfer amounts from retained earnings in the initial set up of the fund.

However, Mr. Matwichuk's evidence presumed that the recommended RSR could be implemented on a prospective basis without affecting existing retained earnings.

PUB/CAC/MSOS (Matwichuk) I - 22

Reference: Page 29 Q 33 Table 4

c) Please explain whether there should be a set limit for an RSR if so, how would you determine the target RSR level.

Answer:

c) Consistent with the response in (b) above, there is no need for setting a limit on the recommended RSR. The level of the RSR balance would essentially float based on the annual supplements, draw downs and amortization amounts. This approach is illustrated in Table 4 in the evidence and in PUB/CAC/MSOS (Matwichuk) 22 (a) Attachment 1.

In contrast, a segregated/targeted fund approach, like that of Seattle City Light or Manitoba Public Insurance (see response to PUB/CAC/MSOS (Matwichuk) I-21), would generally require a target limit. Mr. Matwichuk's evidence did not recommend this approach and did not conduct an analysis with respect to a target level under such an approach.

PUB/CAC/MSOS (Matwichuk) I - 22

Reference: Page 29 Q 33 Table 4

d) Please explain the stated purpose of the fund and what circumstances would govern drawing upon it.

Answer:

d) As noted in part (b) above, the intent of the design in the recommended RSR is to deal with forecasting variances and, in particular, the concern of misaligned risk tolerances and directly address how to properly use the financial gains from favourable events to ensure that the domestic ratepayers receive the benefits of those events in the same manner as they bear the losses from unfavourable events. As noted in part (b), a variance would arise between the actual and forecast net export revenue, and therefore, the portion of retained earnings attributable to the net export sales would be based upon the forecast.

There are three significant expected outcomes of the recommended RSR:

1) **Matching Benefits with Risks** - The recommended RSR uses the financial gains and losses from events that were not forecast, to ensure that the domestic ratepayers explicitly receive the benefits of favourable events in the same manner as they bear the losses from unfavourable events.

2) **Rate Smoothing** – The financial gains and losses in 1) above, are amortized over 5 years, so that rates are kept relatively stable. Please see graph contained in PUB/CAC/MSOS (Matwichuk) 22 (a) – Attachment 2.

3) **Mitigate Moral Hazard** – The RSR mechanism's simplicity and transparency alleviates the need for Manitoba Hydro to exercise discretion with respect to use of the financial impacts of events where actual net export revenues are greater or less than forecast net export revenues.

The recommended RSR would provide transparency to domestic ratepayers (and the Board) via a simple mechanism where domestic ratepayers can more explicitly and more immediately benefit from the gains which arose as a result of bearing the risks to achieve those gains and to see the impact of the losses from bearing those risks explicitly as well.

Also, as noted in (b) above, the use of the fund to adjust domestic rates would be simple and regular based on amortization of the balances for each particular year. Over time, the amortization amounts would be calculated and would be refunded to / recovered from domestic customers, as shown in PUB/CAC/MSOS (Matwichuk) 22 (a) – Attachment 1.

While the table in this attachment is illustrative, as discussed in the evidence under Q.34, it is recommended that the net export forecast and actual amounts align with well understood definitions in the Prospective Cost of Service Study.

PUB/CAC/MSOS (Matwichuk) I - 23

Reference: Page 45, Q 51 Credit Rating

Please provide a table indicating the debt to equity ratio and interest coverage ratio of MH for the last thirteen years and the state credit rating for MH and Province from each of the credit rating agencies.

Answer:

Please see attached table PUB/CAC/MSOS (Matwichuk) 23 – Attachment 1.

Manitboa Hydro
2010/11 - 2011/12 GRA
Comparison of Debt Ratio and Credit Ratings

		2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997
INTEREST COVERAGE RATIO															
Per MHEB Annual Reports	[1]	1.32	1.49	1.69	1.23	1.77	1.25	0.17	1.14	1.42	1.62	1.35	1.23	1.25	1.23
DEBT RATIO															
Per MHEB Annual Reports	[1]	**73.0%**	77.0%	**73.0%**	80.0%	81.0%	85.0%	**87.0%**	80.0%	77.0%	80.0%	83.0%	84.0%	86.0%	**88.0%**
CREDIT RATINGS															
DBRS															
Long Term Debt	[2]		A (high)	A (high)	A (high)	A (high)	A (high)	A (high)	A (high)	A	A	A	A	A	A
Commmercial Paper/T-Bills	[2]		R-1 (mid)	R-1 (mid)	R-1 (mid)	R-1 (mid)	R-1 (low)	R-1 (low)	R-1 (low)	R-1 (low)	R-1 (low)	R-1 (low)	R-1 (low)	R-1 (low)	R-1 (low)
Standard & Poors															
Long Term Debt	[3]			n/r	n/r	n/r	n/r	n/r	n/r						
Commmercial Paper/T-Bills	[3]			**A-1+**	**A-1+**	**A-1+**	**A-1+**	**A-1+**	**A-1+**						
Moody's															
Long Term Debt	[4]	n/r	n/r	n/r		n/r									
Commmercial Paper/T-Bills	[4]	**P-1**	**P-1**	**P-1**		**P-1**									

Notes:

[1] Appendix 63, MH 59th Annual Report, Financial Statistics, page 100 for 2001 to 2010; MH 52nd Annual Report, page 94 for 1997 to 2000

[2] Appendix 39, Attachment 1, DBRS Report, Feb 12, 2009, page 12 for 2004 - 2010; DBRS Credit Rating Report, Nov 15, 2005, page 1 for 1997 to 2003

[3] Appendix 39, Attachment 3, S&P Report, Nov 20, 2008, page 5 for 2004 to 2008; S&P Report Nov 21, 2007, page 4 for 2003

[4] Appendix 39, Attachment 2, DBRS Report, Feb 8, 2010, page 1 for 2010; CAC/MSOS/MH I-120(a) Attachment 2 page 1 for 2009; and CAC/MSOS/MH I-120(a) Attachment 2 page 1 for 2009; CAC/MSOS/MH I-120(a) Attachment 1, page 1 for 2008;

nr - no credit rating provided that year

PUB/CAC/MSOS (Matwichuk) I - 24

Reference: Page 48 Q 53 Interest Coverage Ratio

a) Please indicate a recommended interest coverage ratio that should be employed for rate setting purposes to provide some cushion for the debt holder in light of the debt guarantee fee.

Answer:

a) In light of the debt guarantee fee, an interest coverage ratio in the range of 1.05 to 1.1 is recommended to provide some cushion for the debt holder from non-export forecasting differences.

PUB/CAC/MSOS (Matwichuk) I - 24

Reference: Page 48 Q 53 Interest Coverage Ratio

b) What would be considered a reasonable variance from forecasts?

Answer:

b) As indicated by the recommended interest coverage ratio range of 1.05 to 1.1, an expected variance from forecast would be 5% to 10% on net income since the variation in export sales is taken care of through the recommended RSR.

PUB/CAC/MSOS (Carter) 25

Reference: Pages 5-6

Question:

a) In Mr. Carter's identification of energy burden thresholds, please confirm whether municipal services (water and sewer) bills are included in the energy burden.

ANSWER:

When energy burdens are calculated there is some difficulty in extracting what constitutes a legitimate energy burden, particularly in rental units where utilities are part of the rent. From a sound policy perspective an energy burden should not include sewer and water charges. They should include charges for electricity and gas or fuel oil or other energy sources used for heating. This should include the energy source (electricity or gas for example) to heat water but not charges for water or sewage usage.

PUB/CAC/MSOS (Carter) 25
Reference: Pages 5-6

Question:

b) If Mr. Carter was to set an energy burden threshold in order to determine eligibility for an energy efficiency program, please state the recommended threshold and explain why this threshold was chosen. Also please indicate whether the threshold includes municipal services.

ANSWER:

I would not include municipal services, i.e. charges for sewer and water.

I would chose 6% of after tax income as the threshold as opposed to the more standard 10%. My rational for this choice is related to the depth of poverty experienced by some households. In 2007, low income families needed an average of $7,200 to bring their income above the LICO threshold, while unattached people faced a low income gap of $6,500 (Statistics Canada 2009). Many households are well below the poverty line so 6% places less of a burden than the 10% threshold. In some Canadian markets (major metropolitan centres for example) rents are very high relative to incomes. As the report notes a large proportion of renters pay in excess of 30% of gross, before tax income on housing, some pay more than 50%. The 6% provides more potential to reduce poverty: it is a better poverty alleviation measure.

The ideal approach would be a sliding scale which declines as incomes declines. However, this would be very difficult to administer.

PUB/CAC/MSOS (Carter) 26

Reference: Pages 9-20

Question:

a) Please identify which vulnerable populations it appears MH is not targeting, and recommend potential ways for MH to more aggressively target them.

ANSWER:

I cannot provide an answer to this question as I have not undertaken an evaluation of Manitoba Hydro energy efficiency programs. In the report I do identify those groups in society most likely to experience poverty. These groups should be priority target groups for Manitoba Hydro programs or any programs designed to reduce energy poverty or poverty alleviation initiatives in general.

PUB/CAC/MSOS (Carter) 26

Reference: Pages 9-20

Question:

b) In the case of renters whose utility bills are included in their rent, please comment on MH's ability to target these customers absent the tenant or landlord contacting MH. Put another way, how does MH know that these buildings are housing low income tenants and that they are in need of energy efficiency assistance?

ANSWER:

Again I must preference my remarks by pointing out that I have not undertaken an extensive evaluation of Manitoba Hydro's programs but based on approaches from other jurisdictions, the U.K. for example, eligibility is based on receipt of other benefits: Social Assistance, GST Rebate, Guaranteed Income Supplement, for example. People who receive these benefits are automatically eligible and assistance provided. Other programs work through community based non-profit organizations that often work with these tenants in other capacities. They can refer these tenants to the organization funding, administering and delivering the programs. Proactive work with landlords through property management organizations may also help increase participation. Once contact has been made with a tenant an energy audit can be conducted on the unit or building.

I have pointed out in my report the many difficulties of working with and getting participation from low-income people in the rental sector. Basing eligibility on receipt of other benefits may be the most effective approach but requires considerable coordination between various departments.

Working with the providers of social housing is another effective approach because eligibility for social housing is based on low-income. Many jurisdictions have targeted programs to social housing units.

PUB/CAC/MSOS (Carter) 26

Reference: Pages 9-20

Question:

c) Please describe ways MH can be proactive in targeting customers, considering MH does not maintain income level data for its customers, nor can it use its customer billing database to mass market efficiency programs to its customers because of privacy legislation.

ANSWER:

Proactive work with community based groups who work with low income people in the neighbourhoods can result in increased participation. These organizations know many people who would be eligible for programs. Manitoba Hydro works with the Salvation Army under the Neighbours Helping Neighbours Program. Basing eligibility on receipt of other benefits as described in the previous response is also a route worth examining but as pointed out this requires coordination with other departments. This may also contravene privacy regulations but as this is done in other jurisdictions it would be worth examining how they implement this approach. Another alternative is to have assistance delivered through organizations that distribute benefits like social assistance. Energy poverty could be reduced by increasing social assistance rates.

PUB/CAC/MSOS (Carter) 27

Reference: Pages 45-48

Question:

Please compare Manitoba Hydro's Lower Income Energy Efficiency Program and natural gas Furnace Replacement Program against the best practices identified on pages 45 to 48 of Mr. Carter's evidence and comment as to whether MH's programs are following, partially following, or are not following each of the best practices.

ANSWER:

I am unable to answer this question as my terms of reference and mandate did not include an evaluation of Manitoba Hydro Programs. Hence I do not have sufficient detail to provide a valid response.

PUB/CAC/MSOS (Carter) 25

Reference: Pages 5-6

Question:

a) In Mr. Carter's identification of energy burden thresholds, please confirm whether municipal services (water and sewer) bills are included in the energy burden.

ANSWER:

When energy burdens are calculated there is some difficulty in extracting what constitutes a legitimate energy burden, particularly in rental units where utilities are part of the rent. From a sound policy perspective an energy burden should not include sewer and water charges. They should include charges for electricity and gas or fuel oil or other energy sources used for heating. This should include the energy source (electricity or gas for example) to heat water but not charges for water or sewage usage.

PUB/CAC/MSOS (Carter) 25
Reference: Pages 5-6

Question:

b) If Mr. Carter was to set an energy burden threshold in order to determine eligibility for an energy efficiency program, please state the recommended threshold and explain why this threshold was chosen. Also please indicate whether the threshold includes municipal services.

ANSWER:

I would not include municipal services, i.e. charges for sewer and water.

I would chose 6% of after tax income as the threshold as opposed to the more standard 10%. My rational for this choice is related to the depth of poverty experienced by some households. In 2007, low income families needed an average of $7,200 to bring their income above the LICO threshold, while unattached people faced a low income gap of $6,500 (Statistics Canada 2009). Many households are well below the poverty line so 6% places less of a burden than the 10% threshold. In some Canadian markets (major metropolitan centres for example) rents are very high relative to incomes. As the report notes a large proportion of renters pay in excess of 30% of gross, before tax income on housing, some pay more than 50%. The 6% provides more potential to reduce poverty: it is a better poverty alleviation measure.

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