Manitoba Hydro 2011-2012 General Rate Application

Consumer Association of Canada (Manitoba Branch) and Manitoba Society of Seniors

Final Recommendations

Public Interest Law Centre
Byron Williams
610 – 294 Portage Avenue
Winnipeg MB R3C 0B9

Overview of the Position of CAC/MSOS

Excerpts from the Record

> One lever that regulators have is obviously the purse strings. (Chernick 7159, see also 7160, 7161)
>
> If there is a level of discomfort with ongoing cost escalation sending a message through the revenue requirement would be "entirely consistent" with our evidence. (Bowman 7378)
>
> One of the issues is finding a way in the short term to support Mr. Brennan in his efforts to impose cost control and to get people to pay attention to that. (Bowman 7391)

Recommendations

CAC/MSOS recommend the following findings and orders:

A. Revenue Requirement Determination

Evidence Relating to the Test Years

- Focusing on the test years specifically, there is evidence to support a finding that the 2% interim rate currently in place for 2011/12 should be eliminated or at least cut in half. That evidence includes:

  the Corporation's materially improved financial performance since IFF – 09 was filed (see Attachment 2 to this argument);

  confirmation that the Corporation's finance costs are overestimated due to systemically biased estimates of finance cost in IFF 09 and to a lesser extent in IFF -10;

  new information filed since the interim hearing demonstrating a material gap between

Hydro's forecast interest costs for short term and long term debt, actual interest costs and current forecasts of interest cost for the test period;

new evidence since the interim hearing demonstrating that the Corporation has imprudently foregone substantial opportunities for savings in terms of financing costs over the test year period;

new evidence via cross examination and in the 2009/10 Power Smart Review suggesting that the Corporation's ongoing operation of its energy efficiency program is not prudent and reasonable and is not consistent with industry best practice;

new evidence including information provided by the CEO of the Corporation suggesting that the Corporation's efforts in terms of managing its day to day expenditures controls is not demonstrably prudent and reasonable;

- Judicial notice is taken of the reality that recovery from the recession has been slow. While Manitoba has weathered the recession relatively well compared to other jurisdiction, there has still been material hardship for consumers, business and industry.

- Judicial notice is taken of the material hardship wrought on consumers, farmers, business and industry in portions of the Province as a result of the flooding in various regions of the Province.

Issues related to Rate Stability in the face of Adverse Events

- The implementation of a rate stabilization mechanism of the type proposed by Mr. Greg Matwichuk will serve as valuable tool to improve transparency, enhance stability in the face of adverse events by smoothing their impact and increase efficiency by removing the moral hazard associated with material positive variations from forecast for export revenues;

Evidence relating in part beyond the Test Years

- Taking into account the longer term outlook, there is new evidence since the interim rate hearing confirming that both IFF-09 and IFF-10 understated the Corporation's future capital cost notwithstanding that information was available to the Corporation's senior management and Board suggesting that the costs of Bi-Pole III were likely to be significantly higher than $2.2 Billion estimate contained in IFF 09 and IFF 10.

- The revised Bi-Pole III estimate suggests additional pressure will be placed on the Corporation's operations over the next decade as compared to the IFF 09 and IFF 10. The debt ratio remains the same as in IFF101-1 for 2014/2015 (79%) but by 2019/2020 has increased to 83% relative to 81% in IFF10-1.

- There is new evidence since the interim rate hearing related to the signing of export contracts with both Wisconsin Power and Minnesota Power. This new evidence removes a significant uncertainty relating to Hydro's preferred plan. However, material uncertainty related to Hydro's preferred plan remains.

- In supporting its rate application, Hydro has asserted that the benefits of its preferred plans outweigh its costs. It has asserted that its preferred scenario is preferable to the alternative scenario. On a balance of probabilities based on the evidence currently before the Board, these assertions cannot be verified and will not be relied upon for the purpose of this General Rate Application.

- As *obiter* comment, the merits of these assertion can only be properly tested in a Needs for and Alternatives Proceeding. Colloquially put, "if the beef is not there, the sandwich will not be bought".

- As *obiter* comment, any such assessment of the preferred, alternative and other alternatives must involve a more complete disclosure of information than existed in this proceeding. As *obiter* comment, given the lack of ambition which appears to underly Manitoba Hydro's future DSM plans, it cannot be stated be stated with confidence that Hydro has adequately canvassed existing alternatives. Hydro's preferred and alternative scenarios might appear materially different if they were supported by a more ambitious DSM plan.

<u>The Setting of the Revenue Requirement</u>

- For the test years, the debt/equity ratio remains at 74/26 under IFF 10 and IFF-10 with Bi-Pole;

- Given significant future capital obligations regardless of whether the preferred, alternative or other scenarios eventually receive regulatory approval, for the purposes of its determination of the revenue requirement in this proceeding, less weight will be given to the maintenance of the existing debt/equity target in the time frame beyond the test years.

- A determination of whether the existing debt/equity target should be maintained for the purposes of rate setting will be made when there is greater clarity in terms of which capital programs have been approved and the costs of the approved capital programs;

- Since the 2003/04 drought, the regulator has faced competing policy issues related to:

    protecting domestic ratepayers over the short and long term, building a more robust domestic revenue base for the Corporation to address existing and future challenges and encouraging greater efficiency in the Corporation's day to day and long term operations;

- For this specific proceeding, efforts will be focused on protecting domestic ratepayers over the short term and encouraging greater efficiency in the Corporation's day to day and long term operations.

- The 2% interim rate increase will be eliminated;

- Alternatively, the Board may wish to expressly find:

  that but for concerns relating to expanded capital costs and uncertainty related to the decade of investment, it would have eliminated the 2% interim rate increase entirely; and,

  reduce the interim rate increase to 1%.

B. Cost Allocation

- There is uncertainty about Hydro's current PCOSS methodology with Hydro initiating an independent review of all COSS areas and Mr. Chernick suggesting that the existing COSS overstates residential costs;

- The existing COSS lacks a robust marginal cost based analysis (although current evidence suggests it would yield materially different results compared to the embedded cost analysis).

- No further rebalancing of revenues between the customer classes over and above that already subsumed in the interim approved rates will be granted.

C. Rates

- The interest deferral mechanism proposed by Mr. McCormick should be implemented. Hydro should be advised that the extent of any corporate recoveries from the mechanism will be contingent on a determination that it has been managing its financing costs prudently.

- No inverted rate for the residential class should be introduced for the 2011/12 year. Further discussion on the merits of an inverted rate should take into account the progress of Hydro in addressing energy efficiency needs for all customers including vulnerable persons and tenants.

- Any future consideration of inverted rates for residential customer must fully canvass the option of employing a different level of inversion for those relying upon electricity to heat their homes.

D. Improved Forecasting and Improved Understanding of Forecasts

- The Integrated Financial Forecast and Capital Expenditure Forecasts filed by the Corporation in support of future General Rate Applications should be supported by a filed copy of the Approved Capital Justification form for any capital projects with costs in excess of $100 Million. For the purposes of rate setting, in cases where a CPJ has been signed off on by the operating units but not yet approved by Executive Committee, the regulator should be advised.

- Manitoba Hydro is commended for adjusting the forecasting methodology in IFF-10 to forecast new debt based on a ratio of 20% floating/80% fixed;

- For the purposes of the revenue requirement in the current proceeding and future applications, the forecast of new debt financing costs in IFF-09 and future IFFs should be reformulated based upon a floating/fixed component that more appropriately reflects:

  Hydro's policy in terms of floating and fixed debt;

  Hydro's practice in terms of floating and fixed debt;

  the reasonable practice of a prudent and reasonable utility seeking to achieve appropriate returns at an acceptable level of risk.

- For the purpose of forecasting new debt for rate setting purposes, the floating rate component of new debt should be set toward the higher end NBF range (i.e. 25 – 27%).

- In support of its next General Rate Application, Hydro should be directed to file the criteria it employs in selecting export price forecasters as well macro-economic forecasters;

E. Risk Management/Prudent and Reasonable Operations

Risk Quantification

- Professors Kubursi and Magee should be commended for their valuable contribution to the proceeding in terms of their:

  advice on how to bring a modern, scientific approach to risk management at Manitoba Hydro;

  advice on means to improve forecasting;

  advice on the allegations of the whistle blower;

  insight, using a basic time series analysis, on the issue of risk associated with water flows;

assistance in bringing an explicitly stochastic analysis to the issue of risk associated with water flows and, in this context, illustrating how serial correlation might be introduced into the estimation of probability distributions.

- Professors Kubursi and Magee should be commended for the candour of their June 24, 2011 undertaking response which acknowledges that using the zero intercept model for the purposes of calculating the relationship between generation and water flows produced a poorer fit and hence materially less reliable estimates than the CAC/MSOS model introduced through cross examination.

- Find that for the purposes of rate setting and the quantification of risk, there are fundamental concerns with regard to Chapter Six with regard to the:

  the data underlying Chapter Six (Table 6.1);

  the probability distributions selected as a consequence of flawed data and limited observations (Figures 6.18 through Figure 6.44);

  the analytic integrity of the model given:

    the selection of generation as a proxy for water flows

    the use of the zero intercept model which produced a poorer fit and materially less reliable estimates than the CAC/MSOS model produced in cross examination

    (the zero intercept model is corrected in the June 24, 2011 undertaking response by the adoption of the CAC/MSOS approach. Among other amendments, this leads to a material amendment to their results.)

    even with the improvements resulting from the adoption of the simple linear regression proposed by CAC/MSOS, there is a significant variation in generation unexplained by water flows, leaving considerable room for error in the amended figure for generation;

  The analytic utility of the Chapter Six analysis given the focus on stress tests (Figures 6.2 through Figure 6.17) rather than probabilistic Monte Carlo

Simulations (Figure 6.1)

- The analysis of the five year and seven year drought scenarios relied upon the data from Table 6.1 and the probability distributions set out in Figures 6.18 through Figure 6.44;

- As a consequence, no reliance can be placed on:

  the results of the Chapter Six Probabilistic Analysis (Figure 6.1)

  the results of the Chapter Six Stress Tests (Figures 6.2 through Figure 6.17)

- Given data flaws and the limited sample size, extreme care should be taken with the employment of the probability distributions identified in Figures 6.18 through Figure 6.44;

- No reliances can be placed on the estimates of the five year drought and the seven year drought flows given that the analysis flows from:

  Table 6.1 Data and Chapter Six Probability Distributions

- The various stress tests conducted by Manitoba Hydro and KPMG provide some limited insight into the nature of the risks faced by the Corporation but are not satisfactory on a going forward basis as a quantification of risk using modern statistical methods;

- For the purposes in this specific hearing only, reliance will be placed upon the five year drought scenarios presented by Manitoba Hydro;

- In its next General Rate Application, Hydro will be directed to provide advice on whether a four year, five year or other drought scenario is best suited for risk quantification in the rate setting context. Any such analysis will take into account other material risks including the correlation, if any, between these risks;

- In its next General Rate Application, Manitoba Hydro is to file a probabilistic assessment of existing and current risk using modern statistical methods. That assessment shall include:

  (1) identification of risk factors which have associated probability distributions of outcomes;

  (2) analysis of the probability distribution of each risk factor using updated historical data, including the nature of any correlation between risk

factors;

(3) the development of an integrated model of MH operations that links the risk factors and the financial outcomes of interest (net revenues);

(4) the performance of Monte Carlo simulations to assess the impact of risk on MH outcomes[1]

- In support of its next General Rate Application, Manitoba Hydro also is to conduct such stress test analysis as the Board deems appropriate in addition to any stress tests the Corporation deems appropriate;

Debt Financing Costs Risks and Optimization

- In support of its next General Rate Application, Manitoba Hydro should be directed to file:

a recommendation regarding the utility of using hedging tools for the mitigation of risk associated with floating and short term debt;

its debt concentration policy;

any policy documentation relating to the target range and upper limits for floating and fixed debt;

any existing guidance for operations within those guidelines in circumstances such as a normal yield curve, an inverted yield curve and a flat yield curve; and,

any other policies the Corporation considers relevant (i.e. market timing).

- It is recognized that the NBF analysis only had access to MISO open market data dating from 2005. Recognizing that the open access MISO market will have been in operation by 10 years by 2015, Hydro is directed to conduct an independent review of floating/fixed rate optimization in that year. Manitoba Hydro is to consult with the Regulator and interested interveners prior to finalizing the terms of the retainer.

Capital Asset Management

- A Capital Asset Management Report recommending best regulatory practices should be filed in support of the next General Rate Application;

[1] Manitoba Hydro expresses some support for this approach at pp. 5390 through 5394 of the Transcript as well as in their Rebuttal Evidence.

- the Keema Report prepared for the Ontario Energy Board on best regulatory practices also should be filed in support of the next General Rate Application.

F. Demand Side Management

- Recognize that there are a number of staff within the Demand Side Management area of Hydro and the broader Corporation with a strong commitment to developing and maintaining industry best practices;

- Recognize that Manitoba Hydro has a relatively strong historical reputation along with BC, Ontario and Quebec in offering relatively strong programming within the Canadian context;

- Recognize that a literature review as Professor Carter's did, will no doubt identify some favourable commentary about Manitoba Hydro and energy efficiency.

Assessment of Current Practices

- Note that the DSM savings that Hydro attributes to some of its more successful residential programs such as CFLs are considerably more optimistic than those adopted by other well respected bodies in the area of energy efficiency such as the Ontario Power Authority;

- Determine that Power Smart Residential incentive-based programs (largest source of planned savings) are lagging relative to plan. The major factors appear to be lower participation rates.

- Determine that particularly concerning is the low participation rates in the Lower Income Energy Efficiency Program (LIEEP) and the low spend from the Affordable Energy Fund.

Hydro's Future Plans

- Accept the conclusion of Mr. Chernick that the 2009 and 2010 DSM plans appear to be spending less and aiming lower in terms of their targets;

- Accept the conclusion of Mr. Chernick that Manitoba Hydro's DSM programming has not demonstrated a commitment to maximizing benefits for customers;

- Accept the conclusion of Mr. Dunsky that leadership in energy efficiency will require new, more ambitious electricity savings goals, as well as reconsideration of its current portfolio of programs and strategies.

Recommendations relating to the rate setting process

- Identify that a critical factor in the reduction of the approved interim rate was the finding that the Corporation's ongoing operation of its energy efficiency program is not prudent and reasonable and is not consistent with industry best practice;

- Determine that ongoing challenges in the LIEEP suggests the need for a strategic review and for for an independent third party Evaluation and Audit of its operations which is to be filed with the next rate application. Manitoba Hydro is to consult with the Regulator and interested interveners prior to finalizing the terms of the retainer;

- Determine that Manitoba Hydro should be directed to report back at the next rate application on whether it would be appropriate to target a proportionate or higher share of DSM expenditures to vulnerable customers and renters calculated by their numerical proportion of the residential rate base;

- Find that the relatively poor performance of Power Smart in 2009/2010 reinforces the need to make major changes such as those recommended by Dunsky including:

  Adopt more aggressive savings targets;

  Close program gaps by creating or expanding programs for:multifamily residential housing, manufactured new homes, consumer electronics and office equipment, appliance retirement, commercial new construction, commercial custom retrofits and small commercial retrofits;

  Develop upstream strategies (market actor training and incentives);

  Launch or consider an expert-supported public stakeholder review process;

  Consider strategies to facilitate market access for third-party initiatives and innovations;

  Modify cost-benefit screening to focus on utility (UCT) or societal (SCT or TRC) perspectives. Use comprehensive (not incremental) screening for alternative program designs.

- Determine that there is a broader need for an independent third party Evaluation and Audit of Power Smart which includes a quantitative *before and after* Dunsky assessment in terms of targets inputs, achievement and budgets. Included in the scope would be input assumptions (unit savings, Free Ridership etc.) Manitoba Hydro is to consult with the Regulator and interested interveners prior to finalizing the terms of the retainer.

G. Vulnerable Ratepayers and the Recommendations of Mr. Colton

- Commend Green Action Centre for bringing recommendations relating to energy poverty to the attention of the Board;

Arrears Management and Crisis Intervention

- Endorse the recommendations of Mr. Colton with regard to the arrears management program and the crisis intervention program.

Low Income Energy Efficiency

- Adopt the recommendations of Mr. Colton with regard to low income energy efficiency as an interim objective with the understanding that further review will be necessary following:

    the independent strategic review and third part Evaluation and Audit of LIEEP;

    Manitoba Hydro reporting back on whether it would be appropriate to target a proportionate or higher share of DSM expenditures to low income customers calculated by their numerical proportion of the residential rate base;

- Reject Mr. Colton's original and amended proposal for a Low Income Rate Assistance Plan. The grounds for the rejection are:

    the plan is unlikely to assist the poorest of the poor (those on general and income assistance) given the assistance provided on utility bills pursuant to *Regulation 404/88* and the Employment and Income Assistance Policy Manual;

    its anticipated participation targets will not be met;

    it runs the risk of diverting scarce resources away from other programming such as low income energy efficiency which is generally viewed to achieve more sustainable social benefits;

    given low participation rates, it will be horizontally inequitable in that it will impose direct costs on other members of the same low income group while diverting scarce resources away from programming that is more likely to achieve sustainable social benefits;

    the business objectives postulated by Mr. Colton will not be achieved given his faulty initial economic assessment of the costs of the program, lower than estimated participation rates and the higher threshold for energy poverty now proposed.

- Find that the issue of double dipping is not at play for recipients of income and general assistance in the scenario presented by Mr. Colton. Find that the operation of s. 4 and 8 of *Regulation 404/88* would serve to treat any bill assistance as a financial resource which is not

an exempted source of income (See Attachment 6 for the statutory provisions);

- Determine that it is an open question, whether the Board has jurisdiction given the unique Manitoba statutory framework. Acknowledge that while the better view is that Board does not have jurisdiction, a reasonably arguable case can be advanced that it does (Attachment 5)

Confidential Hearings

- Acknowledge the legitimacy of the concerns expressed by Mr. Chernick and Mr. Wallach. Initiate a technical conference to address these concerns and invite representatives of the authority charged with the Need For and Alternatives public participation process.

Attachment 1

Manitoba Hydro 2011-2012 General Rate Application

Consumer Association of Canada (Manitoba Branch) and Manitoba Society of Seniors

Overview of the Statutory Regime for Rate Regulation

Public Interest Law Centre
Byron Williams
610 – 294 Portage Avenue
Winnipeg MB R3C 0B9

Applicable Statues

1. *The Manitoba Hydro Act*, C.C.S.M. c. H190

Purposes and objects of Act

2 The purposes and objects of this Act are to provide for the **continuance of a supply of power adequate for the needs of the province**, and to engage in and to promote **economy and efficiency** in the development, generation, transmission, distribution, supply and end-use of power and, in addition, are

(a) to provide and market products, services and expertise related to the development, generation, transmission, distribution, supply and end-use of power, within and outside the province; and

(b) to market and supply power to persons outside the province on terms and conditions acceptable to the board. (emphasis added)

Price of power sold by corporation

39(1) The prices payable for power supplied by the corporation shall be such as to return to it in full **the cost to the corporation**, of supplying the power, including

(a) the **necessary** operating expenses of the corporation, including the cost of generating, purchasing, distributing, and supplying power and of operating, maintaining, repairing, and insuring the property and works of the corporation, and its costs of administration;

(b) all interest and debt service charges payable by the corporation upon, or in respect of, money advanced to or borrowed by, and all obligations assumed by, or the responsibility for the performance or implementation of which is an obligation of the corporation and used in or for the construction, purchase, acquisition, or operation, of the property and works of the corporation, including its working capital, less however the amount of any interest that it may collect on moneys owing to it;

(c) the sum that, in the opinion of the board, should be provided in each year for the reserves or funds to be established and maintained pursuant to subsection 40(1). (emphasis added)

Fixing of price by corporation

39(2) Subject to Part IV of *The Crown Corporations Public Review and Accountability Act* and to subsection (2.1), the corporation may fix the prices to be charged for power supplied by the corporation. (emphasis added)

2. *The Crown Corporations Public Review and Accountability Act,* C.C.S.M. c. C336

PUBLIC UTILITIES BOARD REVIEW OF RATES

Hydro and MPIC rates review

26(1) Notwithstanding any other Act or law, rates for services provided by Manitoba Hydro and the Manitoba Public Insurance Corporation shall be reviewed by The Public Utilities Board under *The Public Utilities Board Act* and no change in rates for services shall be made and no new rates for services shall be introduced without the approval of The Public Utilities Board.

Definition, "rates for services"

26(2) For the purposes of this Part, **"rates for services"** means

(b) in the case of Manitoba Hydro, prices charged by that corporation with respect to the provision of power as defined in *The Manitoba Hydro Act*;

Application of Public Utilities Board Act

26(3) *The Public Utilities Board Act* applies with any necessary changes to a review pursuant to this Part of rates for services.

Factors to be considered, hearings

26(4) In reaching a decision pursuant to this Part, The Public Utilities Board may

(a) take into consideration

(i) the amount required to provide **sufficient** moneys to cover operating, maintenance and administration expenses of the corporation,

(ii) interest and expenses on debt incurred for the purposes of the corporation by the government,

(iii) interest on debt incurred by the corporation,

(iv) reserves for replacement, renewal and obsolescence of works of the corporation,

(v) any other reserves that are necessary for the maintenance, operation, and replacement of works of the corporation,

(vi) liabilities of the corporation for pension benefits and other employee benefit programs;

(vii) any other payments that are required to be made out of the revenue of the corporation,

(viii) any compelling policy considerations that the board considers relevant to the matter,

(ix) any other factors that the board considers relevant to the matter; (emphasis added)

3. *The Public Utilities Board Act,* C.C.S.M. c. P280

Orders as to utilities

77 The board may, by order in writing after notice to, and hearing of, the parties interested,

(a) fix **just and reasonable individual rates**, joint rates, tolls, charges, or schedules thereof, as well as commutation, mileage, and other special rates that shall be imposed, observed, and followed thereafter, by any owner of a public utility wherever the board determines that any existing individual rate, joint rate, roll, charge or schedule thereof or commutation, mileage, or other special rate is unjust, unreasonable, insufficient, or unjustly discriminatory or preferential; (emphasis added)

Discriminatory rates

82(1) No owner of a public utility shall

(a) make, impose, or exact any unjust or unreasonable, unjustly discriminatory, or unduly preferential, individual or joint rate, commutation rate, mileage, or other special rate, toll, fare, charge, or schedule, for any product or service supplied or rendered by it within the province;

Attachment 2

Manitoba Hydro 2011-2012 General Rate Application

Consumer Association of Canada (Manitoba Branch) and Manitoba Society of Seniors

Overview of Recent Financial Forecasts

Public Interest Law Centre
Byron Williams
610 – 294 Portage Avenue
Winnipeg MB R3C 0B9

MANITOBA HYDRO 2010-2012 GRA
NOTES RE: FINAL ARGUMENT

A. OVERALL RATE INCREASE

1. MANITOBA HYDRO'S INITIAL APPLICATION

- The following table sets out the financial outlook associated with Manitoba Hydro initial application for rate increases of 2.9% for April 2010 and 2.9% for April of 2011.

IFF09-1 **Income Statement - Electric Operations**

	Actual	Forecast ->						
	2008/09	**2009/10**	**2010/11**	**2011/12**	**2012/13**	**2013/14**	**2014/15**	**2019/20**
Revenue								
Geneal Consumers	1127	1160	1192	1246	1304	1365	1441	1805
Export	623	414	383	554	583	615	590	1093
Other	16	7	7	8	8	8	8	9
Total	1766	1581	1584	1808	1895	1987	2039	2907
Expenses								
O&A	360	372	380	403	411	420	428	497
Finance	401	417	413	468	525	527	544	878
Depreciation	346	368	386	407	435	446	466	566
Water Rentals	123	120	110	111	113	114	114	124
Fuel & Purchases	176	103	132	248	250	260	269	419
Taxes	64	73	76	77	80	85	92	124
Corporate Allocation	8	8	9	9	9	9	9	9
Total	1478	1460	1505	1723	1824	1860	1922	2617
Non-Controlling Interest	0	0	0	1	1	-2	-5	-14
Net Income	288	121	78	87	72	125	113	276
Net Exports Rev	447	311	251	306	333	355	321	674
Other	811	858	875	952	1040	1058	1102	1568
Rate Increases	-	-	2.90%	2.90%	3.50%	3.50%	3.50%	3.50%
		Balance Sheet - Electric Operations						
Gross Plant I/S - Electr	11915	12527	13034	15075	15566	15982	16691	25001
Net Pant I/S - Electr	7684	7865	8015	9677	9761	9765	10042	15950
LT Debt - Electr	7520	7800	8596	9054	8769	10349	11505	14147
Retained Earnings - Electr	2084	2183	2261	2331	2403	2528	2641	3908
Retained Earnings - Consol	2120	2227	2315	2396	2479	2616	2738	4059
Capital Spending (Plant & Equ)		1113	1079	1004	989	1457	1737	1259
Debt Ratio - Electric	77%							
Debt Ratio - Consolid	77%	74%	75%	76%	76%	78%	79%	79%

- Key elements of the outlook include:

    - Anticipated Financial Results for 2009/10, i.e., prior to the two test years:
        - Net income for the year of $121 M
        - Total Retained Earnings of $2,227 M ($2,183 M for Electric Operations)
        - Consolidated Debt Ratio of 74%

    - Expected Results for the two test years
        - Net Income of $78 M and $87 M respectively for 2010/11 and 2011/12
        - Total Retained Earnings of $2,315 M at the end of 2010/11 and $2,396 M at the end of 2011/12 (Note: Results for Electric Operations are $2,261 M and $2,331 M respectively)
        - Consolidated Debt Ratios of 75% and 76% for 2010/11 and 2011/12 respectively.

    - Long Term Outlook (per IFF-09) based on subsequent rate increases of 3.5% annually:
        - Electric Retained Earnings:
            - 2015 - $2.641 B
            - 2020 - $3.908 B
        - Consolidated Debt Ratio
            - 2015 – 79%
            - 2020 – 79%

2. ACTUAL RESULTS FOR 2009/2010

- Table 2 compares the actual financial results for 2009/10 with those forecast at the time of the GRA Application.
- As can be seen the 2009/10 financial results were more favourable than forecast:
    - Net Income from Electric Operations was $39 M higher than forecast. To put this into context – this value is higher than the additional $35 M in revenue that the 2.9% rate increase for 2011/12 was expected to generate (See Appendix 10.2, page 1 for the $35 M value). It is also fairly close to the $42 M that IFF10 (Appendix 76, page 33) shows as being the additional revenues to be generated by the 2.9% increased requested for April 1, 2011.
    - The 2009/10 year-end retained earnings for Electric Operations are $23 M higher than originally forecast and the total Consolidated retained earnings are $12 M higher than forecast in IFF09.
    - Overall the Debt Ratio (on a consolidated basis) is 73% versus the 74% forecast in IFF09.
- The net income results would suggest that (in the absence of any other changes in the forecast for 2010/11 and 2011/12) the expected results (per IFF09) for 2011/12 in terms of overall retained earning and debt ratio could have been attained without any rate increase in 2011/12.
- The retained earnings for 2009/10 do not increase (actual vs. forecast) by the amount equivalent to the change in net income. However, $23 M increase for 2009/10 suggests that (again in the absence of other changes to the forecast) the 2011/12 retained earnings anticipated in IFF09-1 (i.e., $2,331 M for Electric Operations) could be achieved with a rate increase in 2011/12 significantly less than 2.9%. (Note- If 2.9% yielded $35 M then a roughly 1% increase is all that would be required to make up the difference between the $35 M and the $23 M in additional retained earnings already achieved in 2009/10.)

Table 2

Income Statement - Electric Operations

	Actual 2008/09	Forecast 2009/10	Acutal 2009/10
Revenue			
Geneal Consumers	1127	1160	1145
Export	623	414	427
Other	16	7	6
Total	1766	1581	1578
Expenses			
O&A	360	372	378
Finance	401	417	373
Depreciation	346	368	358
Water Rentals	123	120	121
Fuel & Purchases	176	103	104
Taxes	64	73	76
Corporate Allocation	8	8	8
Total	1478	1460	1418
Non-Controlling Interest	0	0	0
Net Income	288	121	160

Balance Sheet - Electric Operations ($M)

Retained Earnings - Electr	2084	2183	2206
Retained Earnings - Consol	2120	2227	2239
Debt Ratio - Electric	77%		
Debt Ratio - Consolid	77%	74%	73%

Sources: IFF09-1
Manitoba Hydro's 2009/10 Annual Report (page 98)
PUB/MH/.PRE-ASK-9

3. INITIAL IFF10-1 OUTLOOK FOR 2010/11 AND 2011/12

- Table 3 compares the outlook for 2010/11 and 2011/12 as set in IFF09 (the basis of the original Application) versus that from IFF10 (Appendix 76).

Table 3
Comparison of IFF09 and IFF10

Income Statement - Electric Operations ($M)

		IFF 09-1					IFF 10-1				
	Actual	Forecast ->					Acutal	Forecast ->			
	2008/09	2009/10	2010/11	2011/12	2014/15	2019/20	2009/10	2010/11	2011/12	2014/15	2019/20
Revenue											
Geneal Consumers	1127	1160	1192	1246	1441	1805	1145	1194	1265	1451	1818
Export	623	414	383	554	590	1093	427	444	461	529	804
Other	16	7	7	8	8	9	6	7	7	8	8
Total	1766	1581	1584	1808	2039	2907	1578	1645	1732	1988	2630
Expenses											
O&A	360	372	380	403	428	497	378	398	402	430	495
Finance	401	417	413	468	544	878	373	393	411	521	702
Depreciation	346	368	386	407	466	566	358	374	405	458	547
Water Rentals	123	120	110	111	114	124	121	121	115	112	113
Fuel & Purchases	176	103	132	248	269	419	104	121	187	216	316
Taxes	64	73	76	77	92	124	76	81	82	98	140
Corporate Allocation	8	8	9	9	9	9	8	9	9	9	9
Total	1478	1460	1505	1723	1922	2617	1418	1496	1612	1846	2322
Non-Controlling Interest	0	0	0	1	-5	-14	0	0	4	0	-15
Net Income	288	121	78	87	113	276	160	149	125	142	292
Rate Increases	-	-	2.90%	2.90%	3.50%	3.50%		2.80%	2.90%	3.50%	3.50%

Balance Sheet - Electric Operations ($M)

LT Debt - Electr	7520	7800	8596	9054	11505	14147		8507	8927	11311	14690
Retained Earnings - Electr	2084	2183	2261	2331	2641	3908	2206	2354	2479	2922	4196
Retained Earnings - Consol	2120	2227	2315	2396	2738	4059	2239	2398	2531	3005	4331
Debt Ratio - Electric	77%										
Debt Ratio - Consolid	77%	74%	75%	76%	79%	79%	73%	74%	74%	79%	81%

Sources: IFF09-1
Manitoba Hydro's 2009/10 Annual Report, page 98
PUB/MH/PRE-ASK - 9
PUB/MH I-27
IFF10-1

- **For 2010/11** – the outlook has improved significantly, primarily due to higher anticipated export revenues:
    - Net Income is expected to be $149 M versus the $78 M forecast in IFF09.
    - Retained earnings at year-end are expected to be more than $90 M higher than in IFF09 for Electric Operations ($2,354 M in IFF10 versus $2,261 M in IFF09). Note – this $90 M + increase is more than double the $42 M additional revenues that IFF10 shows will result from the 2.9% rate increase requested for 2011/12 (see Appendix 76, page 33).
    - The debt ratio for 2010/11 is now forecast to be 74% on a Consolidated basis (versus the 75% in IFF09).

    - One of the factors restraining the currently forecasted level of net income for 2010/11 is the higher OM&A now forecast for 2010/11 ($398 M) versus that forecast in IFF-09 for the same year ($380 M).
        - The response to PUB/MH/PRE-ASK-14 shows that this increase is due to Manitoba Hydro assuming that the IFRS accounting changes will be implemented in 2011/12.
        - During the current proceeding (Transcript pages 936) MH acknowledged that they were being adopted earlier than required. The appropriate timing of this adoption is a key issue for the PUB in this proceeding. If it is not adopted for regulatory purposes until 2012/13 (as required under IFRS) then the results for 2011/12 will be even more favourable.
        - Should be noted that in IFF09 this change and the associated impact was not adopted until 2011/12 (per Pre-Ask 14) even though IFRS was one year earlier (i.e., 2011/12)

- **For 2011/12** – the financial operations outlook has again improved significantly in IFF10 versus IFF09. While export revenues are lower financing costs are down significantly due to lower debt levels in IFF10.
    - The forecast level of net income for 2011/12 is now $125 M (versus $87 M) in IFF09. To obtain the same net income level as originally expected in IFF09 for 2011/12 would only require a rate increase of roughly 0.3% (Note – The 2.9% increase yields $42 M in additional revenues. With no rate increase the net income level would be roughly $83 M – and 0.3% increase would generate an additional $4 M.)
    - The debt ratio (Consolidated) in IFF10 is 74% at the end of 2011/12 versus 76% in IFF09
    - The forecast level of retained earnings at the end of 2011/12 is $2,479 M (Electric Operations) versus the $2,331 M forecast in IFF09 – this is an increase of $148 M – roughly 3.5 times the additional net income that will be generated by the 2.9% increase. At the same time, the forecast long term debt associated with Electric Operations at the end

of 2011/12 is now forecast to be $8,927 M (versus $9,054 M in IFF09). This suggests that even if the 2.9% increase was foregone – such that retained earnings decreased by $42 M and debt increased by the same amount (ignoring financing costs) MH would be better off at the end of 2011/12 than originally forecast in IFF09.

- **Long Term (2014/15 -> 2019/20)** – Over the longer term, the outlook for annual net income has improved as has the overall level of retained earnings for 2019/2020 ($4.2 B in 2019/20 vs. $3.9 B in IFF09). However, offsetting this is some $1.6 B more in capital spending (per Appendix 76, pages 11) which leads to a higher overall debt ratio by 2019/20 (81% vs. 79%).

4. THIRD QUARTER RESULTS FOR 2010/2011

- Set out in Table 4 are the Third Quarter 2010/11 financial results – compared to the results for 2009/2010 over the 9 months.

Table 4

(M$)	Electric Operations		Consolidated	
Nine Months to Dec 31st	2010	2009	2010	2009
Revenue	1,173	1,149	1,260	1,237
Expenses	1,111	1,099	1,213	2,203
Net Income	62	50	47	34

- The 3rd Quarter Results also stated that the net income (consolidated) for 2010/11 was expected to be $140 M. This compares with the $158 M (consolidated) forecast in IFF10 for that year (Note: IFF09 forecast $88 M on a consolidated basis).

Comment

- While the 3rd Quarter result are calling for a fiscal year-end 2011/12 net income less than that in IFF10, both electric operations and consolidated net income for the first 9 months exceed that of the previous year (2009/10) and the overall annual net income for 2009/10 was $160 M. This suggests that while the first 9 months of 2010/11 performed better than the previous year – MH is forecasting an overall annual result of $140 M which is worse.

5. MANITOBA HYDRO SUBMISSIONS RE APRIL 1, 2011 INTERIM RATES

In support of its request for an interim April 1, 2011 rate increase of 2.9% Manitoba Hydro made the following submissions

- Claimed (page 4178(that it would not meet its projected net income for the current (2010/11) fiscal year.
    - Comment: No additional details were given so it is not clear what "projected" net income MH was referring to (i.e., the $140 M in the 3rd Q Report, the $134 M in IFF10 or the $88 M in the original IFF09).
- Noted that the increases post 2011/12 in the IFF are 3.5% annually. Foregoing a current rate increase would put more pressure on the need for these higher future increases (page 4179)
- Compared its requested 2.9% to BCH ydro's request for increases in excess of 9% over each of the next 3 year (page 4179)
    - Comment: No mention was made of Hydro Quebec where the increase for 2010/11 (i.e., April 1, 2010) was 0.5% and there was 0.4% DECREASE for April 1, 2011.
- Noted OM&A from 2005 to 2011/12 was increasing by 3% / annum (IFF10 after adjusting for accounting changes) as compared to inflation of 1.7% (page 4184) and provided a number of reasons why.
    - Comment: Two pages later in the transcript (page 4186) MH (Warden) is discussing how OM&A is $16 M lower than the previous year (up to January 31st) after account adjustments. This is a significant improvement over the IFF10-1 outlook which forecast 2010/11 OM&A to be $2 M higher after account adjustments ($367 M over $365 M per PUB/MH Pre-Ask #14)
- Noted that IFRS compliant accounting is required for 2012/13 fiscal year (page 4192).
    - Comment: As noted earlier the improved results for 2010/11 and 2011/12 arise despite the fact that MH has included in IFF10 $18 M for IFRS in 2010/11 and $14 M in 2011/12, as MH is adopting it earlier (page 936) than required. Adjusting implementation of IFRS to meet accounting standard requirements would further improve the net income reported for 2010/11 and 2011/12.

6. PUB RATIONALE FOR 2% INTERIM INCREASE APRIL 1, 2011

In Order 40/11, the PUB noted a number of areas where changes in circumstances pose risks/uncertainty for MH looking forward and that supported the 2% interim rate increase (for all but the ARL class) ordered. These factors included:

- MH's substantial capital program over the next 10 years (pages 31 & 32), accompanied by recent increases (and uncertainty) regarding its capital cost estimates (pages 34, 35 and 37)

- More general concerns about inflation levels, exchange rates and interest rates over the long-term (page 35)
- Decreases in export prices in the short-term and uncertainty as to export prices (particularly carbon offset premiums) in the longer-term (pages 34 & 35)
- Delays and uncertainties regarding new long-term firm export contracts (page 35)
- Potential extension of the "grid" to remaining diesel-served remote communities (page 36)
- Lack of comfort regarding MH's methodology for calculating its debt/equity ratio
- Concerns about inter-generational equity with current ratepayers engaged in plans that involve risk with those costs deferred to other generations (page 38).

Comments

- Most of the risks/concerns cited by the PUB as rationale for needing an interim increase deal with concerns and uncertainty beyond the test period (i.e. beyond 2010/2011 – 2011/2012).
- Indeed, using the forecast results for 2011/12 from IFF10 which shows revenue increases of $42 M due to a 2.9% rate increase would suggest that a 2% increase would lower revenues by roughly $13 M. However, even with the lower interim rate increase:
    - The anticipated net income for 2011/12 will be about $112 M (electric operations) which is higher than that forecast in IFF09 ($88 M) for the period and
    - The retained earnings as of the end of 2011/12 will also be higher than that forecast in IFF09 based on 2.9% increases in each year

7. UPDATED IFF10-2 (with Revised BiPole III Capital Costs)

Towards the end of the oral proceeding MH filed an updated version of IFF10 (IFF10-2) incorporating the higher capital cost for BiPole III (Ex. #156):

- For the test period (2010/11 – 2011/12) the financial results are virtually unchanged. This only change is a slight increase in the value of assets under construction. However, this Is not enough to alter the debt ratio on a consolidated basis which remains at 74% for year as in IFF10-1.
- Looking at the longer term, the debt ratio remains the same as in IFF101-1 for 2014/2015 (79%) but by 2019/2020 has increased to 83% relative to 81% in IFF10-1.

Attachment 3

Manitoba Hydro 2011-2012 General Rate Application

Consumer Association of Canada (Manitoba Branch) and Manitoba Society of Seniors

A Plain Language Discussion of Professors Kubursi and Magee

Public Interest Law Centre
Byron Williams
610 – 294 Portage Avenue
Winnipeg MB R3C 0B9

A Plain Language Discussion of Professors Kubursi and Magee

The paper which follows draws on a number of sources within the record of this proceeding including the written evidence, direct and cross examination of Professors Kubursi and Magee, the Hydro Rebuttal Evidence, the oral evidence of Mr. Cormie, the written and oral evidence of KPMG and the written and oral evidence of Mr. Wallach. Given the challenges of time, the citations which follow are less than perfect.

1. Preamble

There is no disagreement that Manitoba Hydro (MH) faces substantial risk in its business operations, that risk arises from a number of sources, and that effective evaluation of these risks is important to MH, the rate-setting process and by extension Manitoba rate payers. There is also widespread agreement that MH needs to devote more resources to the assessment, particularly the quantification, of the risks it faces in producing and selling hydroelectricity.

The Kubursi-Magee (K-M) report devotes a full chapter (chapter 6) to the quantification of MH risks in an exercise that is intended to give direction to the process of risk quantification that MH should undertake. This exercise also provides specific calculations of the risk MH faces in its operations.

This memo examines the methodology used by K-M in chapter 6 of their report and provides a critical assessment of their risk analysis as it pertains to MH. It also provides a brief explanation of the approach taken in Chapter 4.

The methodology uses a fairly standard approach to quantitative risk analysis rooted in the statistical concept of risk. This approach involves three distinct steps: (1) The stochastic conception of any specific risk in terms of some probability distribution for outcomes, (2) the application of a specific empirical probability distribution to describe any specific risk, and (3) the use of Monte Carlo simulation techniques to determine risks arising from complex situations involving multiple risks.

We take each of these topics in turn, provide a critical analysis, and discuss their potential application to the assessment of the financial position of MH under adverse events. We conclude with a summary of the strengths and weaknesses of the analysis of MH exposure to risk presented by K-M.

2. Conception of Risk as a Probability Distribution

Risk arises when outcomes are uncertain. For example, Manitoba Hydro does not know what water flow if will face next year. The scientific approach to risk assessment involves ascribing some probability to each possible outcome for water flow next year, which constitutes a probability distribution of water flow outcomes.

For example, a well known probability distribution is the normal distribution, which has some useful and well understood properties.[1] An outcome that follows the normal distribution will be within 1.96 standard deviations of its mean 95% of the time. Moreover, the normal distribution is symmetric, meaning that an outcome in a certain range above the mean, such as more than 1.96 standard deviations above the mean, is just as probable (2.5%) as an outcome in the same range below the mean (1.96 standard deviations below the mean).

Financial assessments of risk typically focus on downside risk, which refers to extreme adverse events. Stress tests of a business like MH, for example, typically examine the implications of one or a series of adverse outcomes which have low probability, such as the implications of the worst five-year drought ever recorded in Manitoba on MH electricity generation or revenues.

From a statistical point of view, however, risk also involves upside risk, which refers to extremely favourable outcomes with low probability, as well as a range of outcomes with higher probability of occurrence.

Although the normal distribution is commonly used to assess many random events, other distributions may be more appropriate and may or may not be symmetric.[2] Similarly, results may not be independent.

---

1 The normal distribution is also known as the Gaussian distribution or Bell curve. The widespread use of the normal distribution is based on a series of results, the Central Limit Theorems, which suggest that the outcome of a large series of random processes will often approximate the normal distribution.

Symmetry simply means that, for each deviation below the mean of the distribution, there is a corresponding deviation above the mean with equal probability. This implies that the downside risk of any extreme adverse event is matched, or completely offset, by an upside risk of an extreme favourable event with equal probability. Over a long series of "draws" from a symmetric distribution, the mean outcome should be zero, although an adverse event or series of adverse events may occur in any future period.

2 Some non symmetric distributions considered by KM include poisson, exponential,and Pareto distributions. K-M also introduce extreme value distributions (EVDs), which represent the probability distribution of the extreme value (e.g. smallest value if that is the "adverse event") arising from a series of independent draws from a known probability distribution.

Independent means that the next outcome is not influenced in any way by the previous outcome. If the probability of an event is 2.5% (1 in 20), then the probability of an adverse event next year is 2.5% regardless of whether an adverse event has occurred this year or not. As a result, the probability of two consecutive adverse events is very small (1 in 400).

However the independence assumption may not hold. Take for example water flows. The probability of an adverse water flow event next year may be greater or smaller than 2.5% if an adverse water flow event was experienced this year. A probability greater than 2.5% would indicate that the outcomes are positively correlated, a common feature of natural and economic data.

When the outcomes have a time dimension, this correlation is often referred to as serial correlation or autocorrelation, describing the dependence of the next (in time) outcome on the previous outcome or outcomes. This makes the analysis considerably more complex because the outcomes must be conceived as coming from a distribution in which successive events are correlated, or a joint probability distribution of outcomes. K-M (p.152) note, for example, that the extreme value distribution is limited because it doesn't allow for correlated outcomes (losses).

K-M's treatment of correlation in chapter 4 is limited to water flows, although other risky factors, such as exchange rates, may also exhibit serial correlation. Moreover, different risky outcomes may not only be serially correlated but may also be correlated with each other, complicating the analysis further.

The probabilistic nature of the risk factors facing MH can only be ascertained by careful statistical examination of the accumulated data. An important criticism of the current risk management procedures followed by MH, made by both the K-M and KPMG reports, is that MH has generally not analyzed its risky factors in terms of their underlying probability distributions, or the stochastic properties. In this sense, MH is not following best practices in modern risk management and is limiting what it can learn about the risks it faces.

3. Estimating Risk

Once risks are conceived in terms of probability distributions, one can begin to assess the exact nature of those risks by fitting the observed outcomes to actual distributions.

In principle, with a sufficient number of observed draws of a random variable that follows a particular distribution, we can assess whether those observations follow the normal distribution or some other distribution and, as the

number of observations increases, test between distributions with increasing confidence.[3]

The standard approach is to compare the observed outcomes with those that would have arisen under a particular probability distribution; the further the observed and expected values are apart, the less likely is the particular distribution to have generated the outcomes. The comparison can be made using a chi-squared test.

In addition, a set of observations can be tested against a series of probability distributions to see which distribution fits the actual outcomes best (has the lowest chi-squared test score). K-M undertake such a standard exercise in chapter 6 with a very limited number of observations and a large number (over 30?) of distributions.

The tests discriminate only weakly among the potential distributions from which a particular random variable, such as water flow, might have been drawn. In that sense, the criticism by MH of the risk quantification exercise undertaken by K-M in chapter 6 is valid (MH Rebuttal evidence, pp.83-86).

Moreover, in their original Chapter Six Analysis, K-M skirt the complex issue of serial correlation by limiting their risk quantification exercise to one year. Tellingly, they state:

> **We did not examine the results of a five or seven year drought as we did not have and did not think that the actual series would produce the best correlation given that our estimate came from a statistical simulation exercise. (Report 229)**

In MH-KM-28, MH asks:

> "Please confirm that the various risk factors quantified in Table 6.2 do not take into consideration the correlation and interrelationship between the risks. . ."

K-M replies:

> "KM agrees that Table 6.2 is only for a 1 year period. KM agrees that the probability of an occurrence of each risk must be considered in assessing the relative ranking of Manitoba Hydro's risk factors. . ."

---

3 That is, we can test between, say, the normal distribution and lognormal distribution, which has a long right-hand tail of favourable (positive) outcomes. We can never be absolutely sure which distribution should be rejected, as is the case in all statistical analysis, but we can be increasingly confident in rejecting one distribution in favour of the other for a given sample statistic as the number of observations increases.

MH's criticism is more defensive than constructive, however, since they do not appear to offer any method (or at least no scientific method) of assessing "the correlation and interrelationship between the risks".

There is a sense here that the problem is too complicated and MH knows better how to assess these risks. **While no one doubts that experienced judgment is an important factor in risk management, experienced and informed judgment should make for better decision-making.** And informed judgment leads to a scientific and empirical assessment of the risks and their correlations, which both KPMG and K-M encourage.

Assessing Serial Correlation in Chapter 4

K-M do address the issue of serial correlation with regard to water flows in chapter 4, where they use basic time series analysis to evaluate the risk assessment provided by MH.

MH's approach is simply to examine the 98-year series of annual water flows to identify periods of prolonged drought, defined as the worst 5-year periods of water flow on record. MH then use this drought scenario as their adverse event to assess the impact on MH hydroelectricity production and finances.

An important limitation of this approach, pointed out by K-M (p.139) is that it does not allow for outcomes worse than those already observed. Nor, does it allow for a correct assessment of the probability of specific drought outcomes, such as those that would be less than some specified probability of occurrence (e.g. 2.5% or 1 in 40). To do this, a specific probability distribution or model must be specified and estimated for the observed water flow series.

K-M choose to fit a third-order autoregressive (AR) model, which simply specifies that the water flow in any one year depends on water flows in the three previous years and random error. While conceding a more general time series analysis of water flows might be more accurate, K-M suggest that an AR model simplifies the simulation process (CAC/MSOS-KM-34).[4]

The simulation process involves using the calculated residuals from the time series analysis, which are the differences between the observed water flow values and those predicted by the model on the basis of the previous three years of water flow.

4 See also CAC/MSOS(KM) 35 for a brief discussion of the utility of ARIMA in addressing structural breaks this may suggest some utility in using a more complex approach in evaluating the impact of Global Warming.

These residuals are then randomly chosen or resampled and added to the predictions of the model to generate new artificial, or bootstrapped, series of observed water flows. The power of this approach is that an arbitrarily large number of these bootstrapped observations can be generated to ask the pertinent questions: What is the probability of a 5-year drought with combined water flows below some specified value (e.g. the worst 5-year drought ever observed) or what is the 5-year drought water flow that would occur only a specified percentage of the time (e.g. 2.5%)?

Suppose that you wanted to answer the latter question. You could generate, say, 10,004 bootstrapped observations, identify the 10,000 5-year water flows[5] from that series, and determine the 250th lowest 5-year flow to estimate the 2.5% (250/10,000) lowest water flow values.

Using this approach, K-M (p.162) find that the their approach yields a similar estimate of the probability of an adverse water event to that found by MH, so that the approach taken by MH does not appear to be biased (i.e., excessively optimistic or pessimistic regarding the possibility of an adverse water event).

The approach of K-M is, however, explicitly stochastic and, as such, provides a wider range of potential outcomes with associated probabilities (i.e. a proper estimated probability distribution of prospective water flow outcomes) that can be used for risk assessment and risk management. It also illustrates how serial correlation can be introduced into the estimation of probability distributions associated with other risks facing MH.

4. Assessing Complex Risk Situations Using Monte Carlo Methods

There is no question that assessment of the risk factors on the operations of MH is a complex task and one that requires not only the full input of MH in understanding its complex operations but also a systematic method of characterizing the risks faced by MH and how they interact. Fortunately, modern computing power and statistical science has developed methods by which the complex interactions among risks can be evaluated using the power of randomization and replication associated with Monte Carlo methods.

Randomization refers to the creation of a random value corresponding to a specified distribution. For example, K-M (ch.6, p.228) focus on 15 different risk factor[6] that affect MH's net revenue.

For each of these factors, they fit a series of probability distributions to the data and choose that probability distribution with the lowest chi-squared score

5 Four extra observations at the beginning of the series are required to construct the first 5-year series, after which one observation would be added and one deleted each time. Initial past water flow values would also be required as input to the AR(3) model.

(i.e. that distribution that predicts the observed outcomes of the factor in question the closest), as discussed in section 3.

Once a probability distribution has been assigned to a factor, they can then draw random values corresponding to that distribution. For example, K-M determine that Load follows a normal distribution with mean 21,272 Gwh and standard deviation 1086.6 Gwh. (We choose this example because the normal distribution is familiar and easy to work with, but the principle is the same for any other distribution).

For this distribution, K-M can now generate a random value between 0 and 1, call it x, using standard computer software functions. They can then generate a random value from the (cumulative) normal distribution for a specified mean (21,272 for Load) and standard deviation (1086.6). This value corresponds to a random draw from the normal probability distribution for Load depicted in Figure 6-19 (p.247).

Replication refers to the fact that random values corresponding to the specified distribution, such as the normal distribution for Load in Figure 6-19, can be drawn *ad infinitum* even though the probability distribution was fitted or estimated from a limited number of data points, the observed values for Load.

With modern computer technology, this provides a powerful tool to explore the extreme events associated with Load and their implications for the risky outcomes faced by MH.

Thus, one could generate a very large number of normally distributed random values for Load which would trace out the probability distribution in Figure 6-19 and indicate that Load would fall short of 19,142 Gwh (21272-1.96*1086.6) 2.5% of the time and exceed 23,402 Gwh (21272+1.96*1086.6) 2.5% of the time.

This exercise is simplified by software functions specifically geared to the generation and replication of random values for Monte Carlo simulation, such as the @RISK function available for Excel used by K-M. While the replication described here is a trivial exercise because of our understanding of the normal distribution, replication is a powerful modern method of exploring more complex stochastic relationships associated with risk.

In particular, K-M identify a large number of different risk factors associated with the operations of MH. In principle, the implications of any specified combination of these risk factors can be explored by generating repeated random values for the specified risk factors and generating a financial

6 This claim is confusing because section 6.5 presents 27 probability distributions associated with different risk factors, although some of the factors are closely related, such as firm and non-firm exports to the U.S. and other provinces (Figs. 6-22 to 6-25). We later refer to “a large number” of risk factors; the exact number is immaterial for an illustrative exercise.

outcome for MH in each case. K-M do this using net income as the measure of financial outcomes for 13 different variations from a base case in Table 6.2. In order to conduct Monte Carlo simulations of this sort, K-M need an integrated model of MH operations which captures the interrelationships among these risk factors. This integrated model is presented in Appendix B of their report.

The integrated model of MH operations in Appendix B consists of three subsystems: hydrology, power generation, and finance. K-M argue state (p.295)

> "Our objective is to demonstrate that the system can be integrated. The structure of the relationships is such that this integration is seamless and simple. We have called for a full integration of the system in our recommendations and that is why we have developed this simple presentation."

The tone reflects an intent to provide a "demonstration" or "simple presentation" of an integrated model that can be used to conduct Monte Carlo simulations and assess the impact of risk factors, individually or in combinations, on MH finances.

K-M specify their integrated model in 24 equations (pp. 295-305). Note that a specification of this sort, if not this precise specification, is a necessary step to interrelate the risk factors and allow Monte Carlo simulations to proceed.

In rebuttal (p.86), MH clearly acknowledges that K-M have provided a useful illustrative exercise, even if their data and methodology are inadequate to assess the risk MH currently faces:

> "Manitoba Hydro accepts as reasonable the concept and process outlined in the KM Report as being indicative of how a tool such as @Risk could be used to quantify financial risks when combined with a model that accurately represents the physical aspects of Manitoba Hydro's system and the interdependencies and correlations. . .
>
> Such an analysis, to be reliable, would require verified Manitoba Hydro data and would be required to take into consideration all relevant factors, including, for example, physical system capabilities (e.g. tie-lines, generation capacity), the effects of load growth, new contracts, new generation, changes in market rules, the effects of regulatory changes on operations (e.g. Brandon Unit #5), and correlations between parameters. These examples are not an exhaustive list, but are illustrative of the wide range of variables which

must be considered to undertake a fulsome analysis
and from which definitive conclusions could be drawn."

This is a telling acknowledgement that MH accepts the idea that useful exercises can be conducted using a more modern, more scientific approach to risk management in which risk factors are assessed in terms of their underlying probability distributions and Monte Carlo simulations of risk scenarios are conducted using an integrated model of MH operations.

It would be surprising if MH could not find fault with the initial efforts of two academics with limited exposure to MH's operations and could not improve on their effort substantially after a careful review of the model. While MH's criticism of K-M's model may be an effective rebuttal of K-M's findings in chapter 6, it is not an effective rebuttal of the methodology they have outlined.

The specific scenarios chosen are set out in Table 6.2. K-M begin with a Base Case, or benchmark, that uses the average values of the Statistics Canada data for MH from 2001 to 2007 contained in Table 6.1 and the probability distributions for each risk factor. **(We now know that water flow was not separately modelled in the base case but that generation was used as a proxy.) (In their June 24, 2011 Response to Undertakings, K-M have acknowledged that the formula employed was a poorer fit that others that might otherwise be employed. Using a revised formula, resulted in a substantial downward revision in a number of the Figures captured in Table 6.2. As set out elsewhere in the outline of the argument, there are still ongoing and significant problems with fit.)**

The Monte Carlo simulation of the Base Case generates random outcomes for each risk factor that correspond to the associated probability distribution for that risk factor. The random outcomes are entered into the integrated model to produce an estimate of net revenue. This process is repeated a large number 1,000 times to identify the probability distribution of net revenues for the base case in Figure 6.1. This summarizes the interactions of the risk factors for 1,000 replications when average conditions (defined by the averages from 2001 to 2007 in Table 6.1) apply.

Note that the outcome is itself necessarily a probability distribution, not a specific (or point) estimate of the sort produced by MH forecasts, because it reflects the underlying risk factors that are expressed in terms of probability distributions. This outcome distribution can be summarized by a mean ($445 million in annual net revenue), a standard deviation ($129 million), and a 90% confidence interval between $199 million and $615 million; that is, net revenue can be expected to fall between $199 million (the 5% confidence level) and $615 million (the 95% confidence level) 90% of the time under average conditions and to fall below $199 million 5% of the time and above $615 million 5% of the time.

K-M also list the minimum and maximum outcomes, but these are largely meaningless as they will depend on the number of replications used and, in any case, have a very small probability; for 1,000 replications, values as small as the minimum or as large as the maximum have a probability of only 0.1%.[7]

K-M then specify a series of adverse scenarios or stress tests to assess their impact relative to the Base Case. Take the familiar scenario of 1940 drought levels, which is discussed widely as the worst water flow on record (K-M report, Figure 3.10, p.82). Using generation as a proxy for water flow, and substituting this generation for the average generation, but allowing variation in the other risk factors over 1,000 replications, leads to a new probability distribution of outcomes for MH net revenue.

The new distribution of net revenue outcomes for the 1940 year is summarized in Table 6.2 by its mean, a loss of $343 million. This yields a net impact of a drought like 1940 of -$788 million (-$343 million - $445 million). K-M note (PUB/KM-57) that this reflects the "opportunity cost" of the drought, which is the actual accounting loss less the foregone net revenue of $445 million from a year with average or normal water flows. **(This number was substantially revised in the June 24, Undertaking Responses. Their continue to be ongoing challenges with fit.)**

Other scenarios proceed similarly and produce few surprising results. The largest impact arises from the compounding of risks. When a 1940 drought is combined with high import prices the loss is the largest in Table 6.2, $755 million, result in a net impact of $1.2 billion relative to the Base Case. **(This number was substantially revised in the June 24, Undertaking Responses. Their continue to be ongoing challenges with fit.)**

Indeed, one danger of the adoption of K-M's Monte Carlo approach is that one can generate very large losses by simply compounding a series of risks. The problem with this approach is that there is no analysis of the data to suggest whether a particular combination of risks is likely.

The K-M approach illustrates what can be done to assess risk using Monte Carlo simulation only to a limited extent, even setting aside concerns about the data and modelling of MH operations. The simulations in Table 6.2 take specific adverse scenarios, such as the 1940 drought, and attach a point estimate (mean net revenue) to the outcome.

This is not very different from the exercises undertaken by MH and it is therefore not surprising that they produce similar results to those found by MH.

---

7 As the number of replications increases, the minimum will be expected to fall and the maximum will be expected to rise but the probability of occurrence of values as low as the minimum or as high as the maximum will also fall. On the other hand, the 5% and 95% confidence levels may rise or fall but will be estimated more precisely with more replications.

Of more interest would be simulations where all risk factors of concern, including water flows, are characterized by a probability distribution or probability model. In the case of water flows, the probability distribution could be based on K-M's AR(3) model of water flows derived from the historical data in chapter 4. This would introduce autocorrelation into the water flow series. Monte Carlo simulation could then be used to generate a probability distribution of annual net revenues like Figure 6.1 but including water flows as a risk factor. That simulation would not likely be the most useful, however.

If we want to know how MH net revenues are likely to evolve over time, Monte Carlo simulations could be run to generate a probability distribution of outcomes for a specified time horizon, such as five years. Each simulation, involving random draws for each risk factor including water flow, would constitute one annual observation in a five-year series. The connection between water flows and net revenue in the current and previous years could be captured by the probability model for water flows developed by K-M in chapter 4 (or an improved version).

This type of simulation would generate a probability distribution of 5-year cumulative net revenue streams that would indicate what type of reserves MH is likely to need. It would estimate for example, a 5% confidence level for the 5-year cumulative net revenue stream, or a net revenue stream below which MH would likely fall only 1 time in 20. This would be valuable input to the assessment of appropriate reserves for MH.

5. K-M Approach to the Quantification of Risk: The Good and The Less Good

The Good:

K-M present a modern, scientific approach to risk management that should be adopted by MH as part of its risk management strategy and its justification to the PUB for resources to manage risk.

The KPMG report refers to the need for a probabilistic approach to risk that relies on repeated testing against historical data, and even for probabilistic stress tests and an approach that permits Monte Carlo experiments, but they do not set out the path that MH should follow as clearly as K-M.

The K-M path has four elements:

(1) identification of risk factors which have associated probability distributions of outcomes;

(2) analysis of the probability distribution of each risk factor using updated historical data, including the nature of any correlation between risk factors;

(3) the development of an integrated model of MH operations that links the risk factors and the financial outcomes of interest (net revenues);

(4) the performance of Monte Carlo simulations to assess the impact of risk on MH outcomes

Once a probabilistic approach to risk is adopted, such that risk factors are conceived as arising from some probability distribution for which we have some observed outcomes, the remainder of the risk management strategy falls into place.

Without the proper statistical foundations for risk analysis, however, MH will continue to generate risk assessments which lack empirical and analytical rigour.

The Less Good

An effective risk management strategy requires good information, including a good understanding of the operations of MH and good data.

Unfortunately, K-M's limited exercise fails on both grounds. The data, taken from Statistics Canada for a 7-year period, is convenient but very limited. They have tested each risk factor against a large number of prospective probability distributions but only against 7 data points. This leads to some analytically unsound results such as the finding that a triangular distribution fits the exchange rate best.[8]

MH also sees several problems with the integrated model they present in Appendix B and use for their simulation results in Chapter 6. But MH should not be allowed to dismiss the exercise as unrealistic if, as they claim in their rebuttal, the concept and process is reasonable.

Rather, they should commit to developing a full integrated model and data set that can be used to develop a Monte Carlo simulation model either in house or externally.

---

8 We see little use for such "half distributions" in the assessment of risk unless the factor in question, by its nature, permits only downside (or upside) risk. The triangular distribution limits the exchange rate to values greater than CDN$1.066=USD1.00 despite the fact that the Canadian dollar is above par at the time of writing. K-M's response is "that's what we found" (see CAC/MSOS/KM-44), although they admit parity is a possibility in Table 6.2 (the last scenario). A better approach would be to consider only full distributions that allow for downside and upside risk in factors such as the exchange rate.

In addition, K-M seem unwilling to take the Monte Carlo model for a proper road test. If many of the questions associated with rate setting revolve around what might happen to MH's net revenues over some defined time horizon, then the Monte Carlo approach can provide estimates of the probability distribution of net revenue outcomes for the horizon of interest. How likely is it that MH's net revenues will result in an accumulated loss of $500 million over a 5-year period?

The Monte Carlo approach is ideal to answer these questions within the limitations of the data and the operational expertise available. It would provide a new tool for risk management at MH and new information for the PUB and interveners that would go more directly to the issues pertinent to rate setting.

Attachment 4

Manitoba Hydro 2011-2012 General Rate Application

Consumer Association of Canada (Manitoba Branch) and Manitoba Society of Seniors

A Relatively Plain Language Comment Regarding Kubursi and Magee Undertakings of June 24, 2011

Public Interest Law Centre
Byron Williams
610 – 294 Portage Avenue
Winnipeg MB R3C 0B9

A Relatively Plain Language Comment regarding KM undertakings of June 24, 2011

Undertakings #151,152:

We now understand that water flows were not captured in the KM simulation model. Generation was used instead and in the base case (Tables 1 and 2)[1] is now modelled as an extreme value distribution. The problem of few data points and many possible distributions suggests a material possibility that the probability distribution that best captures hydro generation may not be the extreme value distribution.

In their original modelling, K and M used a linear regression line without an intercept.[2] During cross examination on May 31, 2011, CAC/MSOS introduced a simple linear regression with intercept. For the purposes of their undertaking response and the document dated June 10, 2011, KM have replicated the simple linear regression of water flows on generation produced at the hearing by CAC/MSOS[3] and tested it against their original approach without an intercept.

KM confirms that:

> both statistical and practical considerations favour the use of the with-intercept regression line.

It has been shown that that not using the intercept produced a poorer fit and hence poorer estimates of generation for any given water flow.[4] K and M indicate their more serious error in Chapter Six was the mistake involving generation.[5]

Tables 3 and 4[6] purport to simulate the case of "1940 Minimum Flows (Using the Intercept), No Interest Costs (Table 3) and With Interest Costs (Table 4)" using a generation figure of 18,770.2.

The KM results from the with intercept model are identical to the CAC/MSOS exhibit filed on May 31, 2011. Unfortunately, they do not display the R2 value which, in this case, would permit us to assess the accuracy of the regression as

---

1 p. 2 and 3.

2 See p. 11. "Original report used equation without intercept."

3 In their graph on page 12, the with intercept line replicates the simple linear regression adduced by CAC/MSOS in cross examination on May 31, 2011.

4 p. 8 and 9.

5 p. 3.

6 p. 3 and 4.

a proxy for its ability to forecast generation levels corresponding to particular (e.g., 1940) water flows. (R2 is the proportion of total variation that is explained by the regression line.)

The R2 value from the original CAC/MSOS Exhibit provides a value of of 0.88 for this regression which implies about 12% of the variation in generation was left unexplained by water flows.

This leaves **considerable room for error** in KM's figure of 18,770.2. (The reference to Newey-West standard errors is irrelevant to the question of forecast accuracy and any other issue in this hearing.)

Similarly, Tables 5 and 6[7] refer to "2.5% Quantile (Using the Intercept)" without explaining how the generation figure is derived. Presumably it comes from their earlier analysis of water flows and now a regression with an intercept. The methodology and results are not well documented.

Again, the forecast of generation based on water flows would be subject to some error.

Undertaking 162:

Negative values should be disallowed where appropriate, either by the choice of the probability distribution (to exclude negative values) or by converting them to zero (or some minimal value). This is a (likely minor) limitation of their simulation method.

Quantification of Manitoba Hydro Risks: Selective Stress Tests[8]

K and M appropriately acknowledge that the selected simulations using fixed variables are stress tests rather than probabilistic scenarios.

They admit that using the intercept in their regression to explain generation in terms of water flows leads to (i) a higher generation value for 1940 flows, (ii) raises generation revenues and (iii) reduces the net impact without interest costs (in the last column of Table 6.2 of the original report) from -$788 million to -$198 million, a reduction in impact of $590 million.

KM characterize this as "not much different" from the original report, but it is in fact substantial, reducing the net impact without interest costs by 75%.

The results for the other (implausible?) scenarios/stress tests are as follows:

7 p. 6 and 7.

8 Last page of unnumbered document dated June 10, 2011.

The net impact of drought at the 2.5% quantile without interest costs falls from -$722 million to -$337 million now, a reduction in net impact of 53%.

The net impact of 1940 flows and high interest rates falls from -$1200 million to -$758 million, a reduction in net impact of 37%.

These differences are hardly insignificant.

Manitoba Hydro 2011-2012 General Rate Application

Consumer Association of Canada (Manitoba Branch) and Manitoba Society of Seniors

Memo re: Differential Rates for Manitoba Hydro

Public Interest Law Centre
Byron Williams
610 – 294 Portage Avenue
Winnipeg MB R3C 0B9

TO: Byron Williams

FROM: Liz McCandless Isaac
Bev Froese

RE: Differential Rates for Manitoba Hydro

DATE: June 29, 2011

Summary

The power of any public utilities regulator must be expressly stated in its enabling statute or exist by necessary implication from the wording of the statute, its structure and its purpose. While recognizing the challenges of disentangling joint costs, regulators have traditionally set utility rates on a "cost of service" basis where rates are designed so that each rate class tends to pay for the estimated costs that class imposes on the utility.[1]

A low income rate program would necessarily lead to treating groups of consumers differently, with higher prices charged to the majority of the group or other classes of consumers to support the low income subset. A general principle has developed through years of rate setting in the United States and Canada that absent express wording in the statute, the courts will not presume the legislature intended to permit a regulator to make distinctions between customers of a public utility.

What follows is a description of the general principles regarding the setting of differential rates by a public utilities regulator. Those principles and relevant case law will then be applied to the Public Utilities Board to consider whether it has jurisdiction to implement low income programs in the context of Manitoba Hydro.

A. General Principles

The concepts of "just and reasonable rates" and "unjust discrimination" have developed over many years through the common law. American case law is more developed than Canadian case law and many of our basic principles relating to rate setting derive from American law. This memo will discuss the applicable principles relating to differential rates for low income consumers. As the case law demonstrates, a regulator usually needs express statutory authority to prescribe differential rates based on income and ability to pay.

Just and Reasonable Rates – the Rate Setting Context

Public utilities regulators have traditionally set rates on a "cost of service" basis, that is on the basis of cost causality by employing a complex cost allocation exercise. Goodman comments that "computation

1 Given the material challenges of fairly allocating joint costs, regulator often have chosen a zone of reasonableness within which it expects costs recovery ratios to fall. Particular challenges also are experienced when historical and embedded costs are materially different.

and allocation of costs of service lies at the heart of the tasks of a regulatory agency's administration of the just and reasonable standard".[2] **[complete footnote]**

In brief, the cost of service approach first looks to the utility's capital investments, maintenance costs and a fair rate of return to determine the amount of revenues required. That amount is then divided among the utility's consumers on a rate class basis (ie. residential, commercial and industrial). As the examination of general principles reveals, however, it is not always easy to separate non-cost factors from cost factors and a public utility will therefore often have to consider both in the circumstances of a particular case.[3]

A regulator's mandate of economic regulation is directed primarily at avoiding excessive prices if there is a monopoly service provider. In performing this function, a regulator acts as a surrogate for competition to protect consumers. In setting rates, it must balance the respective interests of the utility and the collective interest of all consumers.[4]

Rate-setting statutes often require a public utilities regulator to set "just and reasonable rates". What constitutes a just and reasonable rate has been the subject of debate for many years. According to Goodman, a "reasonable" rate may be justified logically in economic terms yet still work an injustice. A "just" rate is judged on its effect on the public, and in Goodman's view, fairness does not take a subordinate role but rather reigns as the final test.[5]

Public utilities legislation has been the subject of considerable jurisprudence in the U.S. and it has been stated that public service or public utility commissions:

> ... are not intended primarily for the benefit of established utilities; their primary purpose is to serve the interests of the public. They represent the public and are for the benefit of the state and its citizens.[6]

The case law demonstrates that where a regulator is charged with the task of setting a just and reasonable rate, the interests of both the utility and the public must be considered. In the landmark case of *Nebbia* v. *New York*, 291 U.S. 502 (1934), the Court held that the use of private property and the making of private contracts are, as a general rule, free from government interference. However, they are subject to regulation when the public need requires. At pp. 536-537, Justice Roberts stated:

> … a state is free to adopt whatever economic policy may reasonably be deemed to promote public welfare … and the laws giving effect to the policy will be valid if they … have a reasonable relation to a proper legislative purpose and are neither arbitrary nor discriminatory …

There are several Canadian cases where it has been held that public utilities commissions are primarily

2 Leonard Saul Goodman, *The Process of Ratemaking*, (Vienna, Virginia: Public Utilities Reports, 1998) at 280.
3 Goodman, *supra* note 2 at 931.
4 See *Advocacy Centre for Tenants-Ontario* v. *Ontario Energy Board* (2008), 293 D.L.R. (4th) 684, (Ont. S.C.D.C.), hereinafter "*Advocacy Centre for Tenants*".
5 Goodman, *supra* note 2, at 19.
6 Corpus Juris Secundum (West Publishing Company, St. Paul, 1993), v. 73B, para 61, as cited in *Centra Gas Manitoba Inc.* v. *Manitoba (Public Utilities Board)*, [1997] 6 W.W.R. 301, at para 25.

directed toward consumer protection and the public interest. For instance, in *Kenora (Town) Hydro Electric Commission* v. *Vacationland Dairy Co-Operative Ltd.*, [1994] 1 S.C.R. 80, Iacobucci, J. stated at p. 90 (dissenting in result but not on this point):

> Public utilities in Canada operate as highly regulated monopolies which exist for the benefit of the public. The fact, therefore, that this appeal involves such an entity, rather than two private litigants, affects the assessment of the policy concerns which inform the applicable legal principles. In other words, there is a statutory regime operating here which impresses the private dispute with a public interest component.

Rates for utility services have traditionally been designed with the principled objective of having each rate class pay for the estimated cost that class imposes on the utility. Regulators seek to minimze inter-class and intra-class subsidies. The theory behind this principle is that if customers impose different costs on the utility, they should be charged different rates (vertical equity) and if they impose similar costs on the utility, then their rates should be identical (horizontal equity).[7]

Unjust Discrimination

The historical common law approach for public utilities regulation has been that consumers with similar cost profiles are to be treated equally so far as reasonably possible with respect to the rates paid for services.[8] It is often said that rates must be cost-based so households that are similarly situated will be treated alike. Most provincial and state legislation has codified the prohibition against "unjust" or "unreasonable" discrimination regarding rates for services. Those jurisdictions that do not have legislation expressly containing such a prohibition nonetheless have judicially incorporated the principle.

It is important to note that not all discrimination is prohibited, as only "unreasonable" distinctions or "undue" preferences are considered discriminatory. According to Colton, in order for a rate or service to be discriminatory, it must have two essential elements. First, it must provide a benefit or preference to a discrete class of customers and impose a harm or burden upon a different class arising as a direct result, or there must be a burden or duty uniquely imposed on a particular class. Second, there must not be a utility-related basis for making the distinction at issue.[9]

The American jurisprudence has developed a process for determining what constitutes rate discrimination. For instance, according to *MCI Telecommunications Corp.* v. *Federal Communications Comm'n*, 917 F.2d 30 (D.C. Cir. 1990) at 39, when a claim of rate discrimination is brought to the FCC under the *Federal Act*, there is a three-tiered inquiry to determine whether the rate is in fact discriminatory. The first two steps involve proof by the petitioner that (1) the service provided is

7 The theory is particularly challenging to apply in circumstances where a cost allocation based on marginal costs may vary substantially from a cost allocation based on historical costs. Competing concepts of fairness and efficiency may come into play.

8 See *Advocacy Centre for Tenants*, *supra* note 4, at para 51.

9 Roger D. Colton, "Discrimination as a Sword for the Poor: Use of an 'effect test' in public utilities litigation", Washington University Journal of Urban and Contemporary Law (1990), reprinted in Public Utilities Law Anthology, Vol. XIII at 5.

similar to the service provided to others; and (2) there is price difference for this "like" service. If the petitioner is able to meet the first two steps, the burden then shifts to the utility to justify the price disparity as reasonable. The utility must prove the rate is reasonable and discriminatory rates may be "approved only when an extraordinarily important and serious interest of the carrier is involved".[10]

According to Colton, the common law prohibition against discriminatory rate-setting developed for several reasons. One reason was the monopolistic character of the services. Since consumers had no choice among vendors, it was important to create a law that would protect them from "unfettered" monopoly power.[11] Another reason was the recognition that the acceptance of benefits required recipients to serve all who came on equal terms. In other words, public funds would not be provided to an institution that unreasonably excluded some part of its population.[12]

In the past there have been several attempts in Canada and the U.S. to create a reduced rate for certain groups of consumers. As the following cases demonstrate, low income affordability programs necessarily lead to treating customer groups differently, with higher prices charged to a majority of residential consumers and support for some portion of the low income subset by the majority group or other classes of consumers.[13]

This type of subsidization has been described as imposing an effective regressive indirect tax upon those required to pick up the shortfall.[14] It becomes particularly onerous when it is charged against other members of the same low income class.[15]It is seen as a departure from a regulator's traditional function of protecting the collective interest of consumers dealing with a monopoly supplier through a "cost of service" calculation.

In the U.S., special rates for low income consumers have been considered for electricity, natural gas, telephone and transit services. According to Colton, these programs have generally taken one of three forms:

- Proposals to exempt the poor/elderly from the proposed rate increases whereby rates for the specified class were to stay constant and the increased costs passed on to remaining customers (ie. *Mountain States Legal Found.* v. *New Mexico State Corp. Comm'n*, 687 F.2d 92 (N.M. 1984));

- An explicit per unit discount whereby classes such as the poor/elderly pay only a portion of their "full" cost of service; or

- A reduced rate on an initial block of energy to provide affordable energy for basic needs, with subsequent blocks priced at higher rates.

---

10 *Trailsways of New England Inc.* v. *Civil Aeronautics Board*, 412 F.2d 926, 932 (1st Cir. 1969) quoting *Frontier Teachers Tariff*, 39 C.A.B. 615, 619 (1964).

11 Colton, *supra* note 9, at 3.

12 Colton, *supra* note 9, at 3.

13 *Advocacy Centre for Tenants*, *supra* note 4, at para 45.

14 *Advocacy Centre for Tenants*, *supra* note 4, at para 46.

15 Consider for example, a circumstance where only 25% of the low income target group participate in a program. The price burden imposed on the other 75% of this low income subset is exacerbated by the need to support the rates of those participating in the program.

In the majority of cases the regulator did not approve the proposed special rates because they are discriminatory and not cost-based. In some cases the regulator acknowledged the need for these types of programs but determined it did not have authority to respond to that need. For example, in *Mountain States*, *supra*, the Court held at p. 498 that although the discount rate "benefits an unquestionably deserving group, the low-income elderly and low-income disabled … [t]his unfortunately does not make the rate less preferential".

In most cases where the proposed special rate was rejected, the preference was found to cause a substantial detriment to remaining ratepayers. For instance, in *Greater Birmingham Unemployment Committee* v. *Alabama Gas Corp.*, 86 Pub. Util. Rep. 4th (PUR) 218 (Ala. P.S.C. 1987), the Court found that an annual cost of $50 imposed on remaining ratepayers as a result of an income-based program was an unacceptable burden. Regulators have not only considered the cost of the discount, but also the administrative costs, for example relating to determining eligibility.[16]

American regulators have also considered whether a low income program is equitable or whether it is over-inclusive or under-inclusive. For example, in *Citizen Action Coalition of Indiana, Inc.* v. *Public Service Company of Indiana*, 450 N.E. 2d 98 (Ind. Ct. App. 1983), the Court noted that:

> … if low-income customers use low amounts of electricity and high-income customers use large amounts of electricity, a general lifeline rate structure would be an equitable method of providing assistance to the needy.

The Court ultimately concluded there was not a strong enough correlation between the rate and use of the service, as follows:

> … although a general lifeline rate structure would benefit low-income consumers who are low users of electricity, it would have the undesirable effect of benefiting many middle and high-income consumers who are low users of electricity and harming a number of low-income consumers who are high users of electricity.

The case law confirms that as a starting point, rates for the same service under substantially similar circumstances and conditions should always be charged equally. Essentially, utility regulators do not have discretion to consider social policy issues unless the legislation has expressly endowed them with this power or it is necessarily implied.

Having said that, there have been some recent American cases that have adopted a more liberal approach and considered social costs in rate-setting. For instance, the New York Commission conditioned a proposed electric rate settlement upon the utility's agreeing to waive the reconnection charge for low income customers whose service had been terminated for non-payment and then had their service restored. The company had earlier agreed only to lower rates for low income customers and the Commission expressly acknowledged the utility's "obligation to take reasonable steps to assist its low-income customers".[17]

16 Colton, *supra* note 9, at 7.

17 *Re New York State Elec. and Gas Corp.*, 165 PUR 4th 309, 322 (N.Y. PSC, 1995).

It is possible to estimate the proportion of rates in terms of a percentage that is devoted to social policy by a utility.[18] The immediate impact of social costs places a utility at a potentially unfair advantage if it had to compete to retain major customers. However, Goodman points out that if other utilities that provide the future competition bear similar social costs, the computed social burden on the one utility may have little practical influence on its competitive status. Goodman suggests that relatively broad-based inquiries are needed to resolve such questions.[19]

As noted above, commissions and reviewing courts have generally been opposed to approving rates whose purpose is income redistribution. The effects of rate changes on low income customers are encompassed as part of value of service considerations. In the U.S. the effects have more recently been considered due to the Public Utilities Regulatory Policies Act of 1978 ("PURPA")[20], which sets out factors that ought to be considered by commissions, yet there remains reluctance to approve lifeline rates that are targeted to specific income or demographic groups.[21]

Under PURPA, the regulatory agency may fix, approve or allow a rate to go into effect that is lower than a rate that would reflect all the costs of providing electric service if it is designed to meet "essential needs … of residential electric consumers".[22] As a result, the statutes of several states require the regulatory agencies to consider the effect of rate structures and changes in rates on the lowest income household. As Goodman explains, it is a form of value-of-service consideration that favours a particular class of customers based on level of income, which in the absence of a statute might be considered discriminatory.[23]

Lifeline rates have been framed as being analogous to the result of a utility's making charitable contributions. For instance, in approving an experimental lifeline program of the Massachusetts Electric Company, the Court held that since a utility was "entitled to include reasonable charitable contributions in the calculation of its revenue requirement" supplied by all its customers, it could require all classes to share in the burden of the reduced rate and not merely the residential class.[24]

Summary of General Principles

The general principles discussed above may be summarized as follows:

- The concepts of "just and reasonable rates" and "unjust discrimination" have developed over many years, primarily through U.S. case law.

- A regulator typically needs express statutory authority to set different rates based on income or

18 See for example the table from "Connecticut DPUC Estimate of Annual Social Costs of Connecticut Light and Power" in Goodman, *supra* note 2, at 998.
19 Goodman, *supra* note 2, at 998.
20 Section 2601 et seq., Title 16, U.S. Code.
21 Goodman, *supra* note 2, at 1042.
22 16 U.S.C. s. 2624(a).
23 Goodman, *supra* note 2, at 1043.
24 *American Hoechest Corp.* v. *Mass. DPU*, 379 Mass. 408, 399 N.E.2d (1980) as cited in Goodman, *supra* note 2, at 1042-1043.

ability to pay.

- Regulators traditionally set just and reasonable rates on a "cost of service" basis.

- Regulators may consider both cost and non-cost factors in setting a just and reasonable rate.

- A regulator's primary function is to serve the public interest by protecting consumers from utilities that have a monopoly. When setting rates, regulators must balance both the interests of the utility and the collective interest of all consumers.

- Rates for services have traditionally been designed so that each rate class pays the actual cost it imposes on the utility.

- Consumers are to be treated equally so far as reasonably possible with respect to the rates paid for services.

- Not all distinctions are prohibited, only "unreasonable" differences and "undue" preferences are considered to be "unjust discrimination".

- Many attempts to create a reduced rate for certain groups of consumers, including low income consumers, have not been successful because they are a departure from the traditional "cost of service" calculation.

- Regulators do not have authority to consider social policy issues unless their enabling legislation expressly gives them the power to do so or it is necessarily implied.

Canadian Case Law

***(a) Allstream Corp.* v. *Bell Canada*, 2005 FCA 247**

In this case, the Federal Court of Appeal held that the wording of the *Telecommunications Act* allows the CRTC to consider social costs when making decisions. The Court also held that the CRTC has the power to consider non-cost based factors in determining a just and reasonable rate.

The matter at it issue in this case was whether the rates proposed by Bell Canada did not comply with the rating criteria set out by the CRTC in a prior decision because they fell below the established price floor. Network arrangements associated with a Quebec government initiative were aimed at supporting the construction of broadband networks for rural municipalities, school boards and other public institutions.

The ultimate issue was whether the rates approved by the CRTC were just, reasonable and non-discriminatory.[25] Under s. 27(2) of the *Telecommunications Act*, "[n]o Canadian carrier shall, in relation to the provision of a telecommunication service or the charging of a rate for it, unjustly discriminate or

25 Note that at para 31 the Court held that the standard of review is patently unreasonable. "The determination of just and reasonable rates falls squarely within the Commission's expertise and involves the Commission's policy-making role."

give an undue or unreasonable preference toward any person, including itself, or subject any person to an undue or unreasonable disadvantage".

The Court noted that in reaching its decision, the CRTC was very concerned about the effect a denial of service would have on the communities at issue. The CRTC was also concerned about the dislocation of complex equipment and facility configurations at a significant cost and to the detriment of school boards and municipalities in the relevant areas. The CRTC decided that these concerns outweighed Bell's failure to seek prior approval of its rates.

In upholding the CRTC's decision, the Court noted that its concerns "are not purely economic in the sense of costs, investment, allowance for necessary working capital, rate of return, etc. ...[t]hese considerations, however, are part of the Commission's wide mandate under s. 7 … a mandate it alone possesses ..." (para 34). Section 7 of the *Telecommunications Act* sets out a list of policy objectives, including:

> (a) To facilitate the orderly development through Canada of a telecommunications system that serves to safeguard, enrich and strengthen the social and economic fabric of Canada and its regions.

The *Allstream* case has been relied on to stand for the proposition that a regulator has the authority to consider both cost and non-cost factors when setting rates, and also to consider social policy. It is important to note that some cases, including the two cases referred to below, have distinguished this case and limited it to the context of the CRTC because of the broad mandate set out in s. 7 of the statute.

(b) Dalhousie Legal Aid Service v. *Nova Scotia Power Inc.*, (2006) 268 D.L.R. (4th) 408 (N.S.C.A.), leave to appeal refused at (2007) 364 N.R. 391 (S.C.C.)

In this case, the Nova Scotia Court of Appeal held that the provincial *Public Utilities Act* did not give the Utility and Review Board the express or necessarily implicit authority to set differential rates based on income.

At issue was Nova Scotia Power's application to the Utility and Review Board for a rate increase. One of the intervenors, Dalhouse Legal Aid Service ("DLA"), requested that the Board consider approving a program featuring power rate credits for low income consumers. DLA's proposed plan used a fixed credit approach so that in order to be eligible, a household would have to be below the LICO for Nova Scotia and have an electric burden that exceeds what is considered affordable. Under DLA's approach, it would be necessary to calculate what bill credit would need to be provided to the household in order to reduce its energy bill to a designated percentage of income. The Board concluded it did not have jurisdiction to set rates based on income and declined to consider the DLA's proposal.

The Court of Appeal considered whether the *Public Utilities Act* precluded the Board from considering DLA's proposal for low income households.[26] The focus of the Court's analysis was s. 67(1) of the legislation, which states:

---

26 Note that at para 18 the Court of Appeal held that the standard of review is correctness. It stated that although entitled to deference, the issue in this case is whether the statute precludes the Board from exercising a power.

> … [a]ll tolls, rates and charges shall always, under substantially similar circumstances and conditions in respect of service of the same description, be charged equally to all persons and at the same rate, and the Board may by regulation declare what shall constitute substantially similar circumstances and conditions.

The Court noted that in order to justify a rate difference, the relevant dissimilarity could not be level of income, but rather the dissimilarity must be the type of service. The Court also noted that Nova Scotia Power provides substantially similar electric service "whatever" the customer's income. Further, the Court held that the statute does not endow the Board with discretion to consider the social justice of reduced rates for low income consumers and simply put, it is for the legislature and not the Court to decide whether to expand the Board's mandate.

One of DLA's arguments was related to the Board's approval of rates for large industrial power consumers. It argued that if the Board can approve rates that prefer large industrial power customers, then it can approve a rate assistance program for low income consumers. The Court of Appeal rejected this argument and held at para 35 that the Board's approval of load retention rates was premised on the finding that otherwise large customers could leave Nova Scotia Power and obtain power from another source. The Board's approach in the large industrial load context affirmed its role as a competition surrogate because it recognizes the microeconomic reality that Nova Scotia Power is not an absolute energy monopoly with a vertical customer demand curve and is subject to elastic demand from high volume customers with other energy options. In other words, this isn't about social policy, it's about the Board being a surrogate for competition.

In summary, the principles and rationale of the Court's decision in this case are as follows:

- The wording of the legislation must be interpreted according to its grammatical and ordinary meaning, and harmonious with the scheme of Act and intention of legislature. (para 19)
- The wording in Nova Scotia's legislation is very different from s. 7 in CRTC Act, which includes terms relating to the safeguarding of Canada's "social and economic fabric" and affordable and accessible service.
- Substantially similar circumstances means similar service, not similar income.
- Section 67 is mandatory and requires rates for similar services to always be charged equally. Adopting the interpretation suggested by DLA would require the Board to read into this provision rate-setting based on the income level of consumers.
- The *Allstream* case is distinguishable because of the CRTC's wide mandate under s. 7 of its enabling legislation; (para 27)
- Section 73 of Nova Scotia's legislation expressly allows for preferential rates for certain consumers, for example seniors. This supports the interpretation that rate levels are tied to a utility's services and the legislature will decide which classes of customers ought to be treated differently based on social policy.
- The purpose of the Board is to set rates for a utility that has a virtual monopoly and in return for providing electricity, the utility is entitled to its reasonable and prudent costs of providing that service.
- The Board's regulatory power is a proxy for competition, not an instrument of social policy.
- There was no need to look at the Charter because the legislation is not ambiguous.

(c) Advocacy Centre for Tenants-Ontario and Income Security Advocacy Centre v. *Ontario Energy Board*, (2008) 293 D.L.R. (4th) 684 (Ont. S.C.)

In this case, the Ontario Superior Court (Divisional Court) departed from general principles and held that the Ontario Energy Board does have jurisdiction to set different rates for low income consumers. The Court determined that setting rates based on income was not setting social policy, but instead was rate-setting within the context and interpretation of the Board's enabling legislation in a fair, large and liberal manner. So long as the global amount of return to the utility was based on cost of service, then determining the actual rate amounts for groups of consumers is within the Board's discretion to achieve its ultimate goal of setting just and reasonable rates.

The Advocacy Centre for Tenants-Ontario and Income Security Advocacy Centre intervened on behalf of Low-Income Energy Network ("LIEN") and proposed a rate affordability assistance program for low income consumers. The majority of the Ontario Energy Board decided that since LIEN's proposal was based on income and would implicitly require subsidization by other rate classes, it amounted to unjust discrimination.

After reviewing general rate-setting principles and the historical role of a public utilities regulator, the Court acknowledged that the traditional cost of service approach is the root principle underlying the determination of rates. The Court also acknowledged that setting different rates for low income consumers would be a dramatic departure from the traditional view because it would impose additional costs on other consumers. Having said that, the Court found the legislation required a much broader interpretation because s. 36 expressly allowed the Board to employ "any method or technique that it considers appropriate" when setting rates.

The Court arrived at its conclusion for the following reasons:

- Cost of service is a fundamental factor and necessary starting point to determining rates. However, the Board must determine "just and reasonable rates" within the context of the legislative objective, which is to protect "the interests of consumers with respect to prices".

- The wording of s. 36 empowers the Board to set just and reasonable rates by employing "any method or technique it considers appropriate". The Court noted that the wording of s. 36 had previously been limited to setting rates based on cost of service but had been amended to give the Board greater flexibility when setting rates.

- The wording of s. 36 is different from and much broader than Nova Scotia's legislation, which requires rates to always be charged equally for services of the same description in substantially similar circumstances.

- In the past the Board had previously reduced a significant rate increase because of "rate shock" and spread out the increase over a number of years. In the Court's view, this indicated that the Board itself believes it has jurisdiction to consider ability to pay when setting rates.

- Enbridge Gas Distribution, unlike other utilities, makes annual contributions to enable emergency financial relief through its Winter Warmth Program. This program provides funds to subsidize low income consumers so they are able to heat their homes during the winter. The Court noted that these subsidies are considered to be part of the utility's costs when the Board approves or fixes rates. The Court also noted that although this program is funded by all consumers, to some extent there is internal cross-subsidization within the residential consumer class. For that reason, if the Board has jurisdiction to approve utilities paying subsidies to the benefit of low income consumers, then it arguably has jurisdiction to order utilities to provide special rates on the basis of low income.

- The fact that s. 79 of Ontario's legislation protects rural and remote consumers does not mean the legislature did not intend the Board to have discretion to protect other groups of consumers. The Court cited s. 79 as an example of a legislative intent to depart from the traditional principle of cost causality to consumers within a certain class.

It is important to note the dissenting opinion of Swinton J. in this case because it is consistent with the reasoning in the Nova Scotia case. Swinton J. held that the Board does not have jurisdiction to set special rates for low income consumers because the legislation does not expressly give it the authority to do so. In his view, if the legislature wanted the Board to have this authority, it would have expressly said so. He further held that if the Board assumes this jurisdiction, it will be taking on a significantly new role as regulator of social policy and carrying out an entirely different function. Swinton J. noted in particular that entering the realm of social policy and weighing the interests of low income consumers over others is not a role the Board has traditionally played, is not where its expertise lies, nor is it well suited for this role.

It is also important to note that neither the majority nor the dissenting judge in this case felt it necessary to consider the Charter because the legislation was not ambiguous.

(d) Affordable Energy Coalition, Re, (2009) NSCA 17, leave to appeal refused at (2009) 400 N.R. 394 (S.C.C.)

Subsequent to the *Dalhousie Legal Aid Services* case, a group of low income consumers challenged s. 67 of Nova Scotia's *Public Utilities Act* on the basis that it violates s. 15 of the Charter. The appellants argued that this provision of the legislation discriminates on the basis of poverty and, alternatively, that it has an adverse impact on women, racial minorities, recent immigrants, the elderly, persons with disabilities, single mothers and their children.

The Nova Scotia Court of Appeal dismissed the appellant's claim on the basis that poverty is not an analogous ground protected under the Charter. It further held that the appellant's adverse impact arguments failed on the basis that “the claimant groups and the comparator group both have substantial numbers living in poverty, who must priorize power costs against costs of other basic needs”. For that reason, the legislation was not discriminatory because it “does not treat the complainants differently than it treats the comparator groups, either directly or by adverse effect, based on sex, race, ethnic or

national origin, age, disability or marital status".

There are two important points to take into consideration regarding this decision. First, although the Nova Scotia Court of Appeal held that poverty is not an analogous ground, that is still an open question and yet to be decided with certainly by the Supreme Court of Canada.

Second, this decision pre-dates the recent Supreme Court of Canada case of *Withler* where the Court expressly recognized the problems associated with a rigid application of the comparator group test previously set out in cases such as *Hodge* and *Auton*. In *Withler*, the Court backed away from its previous rulings and therefore it may not be as onerous for a claimant to overcome the issue of comparator groups if a similar s. 15 argument were made today.

B. Differential Rates in the Context of Manitoba Hydro

The legislative scheme governing the setting of rates by Manitoba Hydro and the PUB is set out in three separate pieces of legislation, namely *The Manitoba Hydro Act*, *The Public Utilities Board Act* and *The Crown Corporations Public Review and Accountability Act*. What follows is a summary of the overall legislative context and a consideration of whether it expressly or necessarily implies that the PUB has jurisdiction to consider ability to pay when setting rates. It should be noted that while Hydro is not defined as a public utility under s. 2(5) of the Public Utilities Board Act[27], section 26(3) of the *CCPRAA* provides that *The Public Utilities Board Act* applies with any necessary changes to a review pursuant to this Part (Part IV) of rates for services.

(a) Purpose of the Act

- The purpose and objectives of *The Manitoba Hydro Act* is to provide a continuing supply of power adequate to meet the needs of the province and to promote economy and efficiency in the supply and end use of power. (s. 2 Manitoba Hydro Act)

(b) Manitoba Hydro and the role of the PUB

- Manitoba Hydro has a monopoly when it comes to the retail sale of power in Manitoba. (s. 15.2 Manitoba Hydro Act)

- The PUB may refrain from exercising its power if it finds as a fact that the service is or will be subject to competition sufficient to protect the public interest. However, the PUB must not do so if refraining from exercising its power would be likely to unduly impair the establishment or continuation of a competitive market. (s. 74.1 of PUB Act)

- Manitoba Hydro has the authority to make regulations setting out the terms and conditions under which it will supply power and any other conditions it deems necessary for its efficient

---

272(5) Subject to Part IV of *The Crown Corporations Public Review and Accountability Act* and except for the purposes of conducting a public hearing in respect of an application made to the board under subsection 38(2) or 50(4) of *The Manitoba Hydro Act*, this Act, other than subsection 83(4) and the regulations under that subsection, does not apply to Manitoba Hydro and the board has no jurisdiction or authority over Manitoba Hydro.

administration so long as they are not inconsistent with the Act.

(c) Rates for service

- Manitoba Hydro is entitled to a return of its full cost of supplying power that includes necessary operating expenses, interest and debt services charges, and a reserve. (s. 39(1) of Manitoba Hydro Act)

- Rates for services by Manitoba Hydro must be reviewed by the PUB and no change in rates shall be made or new rates introduced without the approval of the PUB. (s. 26(1) and 27(2) of Crown Corporations Act)

- In reaching a decision, the PUB may take into consideration a number of factors, including:
  - factors relating to cost of service, ie. operating expenses, interest and expenses on debt, reserves;
  - non-cost factors such as liability for pension benefits and other employee benefit programs;
  - compelling policy considerations the PUB considers relevant; and
  - any other factors the PUB considers relevant to the matter. (s. 26(4) of Crown Corporations Act)

(d) Just and Reasonable Rates and Unjust Discrimination

- Rates charged for power supplied to a class of grid customers in Manitoba must be the same throughout the province. Customers cannot be classified based solely on the region of the province in which they live or on the population density of the areas in which they live. In other words, consumers living in rural or remote regions must be charged the same rates as other consumers. (s. 39(2.1), (2.2) of Manitoba Hydro Act)

- The PUB has authority to investigate complaints that tolls or charges exceed what is just and reasonable having regard to the nature and quality of the service. The PUB may order just and reasonable tolls or charges if they are excessive, unjust, unreasonably or unjustly discriminate between different classes or different municipalities. (s. 64 of PUB Act)

- The PUB has authority to consider whether contractual rates are insufficient, excessive, unjust or unreasonable. If they are not, then the PUB may fix a rate that is just and reasonable. (s. 65(1) of PUB Act)

- The PUB has authority to fix just and reasonable rates whenever it determines they are unjust, unreasonable, insufficient, unjustly discriminatory or preferential. (s. 77 of PUB Act)

- The PUB has authority to fix just and reasonable standards and classifications to be furnished,

imposed, observed and followed by Manitoba Hydro (s. 77 of PUB Act)

- Manitoba Hydro cannot make, impose or exact unjust or unreasonable, unjustly discriminatory or unduly preferential rates. (s. 82(1) of PUB Act)

- Manitoba Hydro cannot adopt or impose any unjust or unreasonable classification in the making of or as the basis for an individual or joint rate. (s. 82(1) of PUB Act)

- Manitoba Hydro cannot give, directly or indirectly, any undue or unreasonable preference or advantage to any person, corporation or locality or subject them to prejudice or disadvantage. (s. 82(1) of PUB Act)

- No change may be made in rates unless approved by the PUB and the PUB has the authority to determine whether the rates are just and reasonable. (s. 84(1) of PUB Act)

(e) When discrimination/preferential treatment is allowed

- If there is a state of emergency, the PUB has the authority to make an order that establishes preferences and priorities between different users and classes of users of powers. (s. 47(1) of Manitoba Hydro Act)

- A municipality may, if authorized by by-law approved by the PUB, enter into an agreement to charge an individual consumer a preferential rate. (s. 82(15) of PUB Act)

(f) When ability to pay is expressly allowed to be considered

- When making an order regarding the discontinuation of service for default, the PUB may consider, among other things, the financial circumstances of the person in default. (s. 104.1(8) of PUB Act) . Given that its regulation of Manitoba Hydro is restricted to the determination of rates for service, this provision would not appear to apply to Hydro.

It is clear that Manitoba's legislation is different from both Ontario and Nova Scotia and falls somewhere in between in terms of what the PUB is allowed to consider when setting rates. For that reason, there are arguments both in favour of and against interpreting the legislative scheme to allow the PUB to set rates based on income and ability to pay.

The arguments in favour of the reasoning in the Nova Scotia case and the dissent in the Ontario case include:

- The purpose and objective of *The Manitoba Hydro Act* is limited to promoting economy and efficiency in the supply and use of power. It does not include a broader mandate to consider social policy like that of s. 7 of the *Telecommunications Act*.

- The legislative scheme reflects the traditional role of a regulator and common law principles in that:

    - Manitoba Hydro has a monopoly on the retail sale of power
    - the PUB acts as a surrogate for competition
    - Manitoba Hydro is entitled to a return on its full cost of supplying power on a cost for service basis, not on ability to pay
    - rates for services must be just and reasonable and rates that unjustly discriminate or give preferential treatment are expressly prohibited

- A low income affordability program that imposes an additional cost on consumers of the same class is an unacceptable burden and therefore would be an unjust and unreasonable rate.

- The PUB's obligation is to protect the collective interests of consumers, not a particular and discrete subset of consumers.

- When the legislature wants to permit preferential or discriminatory rates, it expressly says so. Since it has not expressly said that rates may be based on income, then the PUB does not have the authority to do so.

- Allowing the PUB to set rates based on ability to pay is a radical departure from its traditional role of setting rates based on cost of service and therefore requires an express legislative intent. Further, setting rates based on income is beyond the PUB's area of expertise and it would be entering the realm of social policy. That is a matter for the legislature, not the PUB.

Arguments in favour of the majority in the Ontario case:

- The factors the PUB may take into consideration when setting rates are very broad and not limited to those relating to cost of service. In particular, the PUB is entitled to consider "compelling policy considerations" and "any other factors" the PUB considers relevant, which arguably could include ability to pay.

- The PUB has the authority to fix just and reasonable standards and classifications and Manitoba Hydro has the authority to adopt just and reasonable classifications in the making of rates. Arguably this could be interpreted as permitting classifications based on income.

- So long as the PUB determines the global amount based on cost of service, it has the discretion to set rates based on income. This is rate-setting within the context of the legislative scheme, not the setting of social policy.

- The PUB would not be required to set rates based on income, but would have the discretion to do so if it were just and reasonable. Setting just and reasonable rates is squarely within the PUB's mandate and area of expertise.

- The legislature allows for preferential treatment in certain circumstances and allows the PUB to consider ability to pay (re disconnection of service), so it already recognizes and approves of a departure from traditional rate-setting principles. Therefore it would not be inconsistent with the legislative intent for the PUB to set rates based on ability to pay.

- There is already cross-subsidization within the residential consumer class regarding Manitoba Hydro's programs that provide subsidies for low income consumers.[28]

28 It might be argued that the low income energy efficiency program can be differentiated from a low income bill assistance program in that it is a program or service rather than a rate (quare the application of s. 82). It could be argued that low income energy efficiency is necessary in order to recognize that low income rate payers who tend to disproportionately under utilize energy efficiency programming are not disadvantaged by disproportionately contributing to a program that they under utilize.