

Order No. 59/18

**FINAL ORDER WITH RESPECT TO MANITOBA HYDRO'S 2017/18 AND 2018/19
GENERAL RATE APPLICATION**

May 1, 2018

BEFORE: Robert Gabor, Q.C., Chair
Marilyn Kapitany, B.Sc., (Hon), M.Sc., Vice Chair
Hugh Grant, Ph.D., Member
Shawn McCutcheon, Member
Sharon McKay, BGS, Member
Larry Ring, Q.C., Member

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1.0 Overview

Under Manitoba law, the Public Utilities Board (“Board”) must set electricity rates for Manitoba Hydro’s customers that are just and reasonable. In so doing, as confirmed by the Manitoba Court of Appeal, the Board balances two concerns: the interests of Manitoba Hydro’s ratepayers and the financial health of Manitoba Hydro. Together and in the broadest interpretation these interests represent the general public interest.

1.1 The Manitoba Public Utilities Board

The Board is an administrative tribunal created by provincial legislation to act as an independent decision-maker in the regulation of public utilities in Manitoba. To carry out this mandate, the Board is empowered by legislation with many of the same powers, rights, and privileges as the Manitoba Court of Queen’s Bench. As such, the Board is court-like and transparent in its processes. Those processes include the receipt of evidence under oath from utilities, interested or affected groups (also known as “Intervenors”), and members of the public.

In order to make decisions on the applications before it, the Board deliberates on the evidence obtained in accordance with fair processes pursuant to principles of administrative law. For example, in the present Application before the Board, the Board received written and oral evidence from witnesses on behalf of Manitoba Hydro, expert witnesses retained by Intervenors, Independent Expert Consultants, and members of the public. All of the documents filed in the proceeding, as well as transcripts of oral evidence and submissions, are available on the Board’s website at www.pubmanitoba.ca.

The Board's Rate Review Mandate

The Board's mandate with respect to the regulation of Manitoba Hydro (or "the Utility") is derived from *The Public Utilities Board Act*, CCSM c P280 ("Board Act"), *The Crown Corporations Governance and Accountability Act*, CCSM c C336 ("Crown Act"), and *The Manitoba Hydro Act*, CCSM c H190 ("Hydro Act").

Pursuant to subsection 25(1) of the Crown Act, the prices charged by Manitoba Hydro with respect to the provision of power ("rates for services") are reviewed by the Board under the Board Act. No change in rates for services can be made and no new rates for services can be introduced without the approval of the Board. Manitoba Hydro is required to submit proposals regarding rates to the Board for approval.

The Board's jurisdiction over Manitoba Hydro is limited by subsection 2(5) of the Board Act, such that the Board's primary authority over Manitoba Hydro is the review and approval of rates as set out in the Crown Act. As a result, unlike all other rate-setting jurisdictions in Canada, the Board does not have statutory authority to approve Manitoba Hydro's capital project plans or expenditures; however, the Board Act provides that the Board may perform duties assigned to it by Order in Council of the Lieutenant Governor in Council.

1.2 Manitoba Hydro

Manitoba Hydro is a Crown Corporation established pursuant to provincial legislation in order to provide for the supply of power adequate for the needs of the province, and to engage in and promote economy and efficiency in the development, generation, transmission, distribution, supply and end-use of power. Further to this mandate,

Manitoba Hydro provides safe and reliable electricity service to Manitobans at rates that are among the lowest in North America.

When Manitoba Hydro applies to the Board for rate increases, Manitoba Hydro bears the statutory onus of demonstrating that the increases sought are just and reasonable. While the focus of Manitoba Hydro may be on the financial risks faced by the Utility, the Board's role is broader. As noted above, to set rates in the public interest, the Board considers not only the financial health of Manitoba Hydro. Rather, the Board must balance the financial health of Manitoba Hydro with the interests of ratepayers.

In addressing these two concerns, any application by Manitoba Hydro for a rate increase cannot be divorced from the context in which Manitoba Hydro operates. As a monopoly Crown utility that generates, transmits, and distributes electricity (also known as vertically integrated), Manitoba Hydro is different from many other electric utilities operating in Canada, and in particular, from privately owned for-profit corporations. Unlike private corporations, Manitoba Hydro does not have private shareholders in the traditional sense. While owned by the Province of Manitoba for the benefit of Manitobans, Manitoba Hydro is a non-share capital corporation. This means that Manitoba Hydro does not have investors or shareholders that contribute equity to the Utility and it is not required to make payments to any equity investors. Any equity acquired by Manitoba Hydro is obtained from domestic ratepayers or export power sale customers. Rather, as a Crown utility, Manitoba Hydro has a public policy purpose.

In addition, Manitoba Hydro is a pure cost recovery utility. Unlike many other government-created utilities in Canada, Manitoba Hydro is not required to pay dividends to the provincial government. As a cost recovery utility, Manitoba Hydro is within a subset of types of utilities; it is further within a subset of cost recovery utilities because Manitoba Hydro's debt is borrowed by the Province of Manitoba. The government raises

debt capital from the capital markets, and provides the funds to Manitoba Hydro with the addition of a debt guarantee fee.

1.3 The General Rate Application

In 2017, Manitoba Hydro applied to the Board for changes to its consumer rates. Specifically, Manitoba Hydro is seeking in the present General Rate Application (“GRA”), approval of three rate increases: (1) finalization of the 3.36% interim rate increase that was effective August 1, 2016, (2) finalization of the 3.36% interim rate increase that was effective August 1, 2017, and (3) a 7.9% rate increase to all components of all consumer rates, effective April 1, 2018.

While only the three rate increases listed above are before the Board for approval, the 7.9% increase sought by Manitoba Hydro for the 2018/19 fiscal year is part of a new 10-year financial plan that replaces the Utility’s previous 20-year plans that were predicated on projected 3.95% annual rate increases. Under Manitoba Hydro’s new 10-year financial plan, following the August 1, 2017 3.36% interim rate increase, Manitoba Hydro projects a rate path of six years of 7.9% annual rate increases, followed by a one-year rate increase of 4.54% and then two years of rate increases at 2%.

The new 10-year financial plan includes six years of rate increases at a level twice the previously requested annual rate increases and four times the rate of inflation. The new plan is designed to have Manitoba Hydro reach a 25% equity level, from the current 15%, in 10 years by 2027, while generating additional cash flow and enabling repayment of a portion of Manitoba Hydro debt. This differs from the previously projected 20-year timeframe for achieving a 25% equity level.

The Utility sees the fundamental underlying problem with its financial health as being the major capital expansion and the amount of the debt required to pay for the simultaneous construction of the \$8.7 billion Keeyask Generating Station project ("Keeyask") and the \$5.0 billion Bipole III Transmission Line project ("Bipole III"). Manitoba Hydro seeks a prospective level of income and cash flow that, in the Utility's view, would restore its financial strength while also being capable of enduring drought or material negative deviations from export price and interest rate forecasts without requiring emergency relief from ratepayers. While the change in risk tolerance of the Manitoba Hydro-Electric Board is a significant factor underpinning the new financial plan, Manitoba Hydro also cites lower revenue growth and increased debt as contributing factors.

The 7.9% rate increase requested for the 2018/19 fiscal year is part of Manitoba Hydro's new financial plan. While the 10-year plan is part of the circumstances before the Board in this GRA, rate increases for years beyond 2018/19 are not before the Board for approval. The Board cannot bind itself to future rate increases that are not the subject of the immediate request before the Board. Similarly, and as indicated by Manitoba Hydro, the Utility may alter its plans based on circumstances as they arise. Currently, Manitoba Hydro's Retained Earnings are at record levels and already twice the level that would be required to deal with the negative financial impacts of a five-year drought; however, should unforeseen or negative risks occur, this Board will consider the evidence of the specific circumstances and the options, including rate increases, to address such circumstances as the Board has done when warranted in the past. For example, when a drought occurred in the early 2000s, this Board approved rate increases in excess of what Manitoba Hydro requested to address the financial health of the Utility.

In its Letter of Application filed on May 5, 2017, Manitoba Hydro sought the following specific approvals in the current GRA:

1. Final approval of Order 59/16 which approved, on an interim basis, an across-the-board rate increase of 3.36% effective August 1, 2016, and final approval of any other interim rate Orders issued subsequent to the filing of the Application and prior to the conclusion of this proceeding;
2. Approval, on an interim basis, of rate schedules incorporating an across-the-board rate increase of 7.9% to all components of the rates for all customer classes to be effective August 1, 2017.

After the Board's Order approving a 3.36% interim rate increase effective August 1, 2017, Manitoba Hydro revised its request for the 2017/18 fiscal year and sought only finalization of the 3.36% interim rate increase;

3. Approval of an across-the-board rate increase of 7.9% to all components of the rates for all customer classes to be effective April 1, 2018;
4. Final approval of the Light Emitting Diode ("LED") rates for the Area and Roadway Lighting class (Outdoor Lighting) approved on an interim basis in Order 79/14, and approval of new LED rates for the Area and Roadway Lighting class (Sentinel Lighting) as discussed in Tab 9 of Manitoba Hydro's Application;
5. Approval to remove the Area and Roadway Lighting (Festoon Lighting) and the Area & Roadway Lighting (Christmas Lighting) from Manitoba Hydro's rate schedule, as discussed in Tab 9 of its Application;

6. Endorsement of modifications to the Terms and Conditions of Option 1 of the Surplus Energy Program (“SEP”) that were accepted on an interim basis in Order 43/13, as outlined in Tab 9 of its Application;
7. Final approval of all SEP interim *ex parte* rate Orders as set forth in Tab 10 of this Application, as well as any additional SEP *ex parte* Orders issued subsequent to the filing of its Application and prior to the Board’s Order in this matter;
8. Final approval of Curtailable Rate Program (“CRP”) *ex parte* Order 54/16 as well as any additional *ex parte* Orders in respect of the CRP issued subsequent to the filing of its Application and prior to the Board’s Order in this matter;
9. Final approval of Orders 116/12 and 117/12 that approved, on an interim basis, a 6.5% rate increase to the full cost portion of the General Service and Government rates in the four remote communities serviced by diesel generation (“diesel zone”) effective September 1, 2012, and final approval of diesel zone Orders 17/04, 46/04, 176/06, 1/10, 134/10, 1/11, and 148/11, subject to confirmation that Manitoba Keewatinowi Okimakanak has provided the parties to the agreement with the required affidavits from representatives of signatories to the agreement.

In this proceeding, Manitoba Hydro’s request for final approval of the diesel zone interim rates was predicated on receipt of the executed Settlement Agreement documents. In the course of the hearing, Manitoba Hydro advised that it was no longer seeking final approval of diesel zone interim rates in this proceeding as the final executed Settlement Agreement documents had not yet been provided to the Utility;

10. Endorsement of the proposed deferral and subsequent amortization of costs incurred with respect to the Conawapa Generating Station project, as discussed in Tab 4 of its Application; and
11. Endorsement of the proposed amortization period for disposition of the regulatory deferral accounts established to capture the differences between Depreciation Expense and Operating & Administrative Expense calculated for financial reporting purposes based on International Financial Reporting Standards, and Depreciation Expense and Operating & Administrative Expense calculated for rate-setting purposes reflecting Board directives in Order 73/15, as discussed in Tab 4 of its Application.

1.4 The Board's Hearing into the General Rate Application

The process for the Board's consideration of this GRA formally commenced when Manitoba Hydro filed its Letter of Application. On May 12, 2017 and May 26, 2017, respectively, Manitoba Hydro filed copies of the Revenue Requirement information with its Integrated Financial Forecast MH16 ("MH16") and the Rate Design and Cost of Service Study information in support of its GRA. On July 11, 2017, Manitoba Hydro filed an update to MH16 ("MH16 Update"), which maintained the same increases as in the new 10-year financial plan contained in MH16.

Manitoba Hydro's Application garnered significant public attention, including over 2,300 public comments on the Board's website, increased numbers of public presenters, and a greater number of applications for Intervener status than filed in prior proceedings – 12 in total, including from groups that had not previously participated in electricity regulatory matters before the Board.

Following a Pre-Hearing Conference held on June 12, 2018, the Board issued its procedural Order 70/17, in which the Board approved the following Interveners:

- Assembly of Manitoba Chiefs
- Business Council of Manitoba
- Consumers Coalition (Consumers' Association of Canada (Manitoba) / Winnipeg Harvest)
- Representatives of the General Service Small and General Service Medium Customer Classes
- Green Action Centre
- Keystone Agricultural Producers
- Manitoba Industrial Power Users Group
- Manitoba Keewatinowi Okimakanak

The Board also subsequently approved the intervention of the City of Winnipeg, as well as a request by Representatives of the General Service Small and General Service Medium Customer Classes and Keystone Agricultural Producers to combine their intervention.

An oral public hearing into Manitoba Hydro's request for a 7.9% interim rate increase effective August 1, 2017 was held on July 18 and 19, 2017, at which the Board heard oral submissions from approved Interveners and Manitoba Hydro. In Order 80/17, dated July 31, 2017, a majority of the Board denied an interim rate increase for Manitoba Hydro's general operations, and approved an interim rate increase of 3.36% effective August 1, 2017, with all revenues flowing to the previously established Bipole III Deferral Account to be utilized to pay the additional costs once Bipole III enters service.

The Board member who dissented in Order 80/17, Sharon McKay, would not have granted any interim rate increase.

After release of the Board's interim rate decision, Manitoba Hydro filed a revised financial plan, Integrated Financial Forecast "MH16 Update with Interim". MH16 Update with Interim incorporated the 3.36% interim rate granted by the Board for 2017/18 and revised Manitoba Hydro's 10-year financial plan to now forecast six consecutive years of 7.9% rate increases, through fiscal year ending 2024, followed by one year of a 4.54% increase in fiscal year ending 2025, and then two years of 2.0% increases. The revision to the financial plan maintains Manitoba Hydro's target of achieving a 75:25 debt-to-equity ratio in 10 years, rather than 20 years as the Utility projected previously. The cumulative rate increase in the MH16 Update with Interim 10-year plan is 77%.

The process for the Board's consideration of Manitoba Hydro's GRA also included a review of Manitoba Hydro's capital expenditures. This duty was assigned to the Board for the GRA filed in 2017 in Order in Council 92/2017 as a factor in setting rates for services in a manner that balances the interests of ratepayers and the financial health of Manitoba Hydro. In addition to a review of the reasonableness of current budgets and schedules for ongoing major capital projects, Order in Council 92/2017 gave rise to the Board's assessment of the economics of the Manitoba-Saskatchewan Transmission Line in this GRA proceeding. While the Order in Council expanded the Board's scope of review compared to previous GRA proceedings, the paragraph assigning the Board the duty of considering Manitoba Hydro's capital expenditures as a factor in setting rates reflects the Board's existing jurisdiction under its governing legislation. Beyond this, the Order in Council gave the Board greater procedural powers with respect to Manitoba Hydro's provision of information and documents related to capital expenditures, project

justifications, and revenues and income records. The text of Order in Council 92/2017 is contained at Appendix B to this Order.

Along with the filing by Manitoba Hydro of its written pre-filed evidence in its Application and written responses to Minimum Filing Requirements from the Board, the Consumers Coalition, and the Manitoba Industrial Power Users Group, the process for this GRA included:

- a post-filing workshop,
- a technical conference on Business Operations Capital expenditures,
- a workshop on bill affordability and rate design,
- written responses by Manitoba Hydro to two rounds of Information Requests from the Board and Interveners,
- the filing of written pre-filed evidence by Intervener-retained expert witnesses,
- written responses by Intervener-retained expert witnesses to Information Requests from the Board and all parties, and
- Manitoba Hydro's written rebuttal evidence.

In addition, to assist in the Board's consideration of issues in the GRA, especially in light of the Order-in-Council, the Board retained the following Independent Expert Consultants to test commercially sensitive and voluminous information provided by Manitoba Hydro to the Board:

- MGF Project Services ("MGF") – construction management experts retained as the project lead to conduct a review Manitoba Hydro's major capital expenditures;
- Amplitude Consultants Ply Ltd - to assist MGF with the review of Manitoba Hydro's high voltage direct current transmission assets;

- Klohn Crippen Berger – to assist MGF with the review of Manitoba Hydro's hydroelectric generation projects;
- Daymark Energy Advisors - to review and provide an expert opinion on Manitoba Hydro's export price and revenue forecasts, electricity load forecasts, and to conduct an economic analysis of the Manitoba-Saskatchewan Transmission Project; and
- Dr. Adonis Yatchew - to examine the impacts of proposed electricity rate increases on the Manitoba economy.

The Independent Expert Consultants were independent of all parties and the Board, and were represented by independent counsel. The written and oral evidence of the Independent Expert Consultants was tested by all parties and the Board. The Independent Expert Consultants filed written evidentiary reports. One round of Information Requests was directed to the Independent Expert Consultants and Manitoba Hydro provided written rebuttal evidence to the written reports of the Independent Expert Consultants. All parties and the Board had the opportunity to conduct oral cross-examination of the Independent Expert Consultants.

The Board also adjudicated a number of process matters, including the aforementioned Intervener applications and related budget submissions, a procedural Motion regarding the process for the receipt of confidential information, multiple Motions by Manitoba Hydro for confidential treatment of information filed in the proceeding, and requests for extensions of time.

The oral evidentiary hearing of the GRA commenced on December 4, 2017. The Board heard 31 days of oral evidence, including four Manitoba Hydro witness panels, nine Intervener-retained expert witness panels, five Independent Expert Consultant witness panels, a ratepayer panel sponsored by the Consumers Coalition, Manitoba Hydro's

oral rebuttal evidence, and three oral public presentation sessions along with three written public presentations. A summary of the evidence given by presenters in the proceeding is contained in Appendix C to this Order.

Following the conclusion of the oral evidentiary portion of the hearing, the Board heard closing submissions from Manitoba Hydro and Interveners and Reply argument from Manitoba Hydro on February 5, 7, 8, and 14, 2018.

A Glossary of Terms for technical terminology used in this Order is included as Appendix A.

2.0 Summary of the Board's Findings

By this Order, the Board denies Manitoba Hydro's request for a rate increase of 7.9% effective April 1, 2018. The Board approves a 3.6% average revenue increase to be recovered in Manitoba Hydro consumers' rates effective June 1, 2018. The recovery of these additional revenues is to be through rate increases at a different level for each customer class to address past and current under- and over-payment of costs by the customer classes.

Manitoba Hydro is to calculate the required rates to achieve the approved revenue increase of 3.6%, based on gradually adjusting the rates of all customer classes such that the revenues from each class will approximately align with the allocated costs to serve each class within a 10-year period. The Board anticipates that General Service Small Non-Demand, General Service Large 30-100 kV, and General Service Large >100 kV will experience a rate increase slightly less than the approved revenue increase of 3.6%, while other classes, including the Residential class, will experience rate increases slightly greater than 3.6%. The exception to this is First Nations on-reserve residential customers. The Board directs the creation of a First Nations On-Reserve Residential class and approves a 0% rate increase for this class for 2018/19. The customers in this class will therefore not experience any change to their rates as a result of this Order.

The Board further finalizes the previously approved interim rate increases of 3.36% effective August 1, 2016 and 3.36% effective August 1, 2017. Because these increases were previously granted and are already being collected, there will be no additional impact on ratepayers.

The Board directs Manitoba Hydro to provide a compliance filing pursuant to the directives in this Order. The compliance filing shall be provided by May 15, 2018 in order for Manitoba Hydro to receive consumer rate increases effective June 1, 2018.

Further to Order in Council 92/2017, in reaching its decision regarding rates, the Board considered capital expenditures by the Manitoba Hydro as a factor to support setting rates for services in a manner that balances the interests of ratepayers and the financial health of Manitoba Hydro.

2.1 Rate Increases for 2016/17, 2017/18, and 2018/19

Approval of August 1, 2016 and August 1, 2017 Interim Rate Increases

In this Order the Board approves, as final, the 3.36% interim rate increase effective August 1, 2016 (granted as interim in Order 59/16) and the 3.36% interim rate increase effective August 1, 2017 (granted as interim in Order 80/17). The dissenting member in Order 80/17, Sharon McKay, is in agreement with the decision to finalize the interim rate that was effective August 1, 2017 based on the review of the full record in the GRA hearing. Because these interim rates are already incorporated into existing rates, the Board's final approval now does not result in any additional bill impacts to ratepayers. While no party opposed the interim rates being finalized, the lack of testing by Intervenors and lack of focus by Manitoba Hydro underscores the problems associated with interim rate processes. Interim rates are set without the benefit of a full evidentiary record, involve an abbreviated process, and are adjudicated against a less onerous legal standard than are final rates.

Interim rate processes are not to be used for purposes of convenience or as substitutes for the proper planning of GRAs. Both the ratepayers and the Utility benefit from a robust process that results in final rates that are just and reasonable. Future GRAs by Manitoba Hydro are not expected to be of this magnitude or duration as process improvements have and will continue to be implemented to focus the scope and expedite proceedings. In the absence of unforeseen or emergency circumstances, the Board will not consider future interim rate applications.

The Board appreciates Manitoba Hydro's desire to establish a regulatory timetable that does not require the use of interim rates. The Board is prepared to work with Manitoba Hydro and other parties towards the development of that regulatory timetable.

Denial of 7.9% Rate Increase Requested for 2018/19

Having considered all of the evidence in this GRA, the interests of Manitoba Hydro's ratepayers, and the financial health of Manitoba Hydro, this Board has determined that for the fiscal year April 1, 2018 to March 31, 2019 (also referred to as the "Test Year"), an average rate increase of 3.6% effective June 1, 2018 is just and reasonable. The Board further directs that rate increases are to be differentiated by customer class. To accurately quantify the expected bill impacts, for all customer classes at various consumption levels, Manitoba Hydro is directed to provide by May 15, 2018 a compliance filing containing the new rates, the bill impacts by customer class, and a proof of revenue. The results of the compliance filing will be included in the Board's Order approving the specific rates for 2018/19.

Manitoba Hydro did not provide evidence as to the economic impacts on customers in various sectors - such as residential, commercial, and industrial - or macroeconomic impacts of its proposed rate plan. However, expert witnesses retained by Intervenors

and the Board provided evidence that Manitoba Hydro's projected rate path may lead to short-term job losses and negative impacts for some industries that are more economically vulnerable, based on the electricity intensity of their production and the competitive nature of the markets into which they sell their products. Industry representatives similarly gave evidence that the projected rate path will make Manitoba businesses less competitive, will lead to corporate decisions to not make investments in Manitoba locations, and may lead to plant closures.

Residential ratepayers also voiced concerns about their ability to pay projected Manitoba Hydro rate increases and regarding the impact such increases would have on their standard of living.

Manitoba Hydro's Financial Plan

In reaching its decision, the Board finds that a particular equity level or pace to achieve such a target should not determine the rate increases approved in this GRA, particularly when Manitoba Hydro is undergoing record expansion in the value of its capital assets. There was no expert evidence independent of Manitoba Hydro before the Board that Manitoba Hydro's debt is leading to higher interest rates for the debt borrowings of the province. With rate increases in line with prior approved levels, Manitoba Hydro's financial metrics related to cash flow will be improved from those forecast following the NFAT for the 2018/19 Test Year. The Board also does not accept that rate increases should be higher in order to allow Manitoba Hydro to retire debt according to their new proposed debt management plan, which envisions using cash flow from the 7.9% projected rate increases to retire \$3.1 billion in debt by 2027. While there are benefits to a shorter-term debt retirement plan, such a plan imposes a short-term cost on ratepayers that is not justified.

Reduction in Expenditures

In addition, while the Board appreciates that Manitoba Hydro has, in good faith, brought forward its concerns respecting financial risks and unforeseen events, the circumstances of this GRA for a 2018/19 rate increase do not require a rate increase of the magnitude proposed by the Utility. Rather, by this Order, the Board sets out its expectation that Manitoba Hydro will continue to reduce its costs, including capital and Operating & Administrative costs, and will also continue to maximize its export revenues.

For the 2018/19 Test Year, in advance of the analytical data-driven approaches to managing capital assets being developed by Manitoba Hydro, the Utility identified \$160 million of Business Operations Capital expenditures that can be safely deferred. Business Operations Capital includes expenditures to renew failing assets, increase capacity to address load growth, and to connect new customers but does not include Major New Generation & Transmission capital expenditures. The Board does not accept that all Test Year Business Operations Capital investments are condition-driven and reasonably required for the safe and reliable operation of the system. The Board recommends that Manitoba Hydro defer \$160 million of this capital spending, thus improving the Utility's cash flow. Manitoba Hydro should continue to find reductions in Business Operations Capital spending during the current period of record spending on major capital projects such as Keeyask and Bipole III.

Manitoba Hydro forecasts its Voluntary Departure Program will provide annual cost savings of \$92 million once the one-time \$53 million of restructuring costs have been incurred. Manitoba Hydro's additional reduction of operational positions and Supply Chain Management initiatives are further steps taken by the Utility in its continuous cost reduction efforts. The Board expects that Manitoba Hydro will continue to find savings

as it assesses its operations following the conclusion of the Voluntary Departure Program.

Accounting Issues

There were several accounting-related issues that affect consumer rates and were the subject of evidence and adjudication during Manitoba Hydro's GRA.

- The Board directs that depreciation expense is to continue to be recorded using the Average Service Life methodology for rate setting purposes, without reversion to Equal Life Group in the financial forecast. The Board orders Manitoba Hydro to not amortize the difference between Average Service Life and Equal Life Group for rate setting.
- The Board accepts Manitoba Hydro's proposed treatment of the \$380 million of past costs incurred with respect to the Conawapa Generating Station that is not proceeding. Manitoba Hydro proposes that the costs pertaining to the construction of Conawapa be recorded in a regulatory deferral account effective March 2018, with amortization of the costs to income on a straight line basis over a period of 30 years beginning on April 1, 2018. This treatment is appropriate because the decision to discontinue Conawapa construction was part of the NFAT review of the Utility's long-term system planning for long-lived assets. Further, this approach smooths out the impact of this one-time cost on consumers.
- The Board directs that the \$20 million in annual ineligible overhead should continue to be deferred, consistent with the Board's direction in Order 73/15. With respect to the amortization period, the deferral account balance should be amortized over 34 years to match the average service life of the assets. This recognizes that the balance relates to a deferral of capital costs that are linked to services that will be provided by capital assets in the future.

- The Board directs that the Bipole III Deferral Account should begin to be recognized in domestic revenues once Bipole III enters service (which is expected in 2018/19) and amortized over a five-year period. This amortization will contribute \$80 million annually to further smooth the rate increases necessitated with Bipole III entering service. Additionally, once Bipole III enters service, the approximately \$180 million of annual revenues currently being deferred should no longer be deferred and instead accrue to Manitoba Hydro's general revenue.

Demand Side Management Spending

In addition, the Board finds that Manitoba Hydro's revenue requirement should be reduced to reflect lower demand side management spending. These expenditures should be reduced for rate-setting purposes from the level of spending currently incorporated in the Utility's Integrated Financial Forecast. The Board's approved rate increase directionally takes into consideration a reduction in demand side management spending as well as an increase in domestic load that will result from fewer demand side management programs.

Demand side management is a common utility strategy for reducing consumer demand for energy in order to defer the need for new generation assets. Manitoba Hydro seeks to pursue all cost-effective demand side management opportunities which are assessed against the Utility's marginal value of electricity. For 2018/19, Manitoba Hydro forecasts demand side management spending of \$101.1 million. This amount was determined using a now-outdated marginal value of electricity. In light of the new lower levelized marginal value of electricity introduced in this hearing, and as acknowledged by the Utility, some of Manitoba Hydro's demand side management programming will no longer be cost-effective. Consumer rates should not, at this time, recover the costs of demand side management programs that are no longer economic, unless justified by a lower-income target market.

The Board also recommends that Manitoba Hydro reduce its demand side management spending, based on an assessment by Manitoba Hydro of the cost effectiveness of each of its demand side management programs. However, given the evidence adduced in this proceeding about energy poverty and bill affordability, it is reasonable for Manitoba Hydro to continue spending on lower-income demand side management programs.

In addition to continued Utility investment in lower-income demand side management programs, the Board recommends that the provincial government amend Efficiency Manitoba's mandate to explicitly include considerations of lower-income consumers and energy poverty.

Export Revenues and Load Forecasting

The Board finds that Manitoba Hydro's export revenue forecast is conservative. An export revenue forecast with a probabilistic goal of P50 (that is a 50% chance of being higher and a 50% chance of being lower) would reduce Manitoba Hydro's level of requested and projected rate increases.

In addition, the Board's finding in this Order that Manitoba Hydro's demand side management spending should be reduced for rate-setting purposes and recommendation that the Utility reduce its demand side management expenditures, along with the price elasticity impacts of the decrease in the overall rate increase, all else being equal, will result in a higher load forecast and higher domestic revenue.

Differentiated Rates

Manitoba Hydro's Cost of Service Study methodology was extensively reviewed and refined in the public hearing process that led to Order 164/16. The Cost of Service Study and the resultant Revenue to Cost Coverage ratios are tools available to be used

by the Board when setting rates as the costs to serve a particular customer class can be compared to the revenues that are paid by that customer class.

Many utilities do not set rates in order to achieve class Revenue to Cost Coverage ratios of exact unity (i.e. revenues received by each customer class exactly recover the allocated cost to serve each customer class). Instead of unity, a ‘zone of reasonableness’ is used to target the Revenue to Cost Coverage ratios of the customer classes. Revenues that are within this range are deemed to represent full cost recovery. Since 1996, Manitoba Hydro has used a zone of reasonableness of 95-105%.

The General Service Small Non-Demand, General Service Large 30-100kV, and General Service Large >100kV customer classes have Revenue to Cost Coverage ratios in excess of 105% and thus are all overpaying their allocated costs to a significant degree. The two General Service Large customer classes have been overpaying in almost every year since 1996. The Residential customer class is currently below the zone of reasonableness, and therefore underpaying its allocated costs.

Manitoba Hydro is directed to begin to implement differentiated rates for its customer classes. The differentiated rates mean customers in the General Service Small Non-Demand, General Service Large 30-100kV, and General Service Large >100kV customer classes will experience a slightly lower rate increase than the average rate increase approved by the Board. Customers in the Residential, General Service Small Demand, General Service Medium, and Area & Roadway Lighting classes will experience a slightly higher rate increase in order for Manitoba Hydro to collect the approved revenue requirement based on the average rate increase approved by the Board. For the 2018/19 Test Year rates, Manitoba Hydro is to assume a 10-year timeframe to move all classes within the zone of reasonableness, using the alternative methodology to calculate the Revenue to Cost Coverage ratios by treating export

revenues as a reduction to allocated costs. This approach to the implementation of differentiated rates is consistent with the principle of gradualism and limits the revenue recovery responsibility of the other customer classes, while maintaining overall revenue neutrality.

Manitoba Hydro is directed to include in its compliance filing for 2018/19 rates differentiated rates by customer class consistent with the Board's direction in this Order. The compliance filing is to be provided by May 15, 2018. The results of that compliance filing will be published in the Board's Order approving the specific customer class rates.

Bill Affordability

Although Manitoba Hydro's rates are among the lowest in North America, this does not mean that all Manitoba ratepayers can equally afford to pay their electricity bills. The Board has long been concerned with utility bill affordability issues. Evidence with respect to energy poverty in the province of Manitoba has been brought before the Board for at least a decade. The Board recognizes that Manitoba Hydro has, over time, developed programs to assist customers in managing their energy consumption, thereby reducing individual customer bills, and such programs include targeted support for lower-income customers. However, the Board has consistently expressed concern that measures focused on energy efficiency implemented by Manitoba Hydro to date, while commendable, have been insufficient to address the energy burden faced by lower-income customers. This is particularly the case in a time of major capital construction by the Utility, which has and is forecast to continue to put upward pressure on electricity rates at a level greater than the rate of inflation.

The Board finds that it has legal jurisdiction under its governing statutory framework to order a bill affordability program such as a lower-income rate, and to take into account affordability as a factor in setting just and reasonable rates.

The Board agrees with Manitoba Hydro's President and Chief Executive Officer that there is an important role for governments in this area. The Board recommends that the provincial government introduce a comprehensive bill affordability program run by a government department to address energy poverty issues faced by Manitobans throughout the province. The Board heard evidence that there is a long-standing need to address this issue and the provincial government is best situated to do so in a comprehensive fashion, given its social program infrastructure that is already in place.

The Board reiterates the recommendation in the NFAT Report that the provincial government should use some of the revenues it receives from Keeyask to fund a comprehensive bill affordability program.

First Nations on Reserve Residential Customer Class

A majority of the Board directs Manitoba Hydro to establish a First Nations On-Reserve Residential customer class for existing First Nations reserves and that this customer class will receive a 0% rate increase for the 2018/19 Test Year, such that the rate for this customer class will be maintained at the August 1, 2017 approved residential rate. The 0% rate increase for 2018/19 is also to apply to First Nations diesel zone residential customers. This decision by the Board to create a new customer class is not unanimous and there is a dissenting decision from Board member Larry Ring in this Order.

In this Order, the Board concurs with Manitoba Hydro's President and Chief Executive Officer that electricity rates and the resulting bills place a particularly heavy burden on First Nations communities due to inadequate housing infrastructure and the absolute

levels of poverty. As noted by Manitoba Hydro's President and Chief Executive Officer, there may not be a single solution to this multifaceted bill affordability problem. While government has a role to play in addressing the issue of affordability, so too does Manitoba Hydro and rate design can assist the Utility in fulfilling its role.

The Board concludes that, under its mandate to set rates in the public interest, the Board can and should play a part in addressing bill affordability.

An appropriate starting point for bill affordability in Manitoba is a program targeted at on-reserve ratepayers, specifically through the creation of a First Nations On-Reserve Residential customer class with a differentiated rate to address energy poverty.

The creation of this new customer class is justified by the need to address energy poverty on-reserve, supported by evidence that 96% of First Nations people on-reserve live in poverty and that reserves in Manitoba have the highest rates of child poverty in Canada. In addition, the poor housing stock on reserves in Manitoba and the fact that the vast majority of on-reserve First Nations residential customers (61 out of 63 First Nations communities) have no access to the more economical option of natural gas for heating exacerbate the issue of energy poverty.

The new customer class and related affordability measure of a 0% rate increase are also consistent with the principle of reconciliation. As defined in *The Path to Reconciliation Act*, reconciliation is the ongoing process of establishing and maintaining mutually respectful relationships between Indigenous and non-Indigenous peoples in order to build trust, affirm historical agreements, address healing, and create a more equitable and inclusive society.

Manitoba Hydro is kept whole because the cost of the 0% rate increase for this new customer class has been factored into the level of the average general rate increase granted for the Test Year to all other customer classes. The Board is fully aware that there will be some obvious anomalies created where one household on-reserve will receive a lower rate than a nearby off-reserve household living in similar circumstances. This new customer class is a limited measure designed to reach a targeted group experiencing a high degree of poverty. The anomalies that result from this measure are best addressed by a more wide-reaching government bill affordability program. The Board envisions that, with the introduction of a comprehensive government bill affordability program, the new First Nations On-Reserve Residential customer class and lower rate built into the 2018/19 Test Year may no longer be required.

2.2 Payments to Government

Manitoba Hydro makes payments to the Province of Manitoba for water and land rentals, debt guarantees, and capital and other taxes. Manitoba Hydro also pays grants in lieu of taxes to municipalities. For the fiscal year that ends March 31, 2019, Manitoba Hydro forecasts that it will pay \$433 million to governments, with \$406 million to be paid to the Province of Manitoba. The evidence in the public hearing demonstrated that, excluding payments made to municipal governments, approximately 17 to 18 cents of each dollar of gross revenue is directed by Manitoba Hydro to the Province of Manitoba.

Manitoba Hydro's major capital expansion places upward pressure on rates, including due to the Utility's increased obligations to the provincial government. With respect to Keeyask, after it is fully in-service Manitoba Hydro will pay an approximate \$140 million per year to the Province of Manitoba on account of water rentals, debt guarantee fees, and capital and other taxes. As noted by the Board in its 2014 NFAT Report:

While ratepayers will shoulder a significant rate burden over the next 20 years, the Province of Manitoba will reap substantial incremental revenues through capital tax and water rental payments from Manitoba Hydro as a result of the Keeyask Project. The Province should give serious consideration to using some of these incremental revenues to fund energy affordability programs targeted to vulnerable consumers, particularly lower income consumers and customers residing in northern and First Nations communities. This could involve rate relief programs as well as targeted DSM programs.

Previously, the provincial government indicated it would consider this recommendation from the NFAT Report. The Board continues to be of the view that the provincial government should use some of the revenues that would otherwise accrue as a result of Keeyask in order to fund a comprehensive a bill affordability program.

With respect to Bipole III, the project was initially scoped, designed, and engineered by Manitoba Hydro using the most cost effective route. While the majority of Manitobans are both taxpayers and ratepayers, there is an important distinction. Domestic ratepayers are ultimately responsible for the costs of operating Manitoba Hydro's system, including recovering the costs of Manitoba Hydro's major capital projects once the assets are in service. As a result of a policy decision by the provincial government, the routing of Bipole III was changed to a western route at an additional cost of approximately \$900 million. This decision created a \$900 million burden for ratepayers with no apparent technical benefit for the new route. The Board considers that this was a policy decision of government that should be a cost to taxpayers, not Manitoba Hydro's ratepayers.

The Board therefore recommends that the provincial government suspend payment of the annual Bipole III debt guarantee fee and capital taxes made by Manitoba Hydro to the provincial government starting with the 2019 fiscal year. Manitoba Hydro – and ultimately the ratepayer - should be reimbursed through suspension of such payments

until the \$900 million burden of a policy decision made by government is satisfied, estimated at this time to be in 13 years.

Finally, the inter-relationship between Manitoba Hydro and the provincial government will be enhanced with provincial carbon pricing. In the transition to a low-carbon economy, the Province of Manitoba does and will benefit from the strength of its clean hydroelectric resources. As the provincial government will receive revenue from the planned carbon tax, the Board further recommends that the provincial government transfer a portion of the carbon tax revenues to Manitoba Hydro to strengthen Manitoba Hydro's financial health, which may allow for lower consumer rate increases.

2.3 Capital Project Review per Order in Council 92/2017

On April 5, 2017, by Order in Council 92/2017, for the GRA anticipated to be filed by Manitoba Hydro in 2017, the Board was assigned the duty of considering capital expenditures made by the Manitoba Hydro-Electric Board as a factor in the Board reaching a decision regarding setting Manitoba Hydro's rates for services in a manner that balances the interests of ratepayers and the financial health of the Utility.

The Board's review of Manitoba Hydro's capital expenditures included the following projects:

- Keeyask, with a focus on the reasonableness of Manitoba Hydro's capital cost estimates filed in support of the Utility's financial forecasts. The timeframe for the review began with the cost estimates presented at the NFAT;
- Bipole III, also focused on the reasonableness of the capital cost estimates beginning with the initial western routing control budget for Bipole III;

- The Manitoba-Minnesota Transmission Project (“MMTP”) and the Great Northern Transmission Line (“GNTL”), also focused on the reasonableness of the capital cost estimates; and.
- The Manitoba-Saskatchewan Transmission Project and related SaskPower export sale, focused on whether the project is economic.

The Board’s goal in its review was to gain an understanding of the reasons for past cost increases in order to better understand the forecasts of future costs. The importance of obtaining an accurate forecast of capital costs for these large projects was highlighted by evidence from Manitoba Hydro that a \$1 billion increase in capital costs over its current projections would require 0.43% annual consumer rate increases for 10 years, over and above any other rate increase required for the Utility’s operations, to achieve the same retained earnings level.

Major Capital Projects and Rate Setting

For rate setting purposes in this GRA, the Board accepts, as incorporated by Manitoba Hydro into its Integrated Financial Forecast, the major capital project budget amounts and construction schedules for Keeyask, Bipole III, the Manitoba-Minnesota Transmission Project, the Great Northern Transmission Line, and the Manitoba-Saskatchewan Transmission Project.

In this Order, the Board reaches several conclusions related to Manitoba Hydro’s major capital projects that may assist in future capital projects.

Manitoba Hydro has been approving projects too early in the process, without sufficient development of scope, design, and engineering. The Board recognizes that, with additional scope and engineering development prior to advancing the capital project for financial and economic analysis and subsequent executive approval, there will be

additional front-end costs. In the Board's view, that would be money well spent as it will allow a more informed decision by Manitoba Hydro's Executive.

The Board finds there is merit in Manitoba Hydro considering the "stage gate" approach put forward by MGF, in order to improve its past performance on cost estimating and completing projects on budget. The 'stage gate' concept is that a project does not move from one stage to the next – that is, receive approval to go to the next stage – until a set of criteria is satisfied. The Board recommends that Manitoba Hydro engage an external consultant to assist in studying this matter.

Review of Major Capital Project Planning and Construction

Keeyask

The primary reasons for the Keeyask cost increase from \$6.5 billion to \$8.7 billion are due to: unachievable productivity levels in the general civil contractor's bid, slow start up in the 2016 construction season when the first permanent concrete was poured, and geotechnical issues with the river bed. The Board finds the root cause for the cost overrun relates to the nature of the cost reimbursable payment structure in the Keeyask general civil contract ("GCC"), which was not sufficient to drive the general civil contractor to achieve the productivity levels contained in its original bid for the Keeyask work. Manitoba Hydro expected that tying the contractor's profit to the target price in the general civil contract would provide sufficient motivation to the contractor to meet the productivity levels in its bid, but that did not occur. It further appears that Manitoba Hydro never contemplated that the contractor's profit could erode to zero so early in the project. Once the profit eroded to zero, with no chance of re-establishing profit, the contractor had little or zero motivation to progress the project expediently. In the Board's view, this was a principal failing of the original GCC. Underpinning the reason for the

profit eroding to zero so early in the project was the fact that the general civil contractor bid unachievable productivity levels. Those unachievable productivity levels formed the basis for an unrealistic target price and an unrealistic original cost estimate.

Manitoba Hydro requires a 10% improvement in productivity by the general civil contractor to meet its \$8.7 billion control budget. The Independent Expert Consultants retained in this hearing evaluated Manitoba Hydro's progress to date on Keeyask and in their opinion the final cost of Keeyask will be in the range of \$9.5 billion to \$10.5 billion. According to the Independent Expert Consultants, unless Manitoba Hydro takes control of the Keeyask project and works with the general civil contractor to improve productivity, the final cost of Keeyask will approach \$10.5 billion due in part to the cost reimbursable pricing structure in the general civil contract. The Independent Expert Consultants also made useful recommendations that Manitoba Hydro should consider implementing, and indeed, in part already has implemented. Manitoba Hydro gave evidence that the 10% improvement required is attainable and that the \$8.7 billion control budget remains reasonable.

Manitoba Hydro explained that it has taken steps to mitigate schedule and productivity issues, including through retaining external consultants. The Board's expectation is that Manitoba Hydro will closely monitor and take steps to improve productivity in order to achieve the 10% improvement in productivity required to meet the \$8.7 billion control budget and construction schedule. There was evidence in the GRA that Manitoba Hydro has achieved milestones in the construction of Keeyask, including that the project is on track to divert the river through the spillway in July 2018 to permit work to begin on the south dam.

For future projects, if the cost reimbursable payment structure of a contract is used, effective oversight of the contractor must be exercised. The results for Keeyask indicate there was not effective oversight under the cost reimbursable contract arrangement.

Bipole III

With respect to Bipole III, Manitoba Hydro undertook unreasonable risk when it developed its \$3.28 billion Bipole III cost estimate in 2011. It appears that Manitoba Hydro had rejected its 2009 internal cost estimate of \$3.95 billion, based on what was referred to as the “classic” line commutated conversion technology for the HVDC converter stations, in order to try to take advantage of new, unproven voltage source conversion technology. Manitoba Hydro compounded this risk by significantly reducing the contingency amounts.

The provincial government excluded Bipole III from the scope of the NFAT review; however, all of the development plans considered at the NFAT included Bipole III at a projected cost of \$3.28 billion. The Board finds that, had a more realistic cost of Bipole III been used in the financial analyses, Manitoba Hydro’s debt under all development plans would have been higher and would be closer to the current projections of debt, as discussed in other sections of this Order.

Manitoba-Minnesota Transmission Project and the Great Northern Transmission Line

The Board accepts the forecasts of costs and construction schedules by Manitoba Hydro and Minnesota Power are acceptable for the purpose setting the approved rates for the 2018/19 Test Year.

Manitoba-Saskatchewan Transmission Line

The Board finds that the Manitoba-Saskatchewan Transmission Line project remains economic at this point in time. This transmission line from Birtle, Manitoba to the Saskatchewan border facilitates a 100 MW power sale agreement with SaskPower. The Board supports Manitoba Hydro's decision to develop firm export sales to other Canadian jurisdictions including to the west.

The Board's review of the Manitoba-Saskatchewan Transmission Line project in this proceeding is a precedent for how independent reviews can be conducted of Manitoba Hydro's capital projects. The Board continues to be of the view that in addition to its rate setting approval it should have statutory authority to approve Manitoba Hydro's capital expenditures, which is jurisdiction the Board now lacks.

3.0 Background

3.1 Previous Rate Increases

In Order 43/13, the Board established a deferral account to assist in funding Bipole III in-service costs and to assist in smoothing the rate impacts of Bipole III. The Bipole III Deferral Account is a means by which to gradually increase rates and to partially fund the depreciation, interest, and operating costs of Bipole III to avoid rate shock at the time the asset enters service. In subsequent Orders, the Board directed additional rate increases to the Deferral Account. To date, the cumulative compounded total of the rate increases directed by the Board to the Bipole III Deferral Account is 11.6%. The amounts directed to the Deferral Account have increased and have now reached approximately \$180 million on an annual basis. The Bipole III Deferral Account is projected to reach approximately \$400 million by the time Bipole III enters service.

Payment of the costs associated with the Utility's new major capital projects (excluding Bipole III) was considered at the Board's 2014 NFAT review of Manitoba Hydro's development plans, during the 2014/15 & 2015/16 GRA, as well in the August 1, 2016 and August 1, 2017 interim rate proceedings initiated by Manitoba Hydro.

In Order 73/15, the Board finalized the interim 2.75% rate increase effective May 1, 2014 and granted a final 3.95% rate increase effective August 1, 2015. The total 3.95% rate increase was separated into a 2.15% increase for Manitoba Hydro's general operations and a 1.8% increase, the revenues from which were to be placed into the Bipole III Deferral Account.

In November of 2015, Manitoba Hydro filed an interim rate Application, seeking an interim rate increase of 3.95% effective April 1, 2016. In Order 59/16, the Board granted a 3.36% interim rate increase effective August 1, 2016 for the purpose of collecting additional revenue in the Bipole III Deferral Account. The Board found that, since Order 73/15, Manitoba Hydro's long-term financial projections had significantly improved and the Utility did not require additional revenues from a rate increase to obtain a positive net income for 2016/17. The Board concluded that the public interest would be best served if the entirety of the interim rate increase were to flow into the Bipole III Deferral Account to reduce expected rate shock when Bipole III and Keeyask enter service. The Board further directed Manitoba Hydro to file a GRA for the 2016/17 and 2017/18 years by no later than December 1, 2016, in recognition of the importance of GRAs being heard on a regular basis. The Board stated that interim rate applications ought not be the norm for Manitoba Hydro as such applications do not offer the same level of public review as a GRA.

In Order 80/17, as part of the current GRA process, the Board denied Manitoba Hydro's Application for a 7.9% interim rate increase to be effective August 1, 2017. A majority of the Board approved a 3.36% interim rate increase, with all additional revenue generated from the interim rate increase to flow into the Bipole III Deferral Account. In dissent, Board member Sharon McKay rejected any rate increase.

3.2 Manitoba Hydro's Previous Financial Plans

Manitoba Hydro's 2014 Integrated Financial Forecast MH14, which underpinned the 2014/15 & 2015/16 GRA, consisted of a 20-year rate plan of annual rate increases of 3.95% through 2031 and 2% thereafter, achieving a 25% equity level at the end of the 20-year period. The MH14 forecast projected that Manitoba Hydro would incur losses of \$980 million from 2019 to 2026, the time period when Bipole III and Keeyask were

forecast to enter into service. As noted above, in Order 73/15, the Board ordered a 3.95% rate increase for 2015/16, including a 2.15% increase for Manitoba Hydro's general operations and an additional 1.8% increase that was not required for operations but which the Board determined would flow into the Bipole III Deferral Account.

Similarly, the 2015 Integrated Financial Forecast MH15 also projected equal annual rate increases of 3.95% through 2029, followed by 2% annual increases thereafter, and achievement of a 25% equity level in the year 2032. The MH15 forecast reflected an improved financial position with losses incurred in only three years, totalling \$58 million. As noted above, in Order 59/16, the Board concluded that Manitoba Hydro's financial projections had significantly improved and directed that the entirety of the 3.36% rate increase would flow into the Bipole III Deferral Account as it was not required for the Utility's operations.

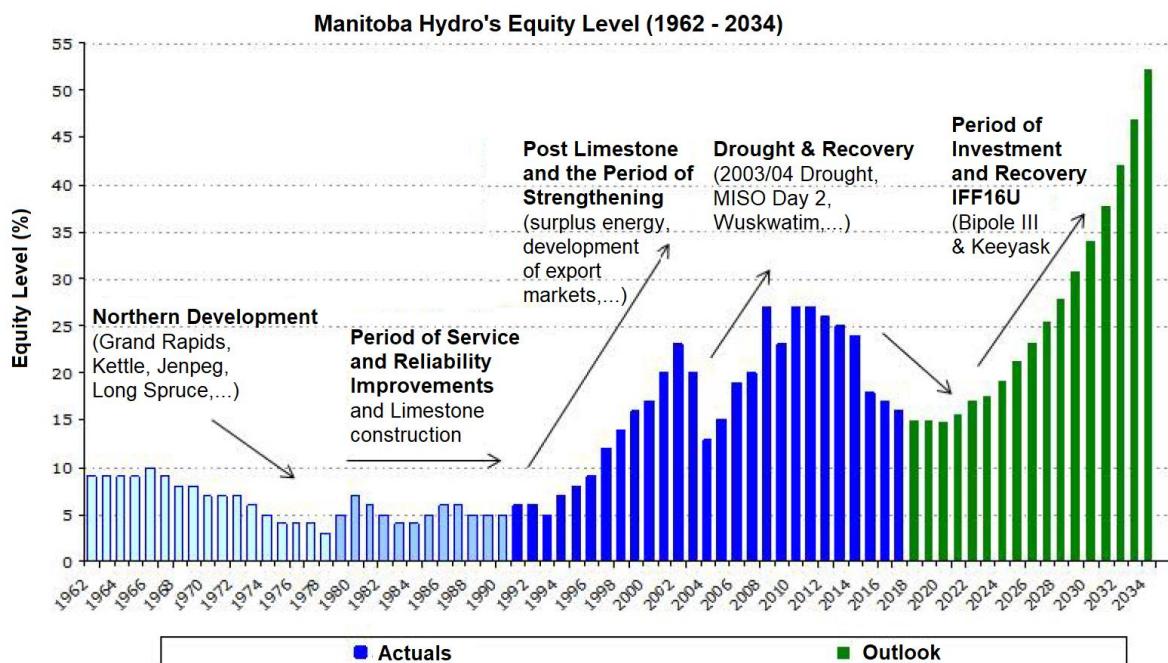
These previous plans followed rate projections used by Manitoba Hydro in the NFAT review of equal annual rate increases of approximately 4%.

Projected rate increases and the level of Retained Earnings since the NFAT have evolved over time. The chart below sets out the Retained Earnings achieved as a result of projected rate increases over 20 years from Integrated Financial Forecasts dating back to 2012, as well as in the forecast underpinning the current GRA. The previous Integrated Financial Forecasts projected rate increases predominately at the 3.95% level, while the projections in MH16 Update with Interim include six years of annual rate increases of 7.9%, one year of a 4.54% rate increase, and 2% rate increases thereafter. The table shows the earlier achievement of a 25% equity level and increased Retained Earnings as a result of Manitoba Hydro's new financial plan as compared to previous plans.

	Integrated Financial Forecast ("IFF") MH12		IFF MH13		IFF MH14		IFF MH15		IFF MH16 Update with Interim (20 year)	
	Equity %	Retained Earnings (\$Millions)	Equity %	Retained Earnings (\$Millions)	Equity %	Retained Earnings (\$Millions)	Equity %	Retained Earnings (\$Millions)	Equity %	Retained Earnings (\$Millions)
2013	25%	2,442								
2014	22%	2,502	24%	2,584						
2015	17%	2,295	22%	2,638	22%	2,717				
2016	15%	2,368	18%	2,592	18%	2,778	15%	2,612		
2017	14%	2,425	16%	2,611	16%	2,837	14%	2,641	16%	2,749
2018	13%	2,444	15%	2,599	15%	2,902	14%	2,703	15%	2,842
2019	12%	2,376	14%	2,533	14%	2,812	13%	2,663	14%	3,053
2020	11%	2,368	13%	2,502	13%	2,696	13%	2,684	14%	3,258
2021	10%	2,361	12%	2,427	12%	2,518	13%	2,671	15%	3,606
2022	10%	2,413	11%	2,366	11%	2,312	12%	2,677	17%	4,124
2023	10%	2,576	11%	2,372	10%	2,126	12%	2,673	17%	4,557
2024	10%	2,804	11%	2,440	10%	2,001	12%	2,729	19%	4,969
2025	11%	3,105	11%	2,572	10%	1,948	13%	2,858	21%	5,498
2026	12%	3,463	11%	2,741	10%	1,924	13%	2,987	23%	5,987
2027	13%	3,881	11%	3,022	10%	2,007	14%	3,219	25%	6,564
2028	14%	4,251	12%	3,299	11%	2,161	16%	3,538	27%	7,214
2029	16%	4,785	13%	3,558	12%	2,427	17%	3,977	30%	7,969
2030	18%	5,495	15%	3,967	14%	2,826	20%	4,497	33%	8,842
2031	20%	6,330	16%	4,499	16%	3,361	22%	5,089	37%	9,831
2032	24%	7,384	18%	5,241	19%	4,008	25%	5,784	41%	10,977
2033			22%	6,193	22%	4,732	28%	6,553	46%	12,257
2034					25%	5,557	31%	7,402	52%	13,680
2035							35%	8,348	57%	15,259
2036									64%	16,927

Manitoba Hydro explained in this GRA that the rate strategy contained in the filed financial projections “essentially compresses the previously projected 3.95% annual rate increases which were planned until 2028/29, into the next five-year period”. As can be seen in the graph that follows, Manitoba Hydro was last at a 25% equity level in the years before construction on the \$8.7 billion Keeyask and \$5 billion Bipole III projects began. This is similar to the situation experienced by Manitoba Hydro at other times of major capital construction, although the equity levels have not dipped to those experienced at the time the 1350 MW Limestone Generating Station entered service in the early 1990s.

The graph below includes both the actual equity levels achieved since 1962 (shown in blue) and the projected outlook arising from Manitoba Hydro's MH16 Update with Interim projected rates (shown in green).



Source: MIPUG/MH I-2(h-i); MIPUG-26 pg 10

Since Limestone entered service, Manitoba Hydro's retained earnings (also considered as 'equity') have grown to a record level, as shown in the table below. In addition, the Utility's DBRS credit rating has improved to and been maintained at "A(high)". At the same time, Manitoba Hydro's debt financing has increased to meet the construction costs of Keeyask and Bipole III, causing the equity level to decline.

Year	Equity %	Total MH Assets (\$Million)	Total MH Net Debt (\$Million)	MH Retained Earnings (\$Million)	DBRS Bond Rating
1992	6	6,505	4,972	183	A
1993	5	6,025	4,533	159	A
1994	7	6,543	4,948	228	A
1995	8	6,449	4,507	284	A
1996	9	6,737	4,685	354	A
1997	12	7,133	4,493	455	A
1998	14	7,617	4,559	566	A
1999	16	7,866	4,772	666	A
2000	17	8,692	5,488	818	A
2001	20	9,966	6,114	1,088	A
2002	23	10,405	6,146	1,302	A
2003	20	10,234	6,320	1,170	A (high)
2004	13	9,903	6,675	734	A (high)
2005	15	9,952	6,642	870	A (high)
2006	19	10,482	6,614	1,285	A (high)
2007	20	10,922	6,597	1,407	A (high)
2008	27	11,766	6,853	1,822	A (high)
2009	23	11,547	7,521	2,076	A (high)
2010	27	12,437	8,155	2,239	A (high)
2011	27	12,882	8,365	2,389	A (high)
2012	26	13,791	9,010	2,450	A (high)
2013	25	14,542	9,633	2,542	A (high)
2014	24	15,639	10,757	2,716	A (high)
2015	18	17,567	12,566	2,779	A (high)
2016	17	19,780	14,527	2,828	A (high)
2017	16	22,338	16,438	2,899	A (high)

Source: MFR14 and Manitoba Hydro Annual Report

The Board learned in this proceeding that the Utility's rate requests in those previous hearings before this Board were capped at 3.95% by the Manitoba Hydro-Electric Board. In its rate increase request for the Test Year, Manitoba Hydro's new management now seeks rate increases of 7.9% for all customer classes.

4.0 Manitoba Hydro's New Financial Plan

The two concerns that must be balanced by the Board in setting just and reasonable rates are the interests of the Utility's ratepayers and the financial health of Manitoba Hydro. Regarding the latter, central to the Application and the rate requests by Manitoba Hydro in this GRA is the Utility's assertion that the "old financial plan has now failed" as it was not adequate and was far too risky. This assertion underpins the new financial plan presented by Manitoba Hydro in this GRA, which features:

- a 10-year trajectory to achieve a 25% equity level,
- achievement of \$6.5 billion in retained earnings in a 10-year period to safeguard against the risks faced by Manitoba Hydro,
- improved cash flow from operations,
- higher net income, and
- a proposed debt management strategy aimed at removing approximately \$4 billion of debt from the Utility's balance sheet.

The requested 7.9% rate increase for the 2018/19 Test Year is Manitoba Hydro's first step in its new financial plan.

In Manitoba Hydro's view, this new financial plan will allow for rate stability with the potential for lower rates for consumer bills in the long run (as opposed to up to 20 years of the previously projected approximately annual 4% increases). According to the Utility, its new financial plan will also avoid unfairly placing an unsustainable debt burden on future ratepayers, while managing the risk of rate shock to consumers in the event of adverse conditions such as drought and/or rising interest rates.

Manitoba Hydro acknowledged that its new financial plan and increased rates in the plan will result in a transfer of money from ratepayers to the Utility at a greater level than previous plans. Further, Morrison Park Advisors, an expert witness jointly retained by the Consumers Coalition and the Manitoba Industrial Power Users Group, gave evidence that, because Manitoba Hydro does not have shareholders to contribute equity, ratepayers are ultimately responsible for all the costs of building Manitoba Hydro's level of equity through rates. Morrison Park Advisors' view is that customer contributions – in the form of bills paid by customers - have a cost of capital for individual ratepayers, and for some customers, that cost of capital can be quite high. Morrison Park Advisors' evidence was that, from the perspective of the ratepayers who are the ultimate funders of all of the Utility's operations, equity is essentially "dead money": it earns no return, but nevertheless has been taken out of the hands of the ratepayers who could otherwise use it. Moreover, Morrison Park Advisors stated that, because Manitoba Hydro is a Crown Utility that does not have equity investors at risk for its performance, Manitoba Hydro could theoretically be 100% debt financed.

In response to Manitoba Hydro's presentation of its new financial plan in this GRA, residential ratepayers, organizations, and representatives of business and industry gave evidence that lower rate increases over a longer period of time are preferred to maintain the financial health of Manitoba Hydro while providing predictability and stability for ratepayers. As Ms. Emily Mayham testified in her oral presentation, "I would prefer the lower rate increases for a longer period of time because it's predictable. I'm able to adjust and adapt as needed." Similarly, Mr. Dan Mazier, President of Keystone Agricultural Producers, gave evidence that he does not hold much weight in the suggestion that there will be a reduction in electricity rates in 10 years, and therefore prefers a more stable approach to rate increases over a longer period of time. The Chair of the Manitoba Industrial Power Users Group testified that industrial companies "seek

predictable energy rates that allow us to manage our business and plan for our future” and that Manitoba Hydro’s projected 10-year rate plan will impact industrial companies’ “decision-making regarding future investment in these operations and, for some, it threatens their very future.”

Against this backdrop, evaluating Manitoba Hydro’s assertion that a new financial plan is needed requires consideration by the Board of the issues identified by Manitoba Hydro of:

- the Utility’s equity level as measured by the debt-to-equity ratio;
- the Utility’s financial reserves;
- the Utility’s cash flow as measured by Manitoba Hydro’s new cash flow analysis as well as the traditional financial metrics of interest coverage and capital coverage;
- the Utility’s debt management strategy; and
- the credit ratings of the Province of Manitoba and Manitoba Hydro.

4.1 Manitoba Hydro’s Position

Manitoba Hydro’s new 10-year financial plan seeks to reduce debt and increase equity through the revenues generated from six successive annual 7.9% consumer rate increases, followed by a 4.54% rate increase, followed by two years of inflationary rate increases of 2% each, in order to return Manitoba Hydro to a 25% equity level in 10 years. The Utility believes this to be the appropriate balance between addressing its financial risks and managing the impact of proposed rate increases on customers.

The new financial plan presented by Manitoba Hydro is a 10-year plan, with a 25% equity level being achieved in 2026/27. However, in response to Minimum Filing Requirements and Information Requests, Manitoba Hydro filed 20-year forecasts. The 20-year forecast included in the MH16 Update with Interim reflects an equity level exceeding 25% and achieving 64% by 2036, but Manitoba Hydro believes that limited value should be placed on forecasts that extend beyond a 10-year period. Manitoba Hydro states that it is focused on a 10-year financial plan and does not intend to achieve an equity level of that size over 20 years.

Manitoba Hydro's position is that the rates that will be appropriate after the tenth year of its plan will be a function of events between today and 2027, but a rate reduction may be one option that could be considered among others. One forecast scenario filed by Manitoba Hydro at the request of the Board was designed to maintain 25% equity following achievement of that level in 2026/27 and includes a forecast rate decrease of 19.75% for 2027/28. An alternative scenario requested by the Board incorporated equal annual rate decreases of 5.76% in the three years from 2027/28 to 2029/30 in order to reduce forecast net income to the range of \$200 million per year, while yet another scenario modeled 0% rate increases beginning in 2027/28 and every year after.

In its new financial plan, Manitoba Hydro seeks a prospective level of income and cash flow that, in the Utility's view, would restore its financial strength while also being capable of enduring drought or material negative deviations from export price and interest forecasts without requiring emergency relief from ratepayers. Recognizing that the requested Test Year rate increases and projected future rate increases in its 10-year financial plan are materially greater than in previous GRAs, Manitoba Hydro included in its key reasons for the rate increases that:

- its current and projected financial situation, absent the proposed rate increases, represents an untenable risk to both the financial sustainability of the Utility and the overall economic health of the Province of Manitoba. The credit rating of the Province has been downgraded by both major international rating agencies and the Province has diminished capacity to absorb inclusion of Manitoba Hydro's debt in its consolidated credit profile without risking further erosion of the Province's credit standing;
- previous financial plans and requested rate increases did not adequately prepare Manitoba Hydro to absorb the significant increase in operating and borrowing costs that result from the completion of Keeyask and Bipole III. The cost overruns for Keeyask and Bipole III have increased by \$2.2 billion and \$400 million respectively, necessitating further increases in gross borrowing under the financial plan;
- inclusive of cash interest on reliability projects and Business Operations Capital expenditures, Manitoba Hydro has been and, without substantial rate increases, will continue to be cash flow negative on its core operations;
- since the last GRA, the financial outlook of Manitoba Hydro has deteriorated because of a reduced outlook for domestic load growth, lessening the opportunity for Manitoba Hydro to look to growth to cure its financial challenges; and
- since the last GRA, there has been continued delay in the recovery of opportunity export prices. Export price growth expectations have been tempered from past forecasts as the outlook for sustained low fossil fuel costs perpetuates.

Manitoba Hydro's financial plan involves its three self-imposed key financial targets that provide a measure of the Utility's overall financial strength. Those financial targets may also be useful to guide proposed rate increases, although consumer rates are not set to produce a target return on equity for the Crown-owned public utility. The financial ratio targets approved by the Manitoba Hydro-Electric Board are:

- A minimum debt-to-equity ratio of a 75% debt level to a 25% equity level. This ratio measures the portion of assets that are financed by internally generated funds (referred to as equity) rather than being financed by debt;
- The cash flow financial metric of an interest coverage ratio of earnings before interest, taxes, depreciation, and amortization (“EBITDA”) greater than 1.80. This ratio measures the Utility’s ability to meet interest payment obligations with cash flow as reported in Manitoba Hydro’s cash based financial statements; and
- The cash flow financial metric of a capital coverage ratio of greater than 1.20. This ratio, which is unique to Manitoba Hydro, is a measure of the ability of cash flow from Manitoba Hydro’s operations to fund Business Operations Capital expenditures, excluding consideration of spending and capitalized interest on major capital projects. Where the ratio falls below 1.0, Manitoba Hydro will have to borrow to fund Business Operations Capital spending. Manitoba Hydro notes that, as the Utility continues through a phase of unprecedented investment, the exclusion of the capitalized interest on major capital expenditures from the metric overstates the capital coverage ratio.

Debt-to-Equity Ratio

The debt-to-equity ratio is a measure of the portion of assets that are financed by Manitoba Hydro’s internally generated funds, rather than debt. The measurement evaluates the relationship of debt (comprised of long-term debt, sinking fund investment, short-term debt, and short-term investments) to equity (comprised of Retained Earnings, customer contributions, Accumulated Other Comprehensive Income, and Non-Controlling Interest) through a comparison of Manitoba Hydro’s net debt to total capital. The debt-to-equity ratio identifies the capital structure of the Utility.

Specifically, and as noted in the Board’s 2014 NFAT Report:

The debt-to-equity ratio is a long-term target, which serves as a financial guideline only, not an annual requirement. In 2013 it stood at 75/25. Manitoba

Hydro expects a significant deterioration in this ratio over the next 20 years to about 90/10 in the 2020s as debt levels increase because of Bipole III and the Preferred Development Plan.

In this GRA, Manitoba Hydro acknowledges that past applications and testimony indicated a willingness by the Utility to tolerate a relaxation to below a 15% equity level during the current phase of debt-funded capital investment (primarily for Keeyask and Bipole III). In past applications, Manitoba Hydro also proposed a financial plan that would have seen an approximate 15-year to 20-year time frame for restoring a 25% equity level. According to Manitoba Hydro, conditions and outlook have changed significantly since the last GRA, including with respect to the Utility's governance with the appointments of a new President and Chief Executive Officer ("CEO") in December 2015, a new Board of Directors in early May 2016, and a new Chief Finance and Strategy Officer in September 2016.

Manitoba Hydro's evidence is that the applications previously filed by the Utility were "wrong" and that the Manitoba Hydro-Electric Board and the Utility's senior management were required to chart a new financial plan for the Utility. The Manitoba Hydro-Electric Board's tolerance for risk has changed. It is now Manitoba Hydro's view that a path back to a 25% equity level of longer than 10 years is too risky.

Financial Reserves

Manitoba Hydro's financial reserves, or Retained Earnings, are the sum of all profits received by Manitoba Hydro through customer revenues since the Utility's inception, primarily from domestic ratepayers but also from export sales. Manitoba Hydro's financial reserves are not cash and are not retained in a bank account, but rather have been reinvested back into the Utility, including through reducing the amount of new borrowing requirements. Put another way, equity and Retained Earnings are debt that is

avoided. Manitoba Hydro's Retained Earnings are included in the Utility's measurement of its total equity level.

The requested and projected 7.9% annual rate increases included in Manitoba Hydro's 10-year financial plan are to provide the Utility with cash flow to ensure that it is capable of enduring drought or material negative deviations from forecast without requiring emergency rate increases from ratepayers. Under its cost of service regulatory regime, Manitoba Hydro considers its non-cash Retained Earnings as a temporary reserve to allow for cost recoveries and rates to be smoothed out over time.

In Integrated Financial Forecast MH16 Update with Interim, Manitoba Hydro's Retained Earnings are at a record-high level of \$2.75 billion. By 2027, the end of Manitoba Hydro's 10-year financial plan, Retained Earnings are forecast to more than double to \$6.56 billion. Under the 20-year MH16 Update with Interim forecast, following 2027 a decade of 2% rate increases results in a forecast of \$16.93 billion of Retained Earnings and a 64% equity level in 2036.

Manitoba Hydro identifies that drought, rising interest rates, and export prices are the largest risk items that could negatively affect Manitoba Hydro's Retained Earnings. Manitoba Hydro estimates that the Retained Earnings impact of a five-year drought beginning in 2019/20 is approximately \$1.4 billion. Due to the quantum of Manitoba Hydro's planned debt, the Utility sees rising interest rates as a greater risk than drought.

Cash Flow from Operations

Manitoba Hydro constructed a new analysis of the cash flow metric to demonstrate that, without the proposed rate increases in Manitoba Hydro's 10-year financial plan, the Utility will be unable to cover both its Business Operations Capital expenditures and its newly defined capital requirements.

According to Manitoba Hydro, capital spending to maintain normal operation and growth of the system (excluding major projects such as Keeyask and Bipole III) is in excess of what is presently being recovered annually in the depreciation expense portion of customer rates. This is because depreciation expense is based on historical costs which, given the age and long useful life of the underlying assets, is not indicative of the actual ongoing costs of maintaining and replacing the system. This situation is expected to reverse in approximately 2023 at which time depreciation expense will be greater than annual capital spending.

Manitoba Hydro argues for the first time that actual Business Operations Capital needs of the Utility have historically been understated in debt service and capital coverage financial metrics. This is because capital projects ascribed “Major New Generation & Transmission” status, due to their individual size based on dollar amounts, are excluded from the financial metrics. Manitoba Hydro now maintains that most of these Major New Generation & Transmission projects are essentially for system renewal or reliability and are not, once finished, contributing to any material increase in revenue. As such Manitoba Hydro now includes these capital expenditure requirements for the purposes of its new cash flow analysis. Major New Generation & Transmission projects continue to be excluded from Manitoba Hydro’s long-standing interest coverage and capital coverage metrics.

Additionally, Manitoba Hydro suggests that the capitalization of interest effectively delays the recognition of increased carrying costs associated with new plant as that capitalized interest is not recognized on the Income Statement for rate-setting purposes until the underlying capital asset enters service. As an example, capitalized interest on funds borrowed to finance reliability and sustainment projects like Bipole III is deferred

and excluded from the determination of revenue requirement and net income until that capital asset enters service for ratepayers.

Manitoba Hydro uses a new cash flow analysis that it developed to illustrate the difference between net income under International Financial Reporting Standards (as reported in Manitoba Hydro's audited financial statements) and the Utility's new perspective on its actual cash flow requirements.

Debt Management and Borrowing Strategy

Unlike privately owned utilities, Manitoba Hydro does not have access to share capital as a source of funds and must rely on a combination of internally generated funds from operations (referred to as equity) and debt financing in order to fund its capital investment program. Manitoba Hydro is forecasting that, in the next four years, it will fund the vast majority of new major generation and transmission capital expenditures, including the sums remaining on the \$8.7 billion Keeyask and \$5.0 billion Bipole III projects, primarily through debt financing.

Manitoba Hydro maintains that its requested and projected rate increases in its 10-year financial plan will allow the Utility to reduce its borrowing requirements in the future, retire debt, and serve to mitigate future rate increases that may be required should interest rates rise. The risk identified by Manitoba Hydro is that interest rates will rise over and above the increases already embedded into Manitoba Hydro's Integrated Financial Forecast. Manitoba Hydro derives its long-term (10+ year) interest rate forecast from a consensus of external forecast views from the average of 10- and 30-year forecasts Canadian debt interest rate forecasts. The long-term interest rates are projected to increase over the forecast period: from 3.15% (excluding the one percent

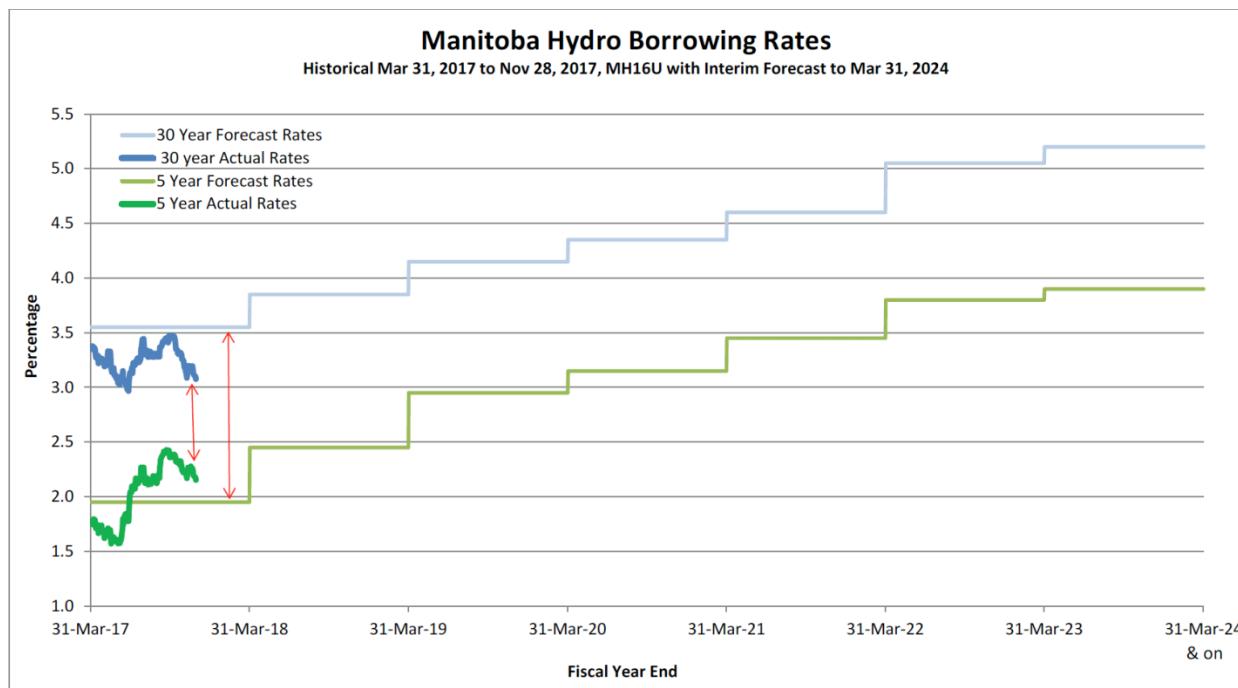
provincial debt guarantee fee) in 2017/18 to 3.90% in 2019/20 and to 4.95% in 2023/24 and thereafter.

Manitoba Hydro states that actual interest rates in the Canadian capital markets have been on a downward trajectory over the past two decades and are currently at the lowest levels in Canadian history. The implications from this record low interest rate environment are such that, should interest rates rise, and with the increasing level of debt financing required by Manitoba Hydro, the Utility is at risk of experiencing escalating debt servicing costs on its maturing and new debt issuances.

In order to reduce refinancing risk, Manitoba Hydro adopted a 'leapfrogging' strategy in 2008 that favoured longer-dated debt maturities that largely skipped over the future period of large borrowings for new cash requirements. This strategy enhanced debt stability by extending the debt portfolio's weighted average term to maturity by over five years. Manitoba Hydro also took advantage of the low interest rate environment to decrease the debt portfolio's weighted average interest rate by over 2%.

Manitoba Hydro indicates that, combined with its projected rate increase plan, the leapfrogging approach undertaken has provided the opportunity for Manitoba Hydro to now shorten the weighted average term to maturity of new debt issuance from approximately 20 to 12 years so as to retire debt permanently. The financial benefit associated with this opportunity has the potential to provide a reduction in debt servicing costs of \$500 million, based on an assumed 1.6% difference between the five-year borrowing rate and 30-year borrowing rate in MH16 Update with Interim. However, Manitoba Hydro revised its estimate of the reduction of debt servicing costs during the GRA hearing down to under \$250 million as a result of the recent flattening of the yield curve between shorter-term (five year) and longer-term (30 year) debt.

The forecast of 30-year and five-year interest rates and recent actual rates, including the 1% debt guarantee fee paid by Manitoba Hydro to the provincial government, is reflected in the following table and the narrowing of the differential is depicted with the arrows in the table:



Source: MH-68

Manitoba Hydro indicated that its last two debt issuances were 30-year issues and that the weighted average term to maturity of the debt portfolio is currently 18 years, not the 12-year weighted average term to maturity envisioned in Manitoba Hydro's new financial plan.

Manitoba Hydro states that, when spending on Keeyask and Bipole III is complete, and with the forecast improvement in operating cash flow stemming from the proposed rate increases and cost reductions, it sees an opportunity to use this future cash to

permanently retire significant levels of debt. This debt retirement plan is a key factor in the forecast reduction in finance expense and is predicated on the successive annual 7.9% rate increases in Manitoba Hydro's 10-year financial plan. Manitoba Hydro submits that, should there be no reasonable prospect for the cash flow from its proposed rate plan, it would be unable to retire as much debt as forecast. Prudence would then dictate that the debt strategy shift to longer-dated maturities in order to protect ratepayers from interest rate refinancing risk.

Credit Ratings of Manitoba Hydro and the Province of Manitoba

Manitoba Hydro's long-term debt is provided by the Province of Manitoba. The Province raises debt capital from the capital markets, advances the funds to Manitoba Hydro, and charges Manitoba Hydro a debt guarantee fee. As a result, Manitoba Hydro's long- and short-term credit ratings are the same as the Province's credit ratings.

According to Manitoba Hydro, the Province's credit rating should be of concern to the Utility's customers as it affects the cost of borrowing that Manitoba Hydro must recover in its rates. Debt advances to Manitoba Hydro form a significant and growing portion of the total provincial debt and the Utility's financial performance is considered by credit rating agencies as a contributing factor toward the financial strength and assessment of the Province's credit rating. Manitoba Hydro maintains the proposed rate increases in its 10-year financial plan are necessary to demonstrate to the credit rating agencies that Manitoba Hydro is on a path to maintain its self-supporting financial status as it is able to support the cost of its borrowings.

Manitoba Hydro states that each credit rating agency independently evaluates Manitoba Hydro by considering the Utility's financial risk profile, including financial performance, ratios, and forecasts as well as the business risk profile in assessing whether or not

Manitoba Hydro is “self-supporting”. The status of self-supporting means that Manitoba Hydro is able to adequately support its borrowing costs through its operations without seeking assistance from the province. Provided that the rating agency views Manitoba Hydro as self-supporting, the credit rating agencies do not include Manitoba Hydro’s debt levels in the net tax-supported provincial debt. Should Manitoba Hydro lose its self-supporting status and the contingent liability represented by Manitoba Hydro’s debt to the Province of Manitoba materializes, the implication to the Province is a heightened risk of further credit rating downgrades.

The different credit rating agencies use different methodologies and scales to measure ratings. Standard & Poor’s now defines “self-supporting” as maintaining stand-alone investment grade credit metrics. Since Manitoba Hydro does not meet this standard nor intends to meet this standard, Manitoba Hydro’s debt is now included by this rating agency in the tax-supported debt of the province. However, the credit rating and outlook from both the Moody’s Investor Services and DBRS rating agencies have remained unchanged since 2015.

4.2 Intervener Positions

The Consumers Coalition submits the financial outlook consistent with Integrated Financial Forecasts IFF14 and IFF15 should be retained for rate setting purposes. In adopting the evidence of its expert witness, Morrison Park Advisors, the Consumers Coalition states that Manitoba Hydro’s new cash flow analysis is not shared with credit rating agencies and should not be used for rate setting purposes. That the Utility has cash flows less than its annual spending on property, plant and equipment at least until 2023 is entirely consistent with Manitoba Hydro’s major capital expenditure plan in the construction of the \$8.7 billion Keeyask and \$5 billion Bipole III projects.

The Consumers Coalition emphasizes that capital markets are not credit rating agencies and credit rating agencies are not capital markets. While both are important, they are not the same thing. This Intervener reminds the Board that, following the NFAT review, the markets did not react negatively when Keeyask was approved to be constructed with a plan of achieving a 25% equity level after approximately 20 years. Two rating agencies have long taken the position that, as long as Manitoba Hydro is paying its costs through ratepayer bills, there is no practical impact on the provincial credit rating or on the cost of the Utility's debt. In addition, the Consumers Coalition adopts the evidence of Morrison Park Advisors that Manitoba Hydro's focus on capital structure does not appear to be shared by capital markets observers, who instead are more focused on measures of cash flow sufficiency to meet debt obligations, in keeping with their primary interest of protecting their debt investments.

The Consumers Coalition maintains the 7.9% rate increase path by Manitoba Hydro is not warranted when rate increases at approximately half of that amount still allow the Utility to reach a 25% equity level by 2033/34. Rate increases at or below 3.95% are consistent with the rate path outlined in the 2014 NFAT hearing and subsequent Board rate increase decisions and ought to be the maximum rate increase allowed for 2018. In any event, as stated by Morrison Park Advisors, as Manitoba Hydro is a pure cost recovery, government-owned utility, it is not clear why "equity" should be a priority *per se*.

The Consumers Coalition submits that financial reserves should be used to manage drought risk, but not interest rate risk or export price risk, the latter two of which can be addressed through rate increase requests at future GRAs. The Consumers Coalition questions the need to have increased reserves to withstand a drought when, under Manitoba Hydro's 7.9% rate increase trajectory, Retained Earnings are growing during a

drought due to excessively high consumer electricity rates. This Intervener supports the researching and developing of a probabilistic analysis to assist the Board in determining the appropriate levels of reserves for Manitoba Hydro, including through technical conferences.

The Manitoba Industrial Power Users Group advocates progressing towards a 725% equity level target over approximately twenty years (i.e. 2035/36) while maintaining rate stability and predictability. Consistent with the long life of the Keeyask and Bipole III major capital assets under construction, the recovery of the costs ought to be spread to the customers that will benefit from the assets. To proceed at the rate path projected by Manitoba Hydro would result in Retained Earnings exceeding \$6.5 billion by 2026/27, while there have been no scenarios provided to suggest ratepayers face risks commensurate with this level of reserves. Additionally, it states that Manitoba Hydro has not provided a credible scenario for what happens after 10 years. Currently, the Manitoba Industrial Power Users Group sees Manitoba Hydro's approximate \$3 billion of Retained Earnings as sufficient to manage a five- or seven-year drought, even without further rate increases.

Manitoba Hydro uses an uncertainty analysis to assess risk. The Manitoba Industrial Power Users Group indicates the recently developed uncertainty analysis capability of Manitoba Hydro is a significant enhancement but it is not ready to be used as a rule-based methodology in the rate-setting process. An improved uncertainty analysis will need to incorporate a rate response where rates would be expected to increase while the event (such as drought) is being experienced. An uncertainty analysis can be used as a signal to capital markets that rates are sufficient to address most future conditions without default. It can also help customers understand how rates are building reserves that yield rate stability.

In assessing the responses of capital markets and the credit rating agencies to annual 3.95% increases, the Manitoba Industrial Power Users Group indicates that there appears to be no prospect that the test used by KPMG, the Utility's external consultant, for self-supporting status (zero retained earnings combined with uncompetitive rates) would fail to be met over the near term or the long term as currently projected. Further, there is no sign that any updated information on the Utility's debt is leading to a higher cost of credit for the province. Considering that the debt guarantee is a kind of backstop or insurance, no evidence has been provided that the Province is being exposed to risks or costs that exceed the payments it has received over the period. As noted in the evidence, the Province's cost of borrowing, measured as a spread over both the federal government and the Ontario government, improved after the Standard & Poor's downgrade.

The Manitoba Industrial Power Users Group sees Manitoba Hydro's interest coverage ratio as reasonable, recognizing it will rise and fall depending on performance. For example, this target was not met under Integrated Financial Forecast MH14 for 10 years. However, there are some issues with the capital coverage ratio due to the arbitrariness of definitions of what is and is not included. According to this Intervener, the capital coverage target is met under the 3.95% rate increase trajectory in all years except 2019/20, 2025/25, and 2026/27 but the Utility's external consultant would consider the target met in each of these years as the results are within 10% of the target. This is an improvement from MH14.

The Manitoba Industrial Power Users Group maintains that, on a normal basis, rate setting for a regulated utility such as Manitoba Hydro should be performed with the primary focus being on the income statement and net income sufficiency, not capital coverage which is a cash flow test.

The 7.9% per year rate trajectory in Manitoba Hydro's new 10-year financial plan drives rates to high levels (81% above 2017's level by 2027/28), net income to record levels of \$650 million per year and more, with Manitoba Hydro's financial targets (interest coverage and capital coverage) being far exceeded. The Manitoba Industrial Power Users Group maintains the analyses demonstrate that there is no overall financial deterioration compared to the NFAT or the previous GRA and there is therefore no need to deviate from the prior rate trajectory.

Representatives of General Service Small and General Service Medium Customer Classes and the Keystone Agricultural Producers adopt the Morrison Park Advisors' expert evidence, as well as the general positions as to rate increases of the Consumers Coalition and Manitoba Industrial Power Users Group.

The City of Winnipeg maintains that Manitoba Hydro's position as to financial metrics is without sufficient justification and is arbitrary. Most importantly, it states that Manitoba Hydro completely fails to take into consideration the interests of ratepayers. As such, the City of Winnipeg argues that the Utility has failed to demonstrate its proposal results in just and reasonable rates as it considered only half of the legal test the Board must apply – that test being the balancing of the interests of ratepayers and the financial health of the utility.

Simply put, the City of Winnipeg submits the Utility has not established that circumstances have so drastically changed that the conclusions of the NFAT Report are no longer valid. On this point, this Intervener reminds the Board that Manitoba Hydro does not expect to meet all of its financial targets during periods of major capital expansion. Additionally, the uncertainty analysis from the NFAT modelling shows that rate increases of approximately 3.95% are sufficient to maintain the long-term viability of the Utility.

The Business Council of Manitoba recommends the Board deviate from the historical rate path in favour of a short-term rate path increase along the lines proposed by Manitoba Hydro. This Intervener calculates the difference between the 3.95% rate path and the MH16 Update with Interim rate path as being an incremental revenue increase of about \$70 million in the next year. Interest rates going higher than forecast by 1.5% would result in \$350 million in additional interest costs that would have to be borne by Manitoba Hydro in 2021 if the Utility's debt is \$23.3 billion, as is currently forecasted.

The Business Council of Manitoba sees increases in interest rates and Manitoba Hydro being found to be a non-self-supporting entity as virtual certainties. This Intervener submits that, based on the current credit rating reports, the risk of a credit downgrade of Manitoba Hydro or the Province is extremely high. This Intervener concludes that the risk that any of these factors will negatively affect Manitoba Hydro and the Province in the short and long term is very high.

4.3 Board Findings

Having considered the interests of the Utility's ratepayers and the financial health of Manitoba Hydro, the Board finds that a particular equity level target and pace to achieve that target should not determine the rate increases approved in this GRA. Although the Board finds that the rate increase should not be driven by achievement of a particular equity level, the Board's assessment must include consideration of the circumstances of Manitoba Hydro's operations. Because of Manitoba Hydro's use of hydraulic resources to meet the electricity needs of the province, it has historically undertaken large investments such as generating stations and transmission lines that have initial large surpluses of capacity for the needs of Manitobans. These assets have large upfront construction costs but relatively low annual operating costs that extend through a very long expected useful life – which, in some cases, can be as much as one hundred

years. With Manitoba Hydro's investments currently underway in Keeyask and Bipole III, the situation today is no different.

An important question from a rate-setting perspective is how these large investments should be funded. On the one hand, if they are to be paid for exclusively by revenues from new rates charged to domestic ratepayers, this would result in a "saw tooth" pattern of rates featuring sharp spikes when new facilities are under construction, and a return to lower rates once the desired equity portion of the project has been funded. On the other hand, if projects are funded through borrowing, rate increases may be "smoothed" over time but the cost of servicing the debt becomes an issue. The concern is to find the right balance between rate increases and the level of debt to fund large capital projects.

In making this determination, the Board is guided by two considerations. The first is: what "reserves" should Manitoba Hydro hold to manage risk and which risks should it take into account? As an example, as per the question posed in the evidence of Morrison Park Advisors, what is the level of retained earnings needed in the event of a five-year drought? The second is to place concerns about the amount of debt and retained earnings in a different perspective by also considering cash flow, using two long-standing financial metrics used by Manitoba Hydro: interest coverage ratio and the capital coverage ratio.

As detailed below, on assessment of these considerations, the Board finds that raising consumer rates by an amount equivalent to four times the rate of inflation is not required to support Manitoba Hydro's current operations. The Board recognizes the sincerity of Manitoba Hydro's concerns about potential future risks materializing. However, as the Board has demonstrated in past decisions – including in years of drought where the Board awarded rates in excess of those sought by the Utility – it will consider all of the

facts and circumstances which confront Manitoba Hydro at that point in time in determining the appropriate rate relief. The Board is prepared to take regulatory action – whether through a rate rider, an interim rate increase, or a general rate increase – as required in times when emergent situations face Manitoba Hydro. At this time, however, the Board finds the circumstances confronting Manitoba Hydro, including those raised in the hearing about credit rating agencies and debt management, do not justify the 7.9% rate increase sought by Manitoba Hydro.

Any benefits of Manitoba Hydro's financial plan must be balanced against the interests of ratepayers. Funds taken out of the pockets of ratepayers through higher rate increases have a cost. In balancing this against the benefits of Manitoba Hydro's plan, the Board finds that the cost to ratepayers is not justified. The Board further notes that, while one financial scenario filed by Manitoba Hydro at the request of the Board showed rate reductions in its 20-year rate forecast, including a significant rate reduction in 2027/28, the Utility did not commit to those reductions. Instead, Manitoba Hydro acknowledged that requests for rate increases or reductions in future years will be dependent on the circumstances at the time.

Debt-to-Equity Ratio

The Board accepts Morrison Park Advisors' evidence that debt-to-equity is a questionable metric for a vertically integrated monopoly Crown utility with a debt guarantee from the provincial government. The equity level target does not have the prominence suggested by Manitoba Hydro given the context in which the Utility operates. The concern regarding the value of the equity level target is compounded when Manitoba Hydro is going through an unprecedented major investment period to more than double the value of its assets in the next four years. As noted by Manitoba Hydro's external consultant KPMG, there is a "practical recognition that this target will

not be met during a period of large capital expenditures when newly constructed assets are placed in service. Accordingly, the 75/25 could remain the long-term objective.” The Board supports this view. The Board agrees with the evidence that there is a cost associated with equity as equity is provided by ratepayers who could otherwise use those funds. As such, the Board is not prepared to look at the issue of pacing to achieve a particular equity level target at least until the current phase of major capital construction is completed, now projected by Manitoba Hydro to be in 2024.

The current 25% equity level target was established by the Manitoba Hydro-Electric Board in 1995 when the Utility had 8% equity and less than \$300 million of Retained Earnings. Except for approximately five years during the last 20 years, immediately prior to the start of Keeyask construction, this target has not been achieved.

The 25% equity level target is “self-imposed” by Manitoba Hydro. While Manitoba Hydro may determine that the 25% target remains relevant, the Board does not accept that consumer rate increases should be granted at the level proposed by Manitoba Hydro so that the Utility can achieve its target within a 10-year time frame. As stated by the Board in the NFAT report:

The Panel supports a relaxation of Manitoba Hydro’s 75/25 debt-to-equity ratio to smooth out rate increases and the Panel concludes that Manitoba Hydro would still be left with sufficient retained earnings if the equity level was decreased.

Financial Reserves

The Board finds that Manitoba Hydro’s forecast achievement of \$6.56 billion of Retained Earnings by 2027 is too aggressive considering that the two major capital projects contributing most to the doubling of the Utility’s assets are still under construction. This increase in Retained Earnings would be funded by ratepayers, with a resulting

opportunity cost. In assessing this cost to ratepayers against the benefits to Manitoba Hydro, the Board finds that under the Utility's MH16 Update with Interim rate path, and as illustrated in Manitoba Hydro's sensitivity analysis and as confirmed by Manitoba Hydro in its testimony, Manitoba Hydro's Retained Earnings would continue to increase even during a five-year drought. Even though a five or seven-year drought would result in Manitoba Hydro not accumulating the same Retained Earnings as it otherwise would have, such a drought would also not result in a reduction in the Utility's Retained Earnings. The Board agrees with the evidence of Morrison Park Advisors, that this raises a question: if a primary purpose of having Retained Earnings is to withstand a drought, why does Manitoba Hydro need rates at a level that would allow it to build Retained Earnings during a drought? The Board concludes this supports the determination that a 7.9% rate increase for 2018/19 is not required.

In addition, the Board accepts the evidence of Morrison Park Advisors that Retained Earnings should be used to manage drought risk in combination with regulatory action by the Board. The Board further agrees that interest rate and export price risks over the long term should be addressed with rate increases as and when those risks materialize. Rates should not be set to increase Retained Earnings to manage those longer-term risks. As discussed elsewhere in this Order, the Board is prepared to consider regulatory action when required to address emerging risks facing Manitoba Hydro. In this context, and having considered Manitoba Hydro's new financial plan and the opportunity costs to ratepayers, the Board finds that the 7.9% requested and projected rate plan is not the appropriate balanced plan for meeting the risks and challenges that confront the Utility.

However, the Board concludes that there is merit to gaining better understanding of the financial reserves required for Manitoba Hydro under various circumstances. This would include consideration of risk tolerances, what risks should be protected by reserves, and the circumstances which would guide the need for more aggressive rate increases to continue full cost recovery for Manitoba Hydro. The Board is mindful that the financing and depreciation expenses related to these new major capital assets entering service already require additional revenues from rate increases. Consideration of the appropriate level of financial reserves, for example a minimum retained earnings test, is best done through a collaborative approach with stakeholders.

The Board directs Manitoba Hydro to participate in a technical conference hosted by Board Staff or an external consultant appointed by the Board for the consideration of the establishment of a minimum retained earnings or similar test to provide guidance in the setting of consumer rates for use in rule-based regulation. The test or rule is to be based on maintaining appropriate or minimum levels of retained earnings and meeting other financial metrics in the face of potential risks to the Utility. The Board will develop the terms of reference for the technical conference. Parties will be invited to contribute to the scope and terms of reference for this initiative.

Cash Flow from Operations

The Board finds that, in assessing whether Manitoba Hydro is meeting its ongoing financial obligations, the focus should be on the accrual accounting methodology used in the Utility's audited financial statements and the financial forecasts used for rate setting. This methodology was also previously used by Manitoba Hydro for rate setting purposes and continues to be used by Manitoba Hydro for its financial forecasting and reporting. Accrual accounting used by Manitoba Hydro includes capitalizing interest to capital projects until those new assets enter service for ratepayers. Once in service, the

financing and depreciation costs are recorded on the Income Statement to be recovered in consumer rates.

Manitoba Hydro's new cash flow analysis does not appear, from the evidence, to be a typical part of financial analysis, and its value is somewhat obscure. The newly presented cash flow analysis is a "new view" created by Manitoba Hydro that the Board does not accept for rate-setting purposes. The new view treats Bipole III inconsistently, departs from the prior treatment of certain Major New Generation and Transmission projects, and deviates from accrual accounting principles. However, the Board accepts that Manitoba Hydro's payments to the City of Winnipeg and mitigation payments should be included in a cash flow analysis of the Utility's operations for rate-setting purposes. The Board notes that insufficient information was provided about the items included in Other Cash Payments in its Integrated Financial Forecast and directs Manitoba Hydro to provide that information in the next GRA filing.

With respect to the traditional financial metrics of interest coverage and capital coverage, the Board finds that the question of financial targets must be assessed in the context of a Crown Utility that is currently in the midst of a major capital expansion, doubling its asset base. With rate increases in line with prior levels, Manitoba Hydro's interest coverage and capital coverage ratios will be improved from those forecast at the time of the NFAT. These metrics therefore do not support rates at a level higher than prior rate increases. The forecast of financial measures, such as the interest coverage ratio and capital coverage ratio, even with the inclusion of City of Winnipeg and mitigation payments, do not support Manitoba Hydro's arguments that a 7.9% increase is justified solely by Bipole III entering service in 2018/19. As well, due to the Bipole III Deferral Account established by the Board and as directed by the Board in prior Orders, 11.6% is already embedded in current compounded consumer rates, despite not

previously being required for the Utility's operations, in order to smooth the rate effect of Bipole III entering service.

Debt Management and Borrowing Strategy

The Board does not accept that rate increases should be higher in order to allow Manitoba Hydro to retire debt according to their new debt management plan. The refinancing risk identified by Manitoba Hydro is linked to the Utility's shorter-term debt retirement plan. Longer-term issuances at current low interest rates mitigate this risk as identified by Manitoba Hydro's Treasury Department. Manitoba Hydro's recently amended approach to the debt management plan, whereby it placed longer-term debt issues to take advantage of a flattening yield curve, demonstrates that Manitoba Hydro's treasury function is well exercised.

While there are benefits to a shorter-term debt retirement plan, such a plan imposes a cost on ratepayers that is not justified by the evidence.

Credit Ratings of the Province of Manitoba and Manitoba Hydro

The Board finds that, while important, care must be taken to avoid placing too much weight on reports by credit rating agencies. The Board accepts that credit ratings and capital markets are related, but are not the same thing.

The Board does not accept that Manitoba Hydro's debt is leading to a higher cost of credit for the province. Neither Manitoba Hydro nor the Business Council of Manitoba chose to call any witnesses from the credit rating agencies, financial markets, or the provincial government to testify as to the impact of Manitoba Hydro's debt on provincial credit ratings. In so doing, the Utility and the Business Council of Manitoba appeared to take the position that it was self-evident that higher levels of debt would damage the

provincial credit rating. There was no expert evidence independent of Manitoba Hydro presented to that effect. More specifically, as submitted by the Manitoba Industrial Power Users Group, there was no evidence that “even if Hydro acted prudently, yet adversely affected the province’s rating, that it would be a net short-term or long-term negative effect on the province compared to not having Hydro’s debt on the books”. The Board accepts the evidence of Morrison Park Advisors that the capital markets will be reassured by a long-term rate plan that acceptably manages Manitoba Hydro’s risks and by this Board’s regulatory action where required to address circumstances as they arise.

5.0 Major Capital Revenue Requirement

On April 5, 2017, by Order in Council 92/2017, for the GRA then-anticipated to be filed in 2017, the Board was assigned the duty of considering capital expenditures made by the Manitoba Hydro-Electric Board as a factor in reaching a decision regarding setting rates for services in a manner that balances the interests of ratepayers and the financial health of Manitoba Hydro. To facilitate the Board's review of Manitoba Hydro's capital expenditures, Order in Council 92/2017 directed the Utility to provide extensive capital expenditure, explanatory, and revenue information.

As such, this GRA proceeding included review of Manitoba Hydro's current major capital projects, specifically Keeyask, Bipole III, the United States interconnection project made up of the Manitoba-Minnesota Transmission Project ("MMTP") in Manitoba and the Great Northern Transmission Line ("GNTL") in Minnesota, and the Manitoba-Saskatchewan Transmission Project. This review included consideration of the budget estimates for these projects incorporated into the Utility's Integrated Financial Forecast, and therefore its revenue requirement.

The Board's review of Manitoba Hydro's capital expenditures included the following:

- A review of Keeyask, with a focus on the reasonableness of Manitoba Hydro's capital cost estimates filed in support of the Utility's financial forecasts. The timeframe for the review began with the cost estimates presented at the NFAT;
- A review of Bipole III, also focused on the reasonableness of the capital cost estimates beginning with the initial western routing cost estimate for Bipole III;
- A review of the MMTP and GNTL, also focused on the reasonableness of the capital cost estimates. The timeframe for the review began with the cost estimates presented at the NFAT; and

- An economic review of the Manitoba-Saskatchewan Transmission Project and related SaskPower export power sale, to determine whether the project was economic.

In order to exercise its authority and responsibility under the Order in Council in this GRA, the Board engaged the services of the following Independent Expert Consultants:

- MGF, construction management experts in the profession of Quantity Surveyors. Quantity Surveyors have construction, contract, and project management expertise. MGF was the lead Independent Expert Consultant for the review of the capital costs of Keeyask, Bipole III, MMTP, and GNTL;
- Klohn Crippen Berger (“KCB”), which has expertise in hydroelectric generating station design and engineering, including the civil, electrical, and mechanical engineering aspects. KCB assisted MGF with the review of Keeyask;
- Amplitude Consultants, which has expertise with high voltage direct current (“HVDC”) transmission systems including HVDC converter stations. Amplitude Consultants assisted MGF with the review of the Bipole III converter stations;
- Stanley Consultants, which has expertise with transmission line design, engineering, and construction. Stanley Consultants assisted MGF with the review of the Bipole III, MMTP, and GNTL transmission line reviews; and
- Daymark Energy Advisors (“Daymark”), which has expertise in resource planning and utility economics. Daymark reviewed the economics of the 100 MW SaskPower power sale agreement and the Manitoba-Saskatchewan Transmission Project.

The Board developed scopes of work for each Independent Expert Consultant with input from Manitoba Hydro and Interveners in the GRA. In the case of Bipole III, the focus of the Independent Expert Consultants was on the pre-construction budget of \$4.65 billion and whether the current forecast of \$5.04 billion can be relied upon by the Board. The Independent Expert Consultants did not investigate the prior Bipole III cost estimates,

nor did they investigate the change in routing of Bipole III from east of Lake Winnipeg to west of Lake Manitoba.

5.1 Keeyask

Keeyask is a 695 MW hydroelectric generating station located in northern Manitoba at Gull Rapids. The Keeyask project also includes infrastructure, such as the access road and accommodation camp, as well as the transmission lines to connect Keeyask to Manitoba Hydro's HVDC Bipole facilities in order that the power may be transmitted to southern Manitoba.

Keeyask is being developed through the Keeyask Hydropower Limited Partnership ("KHP"), a partnership between Manitoba Hydro and four First Nations: Tataskweyak Cree Nation and War Lake First Nation (acting as the Cree Nation Partners), Fox Lake Cree Nation, and York Factory First Nation. The commercial terms of the arrangement are set out in the Joint Keeyask Development Agreement. The four First Nations together currently own 17.5% of the Partnership and have the right to increase their investment and own up to 25%. Manitoba Hydro will own at least 75%. The Partnership has delegated project management responsibility to Manitoba Hydro. Consequently, Manitoba Hydro is the sole entity responsible for planning, design, engineering, procurement, construction, and operation of Keeyask.

At the commencement of the NFAT review in 2014, the anticipated cost for Keeyask was \$6.2 billion and the target in-service date for the first of seven generating units was November 2019.

Prior to the completion of the NFAT, the General Civil Contract ("GCC") for Keeyask was awarded to a consortium of Bechtel Canada Co., Barnard Construction of Canada Ltd., and EllisDon Civil Ltd ("BBE"). Following awarding of the GCC, the Keeyask cost

estimate was updated to \$6.5 billion. The GCC is the largest contract related to Keeyask and includes river management, earthworks to build the dykes, concrete structures such as the powerhouse and spillway, and electrical and mechanical work to complete Keeyask. Construction commenced in July 2014 with the building of the powerhouse cofferdam.

The pricing structure in the GCC is that of a “cost reimbursable nature with a target price” contract. The “cost reimbursable” aspect means the contractor is paid for its costs for materials and direct labour, plus profit and general administration and overheads. The “target price” aspect means that the contractor’s profit erodes if the target price is exceeded and the contractor’s profit increases if the actual cost is less than the target price. The target price and this so-called ‘pain/gain’ pricing mechanism are intended to incent the contractor to perform well.

In a cost reimbursable contract, the owner (Manitoba Hydro) is at risk for quantities, productivity, and inefficiency of the contractor. As an example, under a cost reimbursable payment structure, the contractor would be paid in full for 10 hours of work even if the contractor’s successful bid was based on the contractor taking only six hours to perform the specific work task.

Other types of payment structures are ‘fixed price’ or ‘unit price’ structures. In a fixed price contract (also known as a lump sum contract), a contractor is paid a fixed price regardless of the costs it incurs or the duration of the project. In this type of payment structure, the contractor is at risk for quantities and productivity. In a unit price contract, the contractor is paid a pre-defined unit rate (or rate per quantity) multiplied by the quantity of work. For a hydroelectric project such as Keeyask, a common unit would be a cubic metre of earth excavation or a cubic metre of concrete placement. In this type of

payment structure, the contractor is at risk for productivity but the owner (Manitoba Hydro) is at risk for variation in quantity from the initial estimates provided by the owner.

For Keeyask, Manitoba Hydro attempted to address and mitigate the issues and concerns that resulted in the Wuskwatim generating station exceeding its initial cost projections. At the NFAT, Manitoba Hydro identified the availability and productivity of craft labour as a major issue with Wuskwatim. To address this issue, Manitoba Hydro designed and built premier camp accommodations for Keeyask in order to attract and retain labour. Manitoba Hydro also implemented a retention bonus for craft labour which raised the remuneration under the Burntwood-Nelson Agreement to be more competitive with other remote northern construction projects. Manitoba Hydro also implemented an early contractor involvement process with the general civil contractor. Early contractor involvement is a process whereby the contractor is involved early in the project and afforded time to plan the work for its craft labour teams. One objective of early contractor involvement is to maximize productivity of the workforce.

Manitoba Hydro expected greater productivity – that is, fewer person-hours per unit of work – on Keeyask than it experienced with Wuskwatim. The productivity in the BBE bid was similar to the productivity that was achieved during construction of the Limestone generating station in the early 1990s. When evaluating the bids for the GCC, Manitoba Hydro described BBE's productivity bid as a "red flag" as it was higher than Manitoba Hydro had achieved on Wuskwatim. Manitoba Hydro further investigated BBE's bid and its productivity forecast, but Manitoba Hydro ultimately accepted the productivity rates in BBE's bid and used them to calculate the target price of the GCC and the overall Keeyask cost estimate. The optimistic productivity of the BBE bid was one reason Manitoba Hydro included a labour reserve in the Keeyask cost estimate. Manitoba Hydro characterized the amount in the labour reserve as significant, to address, in part,

its concern over the productivity contained in BBE's bid. A labour reserve was not carried for Wuskwatim.

At the NFAT, the risk of cost overruns was known and the Board commented on this risk in its report:

The Keeyask general civil contract is a costs-reimbursable contract rather than a fixed price contract. This means that if volumes of materials increase, Manitoba Hydro is responsible for that increase. The Panel had the opportunity to consider the contract in camera as Commercially Sensitive Information, and has concluded that Manitoba Hydro bears a significant cost risk.

And:

Manitoba Hydro submitted that the risk associated with the Keeyask construction is somewhat addressed given that 80% of the construction contracts have now been negotiated. However, this only partially mitigates cost risk. The Keeyask general civil contract is a cost-reimbursable contract, not a fixed price contract. This leaves the contract vulnerable to cost escalations as a result of: quantity risk, especially in areas where quantities may have been underestimated; escalation to the contractor's cost factors due to labour productivity or labour costs; escalation in the cost of supply and equipment; and challenges related to adverse weather conditions.

The 2016 construction season was the first where significant amounts of permanent concrete were poured, beginning in May 2016. By June of 2016, BBE was falling behind on its targets for concrete placement. Manitoba Hydro requested a recovery plan from BBE in order to get the project back on schedule. The plan was implemented in June 2016, but did not achieve the desired results in terms of concrete placement or productivity. By the end of the 2016 construction season, only 65% of the earthworks target and 41% of the concrete target were met.

Manitoba Hydro investigated the root causes of the lower-than-expected concrete and earthworks productivity and completion rates. The primary root causes identified by Manitoba Hydro were: 1) unachievable productivity rates for earthworks and concrete as contained in BBE's original bid, 2) slow ramp-up by BBE to full production in the early part of 2016, and 3) geotechnical and geological challenges. These difficulties led to a potential two-year delay. Manitoba Hydro explained that the difference between the productivity bid by BBE and the actual productivity achieved is the largest driver of the cost increase from \$6.5 billion to \$8.7 billion. The actual number of person-hours per unit of work was much higher than the BBE bid.

Concurrently in the summer of 2016, Boston Consulting Group was retained by the Manitoba Hydro-Electric Board to investigate options related to stopping or rerouting Bipole III. Boston Consulting Group's review was expanded to include a review of Keeyask. Boston Consulting Group identified the potential cost and schedule overruns for Keeyask related to the performance under the GCC as an increase from \$6.5 billion to \$7.8 billion and a 32-month delay if no mitigation actions were taken. In Boston Consulting Group's opinion, mitigation measures could reduce the delay to 21 months and limit the cost overrun to \$7.2 billion. Mitigation measures included extending the steel columns deeper in the powerhouse to allow concurrent construction of concrete below and steel structures above, use of auxiliary power to operate the spillway gates instead of waiting to complete the spillway ancillary building, and improving concrete and earthworks productivity.

In September 2016, Manitoba Hydro initiated development of its own recovery plan. Manitoba Hydro determined that, of the recovery options available, amending the scope of the GCC or terminating BBE were higher cost, higher risk options and that amending the existing contract with BBE was the lowest cost, lowest risk option. In January 2017,

Manitoba Hydro negotiated a revision to the GCC with BBE, referred to as Amending Agreement 7.

Amending Agreement 7 also has a cost reimbursable-target price payment structure. Manitoba Hydro advises that, in order to renegotiate the contract with BBE, there were ‘gives and takes’ involved as well as limits to how much risk related to labour productivity, weather, geotechnical, northern logistics, and other risks that Manitoba Hydro could transfer to BBE. Amending Agreement 7 re-established the possibility for BBE to earn profit by setting a new target price based on revised productivity factors and a new schedule with the first generating unit expected to enter service in August 2021.

The schedule delay has a consequential impact on other contracts, triggering compensation related to delays on fixed price contracts as well as increased costs related to extended performance of other contracts, such as camp services. The schedule delay also increases the period over which interest charges accrue to the project. The cost increase for the GCC combined with increased interest charges due to the higher amounts borrowed and the delay result in the revised Keeyask control budget of \$8.7 billion with a schedule delay of 21 months, which Manitoba Hydro made public in March 2017. A control budget is a formal project budget developed by the project team and approved by management. The revised control budget constitutes a 34% cost increase for Keeyask over the cost forecast by Manitoba Hydro in the 2014 NFAT.

The Keeyask cost estimate includes a contingency amount that is determined by probabilistic modeling of the probability and consequence of various risks. The \$8.7 billion estimate with a 21-month delay incorporates a P50 contingency, such that the contingency is expected to address 50% of the risk outcomes. The Keeyask P90 cost estimate, which addresses 90% of the risk outcomes, escalates to \$9.6 billion and

factors in an additional eight-month delay for a total delay of 29 months from the in-service date forecasted at the NFAT.

Pre-Construction		Revised Estimate	
	P50 Contingency	P50 Contingency	P90 Contingency
Total In-service Cost	\$6.5 billion	\$8.7 billion	\$9.6 billion
Unit 1 In-service Date	November 2019	August 2021	April 2022
Unit 7 In-service Date	April 2020	August 2022	April 2023

Amending Agreement 7 was in place prior to the start of the main construction season in 2017. Despite revised target productivity factors (i.e. person-hours per cubic metre of concrete placed) and other changes in the GCC that were made to get the project back on budget and back on schedule, BBE still fell short of end-of-year targets for concrete placement and earthworks by 20% and 25%, respectively.

Manitoba Hydro stated that the productivity to date on Keeyask has been worse than for Wuskwatim. Manitoba Hydro explained that there are different craft labour attraction and retention issues with Keeyask than with Wuskwatim. However, the approaches put in place by Manitoba Hydro – a premier camp, retention bonuses in excess of Burntwood-Nelson Agreement wages, more favourable shift rotations – did not address the underlying labour productivity issues experienced at Wuskwatim, and the low labour productivity has been repeated at Keeyask. The actual productivity rates achieved on Wuskwatim and Keeyask to-date, as well as the productivity bid by BBE, are commercially sensitive and confidential and were heard by the Board *in camera*.

Independent Expert Consultant Evidence

MGF reviewed the Keeyask project and agreed with Manitoba Hydro that the GCC was the single largest driver of the cost increase from \$6.5 billion to \$8.7 billion. MGF developed its own cost estimate for Keeyask based on the productivity factors achieved by BBE in the October 2016 to October 2017 timeframe. MGF's cost estimate for Keeyask is \$9.9 billion with an additional 410-day delay over the currently anticipated 21 month delay, although MGF also provided a range of likely Keeyask costs of \$9.5 billion to \$10.5 billion. In MGF's view, the root cause of the billions of dollars of cost overruns is that the cost reimbursable payment structure of the GCC fails to provide sufficient incentive for BBE to be responsible for productivity. According to MGF, BBE struggles to plan, manage, and execute the work. MGF further states that it has not seen Manitoba Hydro address the root causes of the poor productivity by BBE.

Similarly, KCB found that the principal reason for the cost increase in the GCC and overall Keeyask budget is the nature of the payment structure in the GCC. Specifically, BBE is being paid in full for its actual costs for labour and materials rather than for quantities of work performed against fixed or unit prices. Put another way, BBE is paid for any reasonable costs to pour a cubic metre of concrete, irrespective of the price it bid to do so. KCB also identified an unusual payment arrangement between Manitoba Hydro and BBE, whereby BBE is paid for planned work two months in advance of completing the work. KCB stated that it had never seen a contract that required such a payment condition; in KCB's experience, the way a contractor ensures its cash flow remains positive is through a mobilization payment, followed by performing the work and earning revenue based on quantities times unit prices.

KCB found that geotechnical issues were not a major driver of the GCC increase as the actual quantities of earthworks and concrete required closely aligned with the original estimates that Manitoba Hydro provided to BBE. KCB also found that the production of construction drawings by the engineering contractor has been timely, that overall design was substantially complete prior to the award of the GCC, and that design changes and extra work orders have been minimal. As such, these are not the major factors that have driven the increase in the Keeyask cost estimate.

A further serious problem MGF identified was that Manitoba Hydro, while competent at administering the payment of the construction project costs and project accounting, is not managing the GCC in a manner that is required to exert control over a contract with a cost reimbursable pricing mechanism. In MGF's view, Manitoba Hydro is managing the project and GCC as if it were a lump sum or unit rate contract.

According to MGF, Manitoba Hydro needs to take back control of the project by enforcing its rights under the GCC and holding BBE accountable for its performance, hiring experienced trades supervisors to work with and assist BBE with planning the work in a more efficient manner, understanding why planned progress is consistently not achieved, and recasting forecast at completion costs based on a realistic and achievable schedule. MGF further opines that, if Manitoba Hydro continues to stand back and watch the project unfold as if it were a lump sum contract, then the final cost will be closer to \$10.5 billion, rather than \$9.5 billion, which MGF views as the lowest final cost that Manitoba Hydro can achieve. Unless changes are made, MGF is of the view that BBE's poor performance will continue.

MGF also recommends that Manitoba Hydro initiate periodic contract compliance reviews. According to MGF, BBE is not complying with certain terms of the GCC. For example, BBE is consistently late in providing Manitoba Hydro with monthly progress

reports. Another example is BBE's schedule has over one thousand activities with 'negative float' (i.e. activities that have not or will not meet a scheduled or specifically identified date) while the GCC requires the schedule to have no negative float.

Manitoba Hydro's Position

Manitoba Hydro states that due to the state of the competitive market across North America for major project construction work in the 2012 to 2013 timeframe, and after meeting with several contractors prior to release of the tender, it decided to tender the GCC as a cost reimbursable-target price contract instead of as a unit price or fixed price contract. There were dozens of major construction projects underway at the time across North America, including oil sands and liquefied natural gas projects. Manitoba Hydro's assessment of the marketplace was that major project general contractors would not be receptive to "hard money" contracts - that is, contracts that transferred significant risks to the contractor by requiring a firm price, either through a fixed price or unit prices. Manitoba Hydro points to its experience with the Wuskwatim generating station where it attempted to tender a unit price contract but received only one bid which was nearly double the price Manitoba Hydro expected. Manitoba Hydro further stated that the unit price bid for the Wuskwatim general civil contract was higher than the final actual costs under the cost reimbursable-target price contract.

Manitoba Hydro has a current control budget for Keeyask of \$8.7 billion. Manitoba Hydro argues that it has a strong plan in place to meet this control budget, and is working cooperatively with BBE to do so.

Manitoba Hydro indicates that, to meet or be under its \$8.7 billion control budget, it requires a 10% improvement in productivity in each aspect of the GCC starting in 2018, as well as for no major negative risks to materialize. Those major risks include

unseasonable weather, unexpected geotechnical or geological conditions (including as the geotechnical conditions in the area of the south dam have not yet been ascertained), and work stoppages. If Manitoba Hydro does not achieve a 10% improvement in productivity starting in 2018, the final cost of Keeyask will exceed \$9 billion and will approach \$9.5 billion. In order to drive a 10% improvement in productivity, Manitoba Hydro states that it continues to work with BBE to develop work plans for the 2018 construction season. Manitoba Hydro has also retained former contractors to review and test the work plans developed by Manitoba Hydro and BBE, a process known as a “cold eyes” review.

Manitoba Hydro states that BBE has not performed to the original plan or the plan under Amending Agreement 7. Manitoba Hydro further states that, if it were to do the Keeyask GCC all over again with hindsight, it would take a hard look at the marketplace and decide whether a cost reimbursable-target price contract was the appropriate pricing structure for the GCC.

Amending Agreement 7 is also a cost reimbursable-target price contract, so there is the possibility that after another construction season Manitoba Hydro and BBE may be in the same position as after 2016 where there is no longer any profit for BBE. If that happens, there would be no incentive or motivation for BBE to perform under the contract, leaving Manitoba Hydro in the same position as after the 2016 construction season and contemplating whether to renegotiate the contract. Such an eventuality was contemplated by Manitoba Hydro during negotiation of Amending Agreement 7, so Manitoba Hydro attempted to narrow the possibility of this occurring. The details of how Manitoba Hydro attempted to do this are commercially sensitive and confidential and were disclosed to the Board in camera.

Intervener Positions

The control budget amounts for revenue requirement purposes were not contentious in the proceeding, although the Consumers Coalition and the Manitoba Industrial Power Users Group recommend further review of the Keeyask budget following the 2018 construction season. With respect to the Keeyask budget, the Manitoba Industrial Power Users Group argues that it is premature at this time to conclude that further cost overruns, compared to the estimates used in MH16 Update with Interim, are sufficiently likely for the purpose of inclusion in Integrated Financial Forecast projections.

Board Findings

The Board finds that the \$8.7 billion control budget amount incorporated by Manitoba Hydro into MH16 Update with Interim for Keeyask is to be used for Integrated Financial Forecast modeling and rate setting in this GRA.

The control budget for Keeyask will be reviewed at the next and future GRAs in the Board's consideration of Manitoba Hydro's revenue requirement. There are four more years of construction for Keeyask and there are opportunities for unforeseen issues to arise. One potential issue is the geotechnical condition of the south channel of the Nelson River, which will not be ascertained until the river is diverted through the spillway and the south channel cofferdam is completed. To achieve the \$8.7 billion control budget no major geotechnical issues can be encountered in the area of the south dam.

The Board acknowledges that Manitoba Hydro has taken steps to mitigate schedule issues and productivity, including through retaining Boston Consulting Group, KPMG, Revay, Validation Estimating, and Borden, Ladner, Gervais LLP for recommendations. There was evidence in the GRA that Manitoba Hydro has achieved milestones in the

construction of Keeyask, including that the project is on track to meet the schedule for diverting the river through the spillway to permit work to be done on the south dam. The Board's expectation is that Manitoba Hydro will closely monitor and take steps to improve productivity in order to achieve the 10% improvement in productivity on all aspects of the GCC required to meet the \$8.7 billion control budget. The Independent Expert Consultants, MGF and KCB, made useful recommendations that Manitoba Hydro should consider implementing, and indeed, in part already has implemented. This will help Manitoba Hydro use the four years left remaining on the Keeyask project to stay on track with the schedule and budget. Manitoba Hydro is directed to report to the Board, at the next GRA, the extent to which it has implemented these recommendations and the results.

The Board expects Manitoba Hydro to take the actions it identified in its evidence at the GRA Hearing, namely to work with BBE to plan the work in 2018 to drive productivity improvements and to bring in external expertise for a "cold eyes" review of the project to test the proposed work plans.

The Board concurs with MGF and KCB that the primary root cause of the cost overrun of the GCC, and the whole Keeyask project, relates to the nature of the cost reimbursable payment structure in the GCC. Manitoba Hydro appears to have assumed that tying the contractor's profit to the target price, with the possibility that the profit could erode to zero, would provide sufficient motivation to the contractor to meet the productivity levels in its GCC bid. It further appears that Manitoba Hydro never contemplated that the contractor's profit could erode to zero so early in the project. However, underpinning the reason for the profit eroding to zero so early in the project was the fact that BBE bid productivity levels that proved to be unachievable. While Manitoba Hydro performed an evaluation of the productivity levels bid by BBE, the Utility

accepted the bid, which was ultimately unachievable and formed the basis for an unrealistic target price. Once the profit eroded to zero, with no chance of re-establishing profit, the contractor had little or zero motivation to advance the project expediently. This was a principal failing of the original GCC.

The evidence of Manitoba Hydro, MGF, and KCB was to the effect that in the planning for Keeyask and the preparation of the contract tendering documents, Manitoba Hydro was able to determine with remarkably high precision the quantities of concrete and earthworks (i.e. dams and dykes) that needed to be supplied and constructed. With hindsight, a unit price contract would have been more appropriate as it would have shifted the risk of labour productivity to the contractor while Manitoba Hydro retained the quantity risk. The Board recognizes that Manitoba Hydro had a negative experience when trying to tender the Wuskwatim GCC. Understandably, contractors are not willing to assume the risk for geological conditions and unknown quantities of excavation when bidding on construction projects.

The Board concludes that, had Manitoba Hydro exercised more effective oversight of BBE from the beginning, the current cost overruns may have been mitigated. As MGF observed, Manitoba Hydro is not a construction manager and it appears that it did not have the expertise or the awareness of how to manage a cost reimbursable contract.

5.2 Bipole III

The Bipole III Transmission Line is a reliability project that consists of:

- five 230 kV alternating current power lines, which are the outlets for the power from the northern generating stations,
- the Keewatinohk converter station, located approximately 80 km northeast of Gillam, Manitoba, which converts the alternating current into direct current,

- the Bipole III high voltage direct current (“HVDC”) transmission line, a 500 kV line that is approximately 1,385 km in length,
- the Riel converter station, located east of Winnipeg, which converts the direct current power back to alternating current power for use in the domestic system or for further transmission south to be exported.

Manitoba Hydro had been considering the need for Bipole III since at least the 1980s. A wind event in September 1996 damaged 19 Bipole I and II towers and interrupted the delivery of power from its Lower Nelson River generating stations. Following that event, Manitoba Hydro began planning in earnest additional high voltage direct current transmission options to provide redundancy and increase the reliability of power supply. Initially, only a separate Bipole III transmission line was considered by Manitoba Hydro, routed down the east side of Lake Winnipeg in order to provide physical separation between the existing Bipoles I and II and the new Bipole III. As discussed elsewhere in this Order, the routing was changed to west of Lake Manitoba which necessitated the inclusion of converter stations at the northern and southern terminuses due to the longer length of the transmission line and the resulting inability of the existing HVDC converter stations to operate with the longer line. With the construction of Keeyask and any other future northern generation, additional HVDC converters are required to bring the full power of the new generation to southern Manitoba. Therefore, a transmission line-only option was no longer feasible.

Bipole III is nearing completion, with a scheduled in-service date of July 2018, at a final cost of \$5.04 billion. The cost estimates for Bipole III have dramatically increased over the years since the western routing for the line was established. The following table shows the escalation of the western route Bipole III costs – including converter stations – through the years as specified in Manitoba Hydro’s capital expenditures forecasts (“CEF”).

**Western Route Bipole III In-Service Cost Estimates - Capital Expenditure Forecast
("CEF") (\$millions)**

CEF06	CEF07 to CEF10	CEF11 to CEF12	CEF13	CEF14 to CEF15	CEF16
1,880	2,248	3,280	3,341	4,653	5,042

The \$1.88 billion estimate in 2006 was described in the capital project justification by Manitoba Hydro as a “placeholder”. The revision to the capital project justification by Addendum 05 in CEF07 increased the cost by \$368 million to \$2.25 billion due to:

- an increase in the line length of 45 km in addition to the increase in line length arising from the western routing,
- increased transmission line material costs due to market price increases,
- increased transmission line construction costs as experienced by Manitoba Hydro on recent transmission line projects, such as the Wuskwatim-Birchtree line, and
- increases in interest and escalation charges.

Notably, capital expenditure forecasts CEF06 through CEF10 appear to use HVDC converter equipment estimates developed by an external consultant in 2001, meaning the largest component of the project did not have a current cost estimate. In the current control budget, the converter stations are approximately 55% of the total cost. These capital expenditure forecasts also did not include any amounts for contingency and assumed many of the converter station site development costs were included in other projects such as the Conawapa generating station and the Riel 500 kV sectionalization project.

In 2009, Manitoba Hydro prepared a revised Bipole III cost estimate of \$3.95 billion, an increase of \$1.71 billion. The increase was due to re-estimates of the transmission line and converter station costs, the inclusion of contingency at 15% of the base costs, the

inclusion of costs previously assumed to be included in other projects, and changes in interest and escalation charges. This estimate assumed line-commutated converter (“LCC”) technology, which in turn required four synchronous condensers at Riel station. This estimate, while approved by the Vice Presidents of Transmission and Power Supply, was not approved by the Manitoba Hydro Executive.

After Manitoba Hydro commissioned an estimate by an external consultant in 2010, Manitoba Hydro projected a Bipole III cost of \$3.28 billion, which was reflected in CEF11 and approved by the Executive. The most significant changes were the inclusion of voltage source conversion technology instead of LCC technology and the elimination of synchronous condensers at Riel station, as well as substantial reductions in the contingency for the transmission line and converter stations. This estimate included a contingency of \$205 million, representing 6% of transmission line base costs and 11% of converter station base costs, compared to the previous \$525 million contingency.

The next revision to the Bipole III project cost estimate occurred in October 2014, with an increase to \$4.65 billion due to:

- receipt of the HVDC converter station bids in March 2014 which provided firm, fixed pricing to refine Manitoba Hydro’s internal estimates. Other contracts were finalized and incorporated into the revised estimate;
- HVDC converter station suppliers were only willing to provide LCC technology converters, necessitating the need for synchronous condensers. Manitoba Hydro had assumed that HVDC suppliers would bid the newer voltage source conversion technology which did not require synchronous condensers;
- finalization of the transmission line route according to Clean Environment Commission recommendations;

- an increase in the capacity of the HVDC converters to 2300 MW, in case additional generation is added in the future;
- a delay in the in-service date from October 2017 to July 2018;
- updated land acquisition costs;
- inclusion of the Community Development Initiative; and
- an increase to the transmission line contingency and the inclusion of a management reserve.

As explained by the Board in Order 73/15:

Manitoba Hydro was initially optimistic that it could utilize lower-cost voltage-source conversion (VSC) technology in the Bipole III converter stations. However, while vendors initially indicated that the use of this technology was feasible, they ultimately were not prepared to design and provide VSC technology, resulting in a requirement for line-commutated converter (LCC) technology and synchronous condensers to meet performance requirements.

Manitoba Hydro advised that the three bids for High Voltage Direct Current (HVDC) conversion equipment closed on March 20, 2014. All bids were based on LCC technology. Manitoba Hydro completed its technical review of the proposals by June 20, 2014. The revised control budget was prepared in August of 2014 and approved by Manitoba Hydro's executive committee in August 2014. Manitoba Hydro indicated that it did not advise the Board of cost increases during the NFAT since it took several months to prepare the control budget.

The \$4.65 billion estimate was the final pre-construction estimate prepared by Manitoba Hydro. It is comprised of contracts with varying payment structures, including fixed price (HVDC converter equipment), unit price (transmission line tower foundations, towers, and conductor stringing), and cost reimbursable (camp operations) arrangements.

Of the cost increase from \$4.65 billion to \$5.04 billion, \$106 million is due to increased HVDC converter station costs and \$302 million is due to increased transmission line costs, partially offset by decreases in the Bipole III collector transmission lines and Community Development Initiative. The main reasons for these increases are as follows:

- Increased contingency to address a greater number or consequence of risks;
- Costs related to highway upgrades and the access road to the Keewatinohk converter station which were transferred from the canceled Conawapa project to Bipole III;
- Additional payments to a reserve as specified by a letter of agreement amendment to the Burntwood-Nelson Agreement;
- An increase to the HVDC converter station costs due to commodity (copper, steel, concrete) price escalation;
- Increased transmission line construction costs due to higher actual costs for anchors and foundations than anticipated, delay claims due to weather and material shortages, schedule compression using helicopters to assemble towers and string conductors, and increased costs related to biosecurity;
- Increased transmission line property acquisition costs; and
- Increased vehicle costs.

Independent Expert Consultant Evidence

Amplitude found the costs of the HVDC converter stations and the synchronous condensers to be reasonable. On a cost per megawatt basis, the Bipole III converter stations are within the range of the costs of other converter stations in Canada and internationally, although at the high end of the range. Amplitude explained that this is

reasonable given the remote location of the Keewatinohk converter station, that there are two valve groups per pole compared to one for the comparison stations, and the extreme weather and environmental conditions experienced during construction. Amplitude similarly determined that the Riel synchronous condensers are within the range of other recent projects but at the high end of the range.

MGF found Manitoba Hydro's cost estimating methodologies (with respect to the \$4.65 billion and \$5.04 billion estimates) are consistent with industry standard and best practices. Manitoba Hydro prepared a Basis of Estimate which, in MGF's view, was extremely well done. MGF found Manitoba Hydro's approach to market, tendering of contracts, and contracting methodologies were appropriate.

MGF found the potential for a cost overrun on the HVDC converter stations to be low, due to the fact that most of the remaining work is being performed under fixed price contracts. MGF expects Manitoba Hydro will deliver the transmission line within the estimated cost.

MGF found that Manitoba Hydro has managed the project well. MGF's view is that the project is on schedule but some critical path activities are slipping, specifically work to complete tower erection and conductor stringing. Manitoba Hydro advises that it has addressed this schedule slippage by removing this scope of work from the under-performing contractor and contracting with another construction company to complete this work prior to the end of the 2017/18 winter construction season.

MGF recommends improvements for Manitoba Hydro's estimating processes on future projects, such as having the estimate team prepare the estimate with input from each department and providing supporting back-up and more detailed explanation outlining the structure and relationship between the physical scope of work and resources. MGF

also suggested that a higher contingency, such as a P95 contingency, be used when evaluating the business cases of future projects.

Manitoba Hydro's Position

Manitoba Hydro submits that Bipole III is on schedule for a July 2018 in-service date and is on target to be completed within the \$5.04 billion control budget.

Manitoba Hydro states that the remaining risks to Bipole III relate to schedule and not cost, as the remaining work is predominantly under fixed price or unit price contracts. As such, while the in-service date may slip from July 2018, the cost should not exceed \$5.04 billion. The remaining risks include weather, transmission line contractor performance in erecting towers and stringing conductors, delays in delivery of the final synchronous condenser transformer, and commissioning of the system.

Intervener Positions

The Consumers Coalition states that Manitoba Hydro's proposed use of voltage source conversion technology for the HVDC converters, as was anticipated in the \$3.28 billion cost estimate prepared in 2011, represented a high-risk decision based on new technology that had not been executed at that time. The Consumers Coalition notes that all three HVDC converter equipment vendors rejected voltage source conversion technology in their bids.

Bipole III Western Versus Eastern Routing

In 2005, Manitoba Hydro was instructed by the provincial government to consider a western routing of Bipole III. In the capital project justification prepared by Manitoba Hydro's Transmission business unit and approved by the Manitoba Hydro Executive, Manitoba Hydro identified several reasons why a western routing was inferior:

- Technically inferior solution to the eastern-routed Bipole III line with converters; less load served on average in situations for which the line is to be built.
- Less reliable solution since the west side scheme would still only provide an outlet of 2000 MW of northern generation in the event of another Bipole I & II corridor outage, while an east side Bipole III line would allow the paralleling of Bipole I & II converters on the Bipole III line providing the outlet of 3300 MW of northern generation. Also, the longer line length associated with a western route increases exposure to outages on Bipole III.
- A delayed ISD [in-service date] over an eastern routed line, placing Manitoba customers at greater risk for a longer period of time. A western line will likely take longer for conducting environmental assessment/public work consultation and will take more time to build. The earliest date for initiation of environmental work is after the October 2006 recommendation of an alternative to the east of Lake Winnipeg Bipole III line.
- Justification at a public hearing by Manitoba Hydro of the westerly routing concept vs. an easterly route concept will be problematic.
- Although 1265 km is used as a proxy minimum for the line length, it is likely the actually built line will be considerably longer with more cost and losses, due to efforts to maximize separation from the existing HVDC right of way.
- The siting of Bipole III in a western corridor would make the placement of the next north/south transmission line very problematic with the east of Lake

Winnipeg routing being blocked and the Interlake routing presenting significant risk of a common mode outage.

In 2007, the provincial government finalized its policy decision to build Bipole III with a western routing, rather than the previously planned eastern routing. In its September 20, 2007 letter to the Manitoba Hydro Electric Board, the Government explained as follows:

The Manitoba Government does not regard an east side Bipole III as being consistent with these commitments and initiatives. We recognize the importance of the Bipole III initiative to improving system reliability and accommodating future northern generation. We would encourage the corporation to move ahead with required consultations and planning for an alternative Bipole III route.

With this letter, the provincial government eliminated the eastern route from consideration and mandated that Manitoba Hydro consider alternate routings. Manitoba Hydro had already eliminated the Interlake route because of its proximity to Bipoles I and II. Consequently, the western route was the only route considered by Manitoba Hydro to be feasible. The resulting change to the western routing gave rise to the consequent increase in capital cost associated with the longer western route, although the western routing is technically inferior and leaves Manitoba Hydro customers at greater risk of power outages.

In Order 116/08, the Board noted additional inferiorities with the western routing:

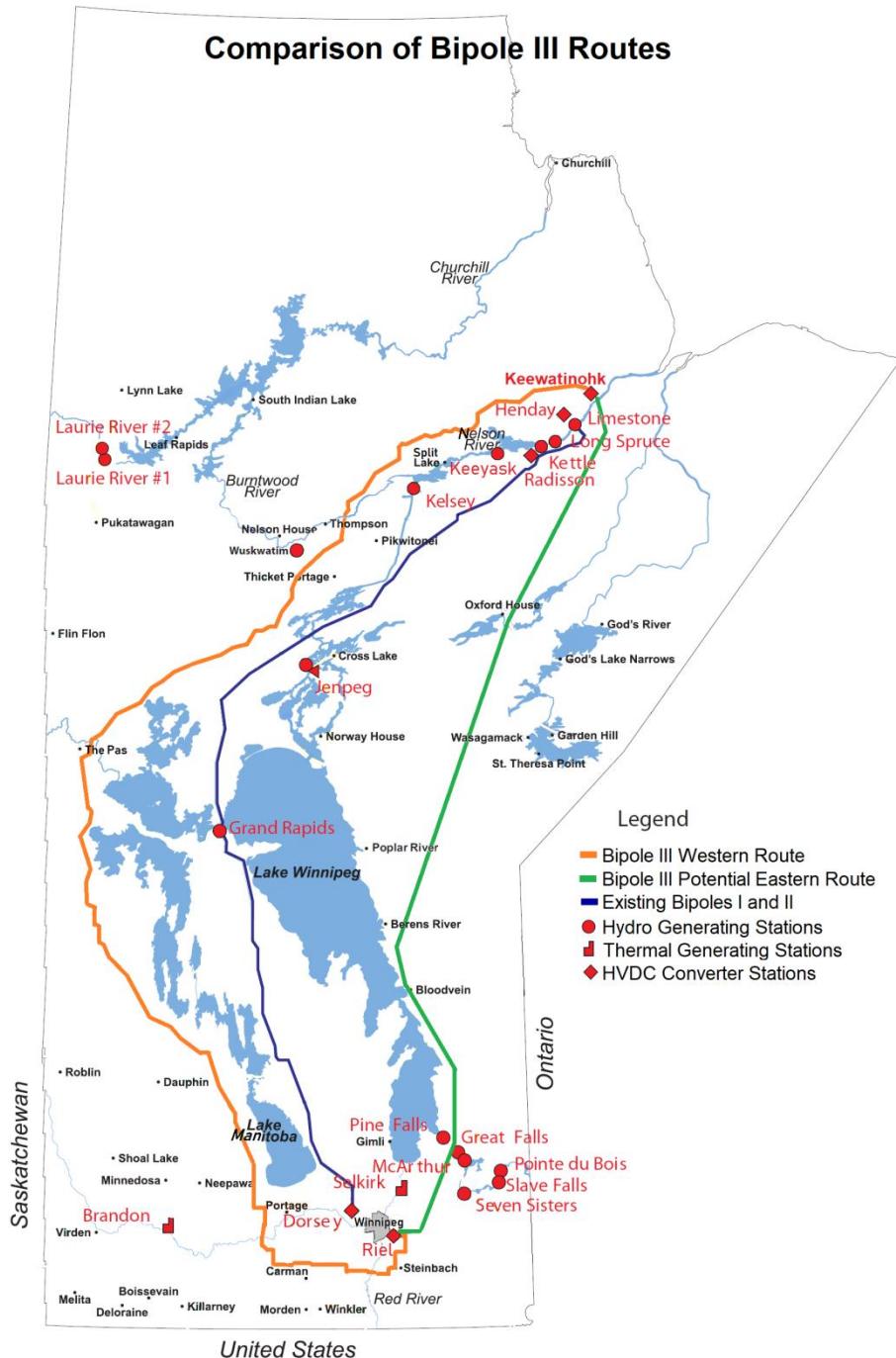
While an East Side Bipole III could function in parallel with existing Bipoles I and II, and in the event of the outage of both, make use of Bipoles I and II converters as well as the new Bipole III converters to provide 3,000 MW to the south, a West Side Bipole III would be limited to using only its own converters and thus could only provide the South with 2,000 MW in such a situation. MH advised that an outage of Bipoles I and II during the summer season could result in an additional cost to the Corporation of \$160 million over the cost that would be incurred if

Bipole III were built down the east side, the extra costs due to a requirement for additional imports to make up for the 1,000 MW differential.

In short, during a major outage of both Bipole I and II, an East Side Bipole III could serve both domestic and firm exports, while a West Side Bipole III would require significant additional needs and presumed expensive imports to meet domestic needs and firm exports.

Boston Consulting Group identified the increased costs of a western routing as \$900 million.

Along with the existing routing of Bipoles I and II, the western and eastern routings of Bipole III are shown in the following map:



Board Findings

The Board finds that the \$5.04 billion control budget amount incorporated by Manitoba Hydro into MH16 Update with Interim for Bipole III is to be used for Integrated Financial Forecast modeling and rate setting in this GRA.

The Board agrees with the Consumers Coalition that Manitoba Hydro undertook unreasonable risk when it developed its \$3.28 billion Bipole III cost estimate in 2011. It appears that Manitoba Hydro had rejected its 2009 internal cost estimate of \$3.95 billion, based on what was referred to as the “classic” LCC technology, in order to try to take advantage of new, unproven voltage source conversion technology. The Board finds that Manitoba Hydro compounded this risk by significantly reducing the contingency amounts. Exploring options to use new, improved technology should not be avoided. However, the Board concludes that when estimating costs for a project that includes new, unproven technology, the contingency amounts should be increased, not decreased as was done by Manitoba Hydro.

During the NFAT, Manitoba Hydro did not inform the Board that all the HVDC converter equipment vendors had bid LCC technology and had rejected the riskier voltage source conversion technology. However, as the Board concluded in Order 73/15, Manitoba Hydro at that time was in a position to know that its \$3.28 billion cost estimate – which included a cost for converter stations of \$1.83 billion – was not realistic and that a cost estimate approaching \$4 billion was realistic.

The provincial government excluded Bipole III from the scope of the Board review at the NFAT; however, all of the development plans considered at the NFAT included Bipole III at a projected cost of \$3.28 billion. The Board finds that, had a more realistic cost of Bipole III been used in the financial analyses, Manitoba Hydro’s debt under all

development plans would have been higher and would be closer to the current projections of debt, as discussed in other sections of this Order.

The Board finds that the \$5.04 billion estimate of the final cost of Bipole III is \$900 million higher due to the western routing of the line compared to an eastern routing. The Board finds that this was a policy decision of government that should be a cost to taxpayers, not Manitoba Hydro's ratepayers. The Board's recommendation is that the payments Manitoba Hydro makes to the Government related to Bipole III be reduced until the \$900 million burden is satisfied, as discussed in another section of this Order.

5.3 Manitoba-Minnesota Transmission Project and Great Northern Transmission Line

The Manitoba-Minnesota Transmission Project ("MMTP") is a single circuit, 883 MW, 500 kV alternating current transmission line starting at the existing Dorsey Converter Station northwest of Winnipeg and connecting at the Manitoba-Minnesota border to the Great Northern Transmission Line ("GNTL"), a new transmission line proposed by Minnesota Power terminating at a new station near Grand Rapids, Minnesota. Together, MMTP and GNTL form a new interconnection between Manitoba Hydro and the Midcontinent Independent System Operator market in the northern United States. MMTP and GNTL facilitate a 250 MW power sale to Minnesota Power beginning June 1, 2020 and ceasing May 31, 2035. MMTP and GNTL were reviewed at the NFAT proceeding. In its NFAT report, the Board recommended these projects proceed.

GNTL is being built in Minnesota by Minnesota Power. Manitoba Hydro, through its wholly-owned subsidiary 6690271 (Manitoba) Ltd., exercises oversight of the construction of GNTL through a Construction Management Agreement with Minnesota

Power. The Agreement grants 6690271 consultation and veto rights over construction decisions. GNTL has received all of its necessary permits for construction.

Manitoba Hydro is responsible for 100% of the construction, operating, and capital maintenance costs of the MMTP. Minnesota Power will fund 28% of the GNTL construction costs, based on the proportion of 883 MW total transmission capacity needed for the 250 MW Power Sale Agreement. Manitoba Hydro will fund the remaining 72% share. Manitoba Hydro is further responsible for 66.7% of the GNTL operating costs. Minnesota Power is responsible for 100% of the GNTL sustaining capital costs.

The new interconnection provides many benefits to Manitoba Hydro, including:

- additional import capacity of 700 MW; the additional winter import capacity allows deferral of new generation by one year,
- reduced import costs by allowing Manitoba Hydro to purchase power at the Minnesota trading hub, avoiding transmission line congestion that can push prices up at the MHEB trading node by 2% to 5% when Manitoba Hydro is importing power,
- improved energy security, emergency response, and reliability benefits in event of drought through increased access to imported power,
- additional export capacity of 883 MW, sufficient to sell the full exportable capacity of Keeyask to the Midcontinent Independent System Operator market under firm transmission,
- economic benefits in average and high flow years as Manitoba Hydro can export more power during more lucrative peak periods and spill less water when the existing interconnection would otherwise be at its maximum export limit, and

- increased prices for exported power through improved bilateral transmission access to the Wisconsin market as well as ability to sell power at the Minnesota trading hub, avoiding congestion and improving prices by 2% to 5%.

Since the NFAT in 2014, the capital cost estimates for MMTP and GNTL have increased. At the NFAT, MMTP was forecast to cost \$350 million; Manitoba Hydro now estimates MMTP to cost \$453 million. In 2014, GNTL was forecast to cost US\$712 million in 2020 dollars. The current cost estimate is confidential and commercially sensitive and was reviewed by the Board *in camera*.

Manitoba Hydro completed the MMTP environmental permitting process before the Clean Environment Commission in 2017 and is awaiting a licence from the provincial government. In late 2017, the National Energy Board (“NEB”) ruled that Manitoba Hydro must proceed with a certification process and not a permitting process, adding some additional cost. The in-service date for MMTP is June 1, 2020, coincident with the commencement of the Minnesota Power 250 MW power sale agreement. Manitoba Hydro indicated that it did not anticipate the NEB certification process would delay the in-service date, but that may be contingent upon obtaining a decision from the NEB prior to that regulator’s March 2019 decision deadline.

MGF found the cost estimate for MMTP to be reasonable, although the estimated cost is low compared to a benchmark of similar transmission line projects.

MGF recommended that Manitoba Hydro prepare a Basis of Estimate to support the MMTP cost estimate. Preparation of a Basis of Estimate is an industry best practice that helps define the project scope, identifies risks and opportunities, provides a record of documents used in development of the estimate, provides a record of communications made during development of the estimate, and facilitates the review and validation of the estimate.

MGF found MMTP to be on schedule, although MGF identified some issues with the excessive complexity in some schedule areas, insufficient detail in other areas, and problems with the logic of the schedules. MGF recommended that Manitoba Hydro update the construction schedule for MMTP more frequently than every two months, which has been Manitoba Hydro's past practice, once construction commences.

MGF found the cost estimate for GNTL to be high compared to a benchmark of similar transmission line projects and high compared with MMTP. MGF recommended that an updated estimate be prepared.

MGF found that the Construction Management Agreement between Minnesota Power and Manitoba Hydro's subsidiary 6690271 Manitoba Ltd. adequately protects the interests of Manitoba Hydro.

Manitoba Hydro's Position

Manitoba Hydro advises that, although still in relatively early stages, both aspects of the United States interconnection project are on schedule and on budget, with a budget of \$453 million for the Manitoba portion of the new interconnection.

Board Findings

The Board finds that the \$453 million control budget amount for the Manitoba-Minnesota Transmission Project and Manitoba Hydro's currently forecast portion of the Great Northern Transmission Line project cost are to be used for Integrated Financial Forecast modeling and rate setting in this GRA. The Board expects that Manitoba Hydro will exercise effective management oversight, including with respect to schedule updates and schedule quality.

The Board recommends that, as suggested by MGF, Manitoba Hydro update the MMTP schedule more frequently than every two months once construction begins, especially considering the potential for a delay impact due to the National Energy Board licensing and certification process for MMTP. Manitoba Hydro is to consider implementing the recommendations made by MGF and report to the Board at the next GRA whether and the extent to which it has implemented these recommendations.

5.4 Manitoba-Saskatchewan Transmission Project

The Manitoba-Saskatchewan Transmission Project is a new 230 kV transmission line that runs from Birtle, Manitoba to Tantallon, Saskatchewan. The Manitoba portion of the line is approximately 44 km in length and together with associated upgrades to Manitoba Hydro's transmission system is expected to cost \$57 million.

The line is being constructed to facilitate a 100 MW export power sale from Manitoba Hydro to SaskPower Corporation. The power sale agreement begins June 1, 2020 and ceases May 31, 2040. The pricing terms of the power sale agreement are confidential and commercially sensitive but were disclosed to the Board at an *in-camera* hearing. Manitoba Hydro indicates that the environmental attributes, such as carbon-free energy produced by Manitoba Hydro's hydroelectric generating stations, are transferred to SaskPower. The price paid by SaskPower includes these environmental attributes as there is no explicit pricing of environmental attributes.

In 2015 and 2016, prior to signing the contract with SaskPower, Manitoba Hydro evaluated the economics of the power sale agreement against the capital and operating costs of the new transmission line. The economic analysis showed that it was in Manitoba Hydro's interest to proceed with the power sale and construction of the transmission line. As this power sale agreement required the construction of new

facilities, approval of the provincial government was sought and obtained through Order in Council.

The power sale agreement was signed in January 2016. The transmission line is currently in the design and licensing phase. Manitoba Hydro anticipates that the transmission line will require a Class 2 environmental assessment. A licence from the provincial government is expected in the second quarter of 2019. The transmission line is expected to be in service in the second quarter of 2021. This is one year after commencement of the power sale agreement. Manitoba Hydro and SaskPower have made alternative arrangements for the period prior to the transmission line entering service.

Daymark Energy Advisors found that, with updated information, the economic analysis indicates that it is still in Manitoba Hydro's interest to proceed with the project.

Board Findings

The Board finds that the \$57 million control budget amount incorporated by Manitoba Hydro into MH16 Update with Interim for the Manitoba-Saskatchewan Transmission Project is to be used for Integrated Financial Forecast modeling and rate setting in this GRA.

The Board finds that the power sale agreement and transmission line project remain economic at this point in time. The Board supports Manitoba Hydro's decision to develop firm export sales to other Canadian jurisdictions including to the west.

6.0 Business Operations Capital

Manitoba Hydro prepares a projection of the capital expenditures needed annually for new and replacement equipment and facilities to meet the electricity requirements in Manitoba and firm export sale commitments outside the province. For Manitoba Hydro's fiscal years ending March 31, 2018 and March 31, 2019, total capital expenditures for its electric operations are forecast to be \$3.0 billion and \$2.6 billion, respectively.

Historically, and until its most current Capital Expenditure Forecast, Manitoba Hydro had three primary categories of capital projects:

1. "Major New Generation & Transmission Projects", such as Keeyask and Bipole III, which increase capacity and energy or provide increased reliability. In this context, increased reliability refers to reliability that was not previously inherent in the system. For example, replacement of an asset that restores the original or "new" reliability is not typically classified as Major New Generation & Transmission.
2. "Major Capital Projects", the category for larger expenditures, typically in excess of \$50 million and with a construction period that usually extended beyond one year, which are not classified as Major New Generation & Transmission projects.
3. "Base Capital Expenditures", also previously referred to as Sustaining Capital, the category for numerous, unspecified projects below the \$50 million threshold. These typically represent expenditures to renew existing assets and facilities (also referred to as "sustainment") replacements, to expand the electrical system to new customers, and to address load growth and requirements for additional capacity.

Under Manitoba Hydro's new management and the most current Capital Expenditure Forecast, capital expenditures are divided between Major New Generation & Transmission projects and Business Operations Capital projects, which combines the former categories known as Major and Base capital projects. Under the new approach, Major New Generation & Transmission projects are those that provide significant new generation and transmission capacity and include projects of a substantial cost. Business Operations Capital projects address requirements to sustain electricity service through renewal of aging or obsolete assets, to expand the electrical system to new customers, to address load growth and requirements for additional capacity, and to enhance system performance and functionality.

Of Manitoba Hydro's \$3.0 billion of total annual capital expenditures in fiscal 2018, approximately \$526 million is forecast to be spent on Business Operations Capital. In future years, the forecast of Business Operations Capital spending is between approximately \$500 million and \$650 million each year, totaling approximately \$13 billion by the end of the 20-year Capital Expenditure Forecast in 2036. Under the Board Act and the Hydro Act, the Board does not have legal jurisdiction to approve Business Operations Capital projects and spending, but only to consider the revenue requirement of those projects for rate-setting purposes.

Manitoba Hydro is an asset-intensive organization that has been managing assets for generations and it has identified the need to mature its asset management practices to maximize value from scarce funding. Due to the magnitude of the past and future Business Operations Capital spending, the Board has long supported the need for Manitoba Hydro to review its spending plans and priorities by incorporating more formal, mature asset management processes.

Asset management involves the balancing of costs, opportunities, and risks against the desired performance of assets to achieve the organizational objectives. Manitoba Hydro defines asset management as the framework of processes and metrics used to make asset life cycle decisions, including operating context (duty cycle), maintenance schedules, and replacements or upgrades in accordance with corporate priorities and risk tolerances to maximize value. In its simplest terms, asset management means providing the required level of service in the most cost effective manner - the "right" work undertaken to achieve the desired performance outcomes in the most efficient and financially responsible manner. Mature and competent asset management enables the application of analytical data-driven approaches to managing assets over the different stages of their life cycle.

In prior Orders, including 116/08 and 73/15, the Board directed Manitoba Hydro to develop asset condition assessments, which are a necessary component of mature asset management processes. Asset condition assessments provide the data necessary with which to make informed asset management decisions. Manitoba Hydro has since developed asset condition assessments and health indices for many of its asset classes, however there are still many asset classes for which there are no condition assessments and the corresponding health indices are based solely on the assets' ages.

In a comparison of Canadian Electricity Association members, Manitoba Hydro ranks in the top quartile for reliability when compared to rural Canadian utilities and in the second when compared to urban utilities. Manitoba Hydro surveys its customers four times a year for their level of satisfaction with the reliability of their electricity service as well as the price. Since 1999, customers have expressed high levels of satisfaction with reliability, while satisfaction with the price is lower. Manitoba Hydro has more limited

survey data concerning customers' preferences for paying higher rates in order to reinvest in Manitoba Hydro's system and maintain the historical high levels of reliability. A 2014 survey indicated that two-thirds of the customers surveyed opposed annual rate increases of 4% to invest in modernizing Manitoba Hydro's system and add generating capacity.

6.1 Manitoba Hydro's Position

In this GRA, Manitoba Hydro identified the need to improve its asset management practices to maximize the value from limited funding. While the Utility is developing more advanced and mature asset management processes, it reports that it is at least three to five years away from being in a position to use these processes in developing its Capital Expenditure Forecast. The proposed spending in the 2016 Capital Expenditure Forecast, which is incorporated into the Integrated Financial Forecast, is based on Manitoba Hydro's long-standing capital planning processes and assumes that historical spending trends will continue into the future.

Manitoba Hydro is developing its new Asset Management Framework in three phases:

- Phase 1: assessment of current asset management practices, through a "gap assessment" performed by UMS Group Inc., an external consultant engaged by Manitoba Hydro in September of 2016;
- Phase 2: development of asset management policies and strategies. Implementation of Phase 2 has not commenced due to competing organizational priorities and the reduction of resources as a result of the Utility's Voluntary Departure Program. A timeline for initiating Phase 2 has not been finalized although it is expected to be in 2018; and
- Phase 3: development of a detailed 'roadmap' for the implementation of a corporate asset management framework at Manitoba Hydro.

Manitoba Hydro implemented a software tool called Copperleaf C55 (“C55”) to assist with asset management, and engaged Copperleaf Technologies Inc. to help with the development of an initial Corporate Value Framework. The purpose of the Corporate Value Framework is to help Manitoba Hydro understand the value of investments and to identify the optimal set of investments across the different business units (Generation, Transmission, and Distribution) which deliver the greatest value.

According to Manitoba Hydro, all Test Year system renewal investments are condition-driven and reasonably required for the safe and reliable operation of the system. However, Manitoba Hydro also gave evidence that \$160 million of capital spending proposed for the 2018/19 Test Year could be deferred. Manitoba Hydro states that a deferral of this magnitude cannot be repeated in future years.

6.2 Intervener Positions

The Consumers Coalition highlights the fact that Capital Expenditure Forecast CEF16 is based on Manitoba Hydro’s historical capital planning processes, not the asset management processes being developed. The Consumers Coalition states that the competence rating given to Manitoba Hydro in the UMS assessment applies to the asset management processes that the Utility is proposing to implement, not the processes that underpin CEF16 and the Test Year spending.

The expert witness retained by the Consumers Coalition, METSCO Energy Solutions (“METSCO”), was critical of Manitoba Hydro for implementing the C55 software prior to the development of the asset management roadmap and in advance of Manitoba Hydro understanding how the software will be used and what it will achieve.

The Consumers Coalition further submits that, while Manitoba Hydro engineers know their system and deliver good reliability results, the Utility has not demonstrated that it does so in a cost effective manner. Manitoba Hydro may not be doing the right project at the right time. The Consumers Coalition states that Manitoba Hydro does not have a consistent definition of risk that can be used across the three business units: Generation, Transmission, and Distribution. The Utility also does not have a means of planning and prioritizing capital spending across the different business units or across the different geographical areas it serves. For example, Manitoba Hydro may be spending on a Transmission project when the greater need and the greater reliability benefit may be realized with a Distribution project.

In addition, the Consumers Coalition argues that Manitoba Hydro has underspent on Business Operations Capital by 18% over the past three years compared to its planned spending, indicating that Manitoba Hydro's estimates for Test Year Business Operations Capital spending cannot be relied upon for rate setting purposes.

The Manitoba Industrial Power Users Group noted the assessment of the Boston Consulting Group that the equity ratio benefits from reduced spending on Business Operations Capital. In what was described by the Boston Consulting Group as a "Realistic 5-year Change", the deferral of low value capital projects totaling \$100 million per year for five years shows a sustained benefit to the equity ratio through the year 2035 (i.e. the deferral was not depicted as a temporary change). In the view of the Manitoba Industrial Power Users Group, Manitoba Hydro has opportunities to reduce its Business Operations Capital spending, and has proven in the past that it is capable of reducing expenditures from forecast amounts.

6.3 Board Findings

The Board finds that, while in a period of major capital spending on Keeyask and Bipole III, Manitoba Hydro should find savings in Business Operations Capital.

The Board does not accept the Business Operations Capital spending forecast in Capital Expenditure Forecast CEF16. The Board does not accept that all Test Year investments are condition-driven and reasonably required for the safe and reliable operation of the system. The Board finds that Business Operations Capital spending can be safely decreased by \$160 million, based on Manitoba Hydro's evidence that it can defer \$160 million of spending in the Test Year. This is consistent with the Board's findings in Order 73/15 that Manitoba Hydro has not adequately evaluated the long-term pacing and prioritization requirements for Business Operations Capital spending. In that Order, the Board did not endorse Manitoba Hydro's long-term Business Operations Capital plan. The Board accepts the evidence that Manitoba Hydro can reduce the level of spending from its forecast and has shown that it has done so in the past, as with the Gillam Town Site Redevelopment project and with the lower spending in the past three years than was originally forecast.

Based on the suggestion of the Boston Consulting Group in its initial report that the spending reductions can be maintained over a longer period, this issue will be revisited at future GRAs. Reducing Business Operations Capital helps offset the expenditures on Keeyask, which are anticipated to mostly be complete by 2023. Reductions in Business Operations Capital result in a reduced need to borrow funds and will enhance Manitoba Hydro's cash flow. Furthermore, the additional reliability obtained from Bipole III and additional generating capacity from Keeyask mean Manitoba Hydro will have added system-level redundancy, reducing the need for non-critical generation investments.

In addition to the positive impact on Manitoba Hydro's cash flow, reducing Business Operations Capital also results in improvement to the debt-to-equity ratio. Manitoba Hydro's analysis also shows that a reduction of capital spending of \$100 million annually increases its retained earnings by \$414 million after 10 years.

The Board accepts METSCO's evidence that Manitoba Hydro cannot demonstrate the proposed spending is necessary or has been optimized to any extent. Manitoba Hydro acknowledges that it has not evaluated alternative Business Operations Capital spending scenarios or the performance and reliability impacts of different Business Operations Capital spending levels.

The Board recognizes that Order in Council 92/2017 does not give the Board authority to direct Manitoba Hydro to amend its planned Business Operations Capital spending. Rather, the Board has factored into its rate decision the reduction in Business Operations Capital of \$160 million. Manitoba Hydro can decide whether to accept the Board's finding and reduce its Test Year Business Operations Capital spending, or to incur additional debt in order to maintain spending at the proposed levels in CEF16.

The reduction in spending on Business Operations Capital in no way diminishes Manitoba Hydro's responsibility and obligation to provide for an ongoing safe and reliable supply of energy to its customers in the most efficient and environmentally sensitive manner. The Board expects that Manitoba Hydro will appropriately assess, plan, and prioritize Business Operations Capital spending in order to meet its obligations in this regard.

The Board finds that Manitoba Hydro has taken initial steps towards developing asset management processes, and is to be commended for doing so in order to better ensure that the financial resources allocated to Business Operations Capital bring maximum

value to the Utility's ratepayers. Further to the direction from Orders 116/08 and 73/15, Manitoba Hydro has developed asset condition assessments for some asset classes, but the health of certain asset classes is characterized solely by the age of the assets. Manitoba Hydro must continue to develop asset condition assessments for all of its major asset classes so that it has the necessary data to make prudent spending decisions within its asset management framework.

At present, Manitoba Hydro prioritizes its capital spending based on the views and experience of its subject-matter experts in Generation, Transmission, and Distribution. Manitoba Hydro has not yet developed processes and practices that would enable it to objectively compare the value of different projects across its business units, nor can Manitoba Hydro quantify in terms of increased reliability the impact of spending on a generation project compared to a transmission project compared to a distribution project. More mature asset management processes, including a more complete set of asset condition assessments, are required so that Manitoba Hydro is in a position to objectively prioritize and optimize its spending across business units based on a common definition of risk.

The Board understands that developing a modern asset management system takes time and wishes to monitor Manitoba Hydro's progress. Manitoba Hydro is directed to hire an independent consultant to assess the Utility's progress with the development of its asset management program and in addressing the recommendations made by its consultant, UMS. The consultant is to also assess progress with the development of the Corporate Value Framework. Manitoba Hydro is to file with the Board by June 29, 2018 the Terms of Reference for the consultant for the Board's review and comment. Manitoba Hydro is directed to report back to the Board on its progress and the result of the consultant's assessment at the next GRA.

The Board acknowledges the contributions from past and present Manitoba Hydro personnel in designing, constructing, and maintaining the electrical system. Clearly, with top quartile reliability, Manitoba Hydro has constructed, operated, and maintained an outstanding electrical system to the benefit of Manitobans. With this Order, the Board does not intend to diminish these contributions, but it does recognize the cost pressures that result from the capital program that includes Bipole III, Keeyask, and a new interconnection with the U.S. Those cost pressures mean that Manitoba Hydro can no longer continue to fund Business Operations Capital at its historic levels unless and until it can demonstrate through mature asset management processes that those investments are necessary.

7.0 Demand Side Management Spending

Demand side management is a common utility strategy for reducing consumer demand for energy in order to defer the need for new generation assets. Manitoba Hydro's Demand Side Management Plan, marketed under the Power Smart brand, involves various education and incentive programs aimed to reduce domestic consumption of both electricity and natural gas.

Manitoba Hydro combines the impacts of demand side management activities with the load forecast to represent the forecast net load, which is used to forecast domestic revenues in the Integrated Financial Forecast.

As noted above, *The Efficiency Manitoba Act* creates a new Crown Corporation, Efficiency Manitoba, which will have a mandate to provide demand side management programming. *The Efficiency Manitoba Act* requires annual net electricity energy savings of 1.5% of sales (compared to the previous year's weather-normal consumption) for the first 15 years of operation; however, this target can be changed by regulation. Until Efficiency Manitoba develops its long-term demand side management plan, Manitoba Hydro intends to carry forward its 2016/17 15-year Demand Side Management Plan, with one-year plans continuing to be developed.

Manitoba Hydro seeks to pursue all cost effective demand side management opportunities. The Utility assesses the cost effectiveness of demand side management programs against its marginal value of electricity. The assessment of the cost effectiveness considers the leveled resource cost of each program, taking into account, on a per kilowatt-hour basis, the combined incremental cost of the installed program plus any administrative costs associated with promoting the program. The

marginal value is the value to the Utility's system of deferring an increment of load growth to Manitoba Hydro's integrated system.

Marginal value is determined based on each of the components of serving residential load: generation supply, bulk transmission capacity, and distribution capability. The transmission and distribution components are based on a one-year deferral of planned capital additions to meet ongoing capacity requirements. The generation marginal value is based on the value for each of generation capacity and generation energy. In 2017, Manitoba Hydro changed its methodology for calculating the value of generation capacity. Previously, generation capacity was valued using the potential for sales of capacity on the export market. Under the new methodology, Manitoba Hydro values generation capacity on the basis of the deferral of a new generation resource in Manitoba. Under the 2017 methodology, generation energy continues to be valued using the forecast price of energy sales on the export market.

In assessing each individual program, Manitoba Hydro considers the capacity and energy benefits over a period of time, including variations in marginal value by time of day, season, and year. As a result, a specific program may have a levelized cost that is higher or lower than the long-term average marginal value. However, in general terms, when the levelized cost of a program is below the marginal value, Manitoba Hydro considers the program cost effective. This means that, over the life of the program, there is an economic return to the Utility with respect to generation, transmission, and distribution benefits that arise from the energy savings achieved through the program.

The programs in the 2016/17 plan are measured against the 2015/16 levelized electric marginal value of 7.8 ¢/kWh. The planned levelized total resource cost of the individual electric demand side management opportunities, including both the customer's and Manitoba Hydro's investment, range from 1.1 to 13.6¢/kWh, with an average of

3.7¢/kWh for the portfolio of programs as a whole. The average leveled utility cost, or the cost of solely the Utility's investment leveled over a fixed time period, is 1.6¢/kWh for the entire electric demand side management portfolio.

During the course of the GRA proceeding, Manitoba Hydro filed updated marginal value information. The marginal value has decreased to 5.75¢/kWh for generation when serving residential customers. Although the marginal value has decreased by 28%, Manitoba Hydro does not plan to reassess the cost effectiveness of its demand side management programs under a total resource cost test because of the anticipated transfer of programming to Efficiency Manitoba.

Manitoba Hydro's 2016/17 15-year plan seeks to realize electricity savings of 1.2% of the annual average load over the next 10 years, with a Utility investment of \$1.2 billion over the next 15 years. Manitoba Hydro's 2017/18 Demand Side Management one-year plan seeks to realize electricity savings of 238 MW and 310 GWh in 2017/18, with an electric utility investment of \$58.7 million. Of that amount, \$43.7 million was spent as of November 30, 2017. For the 2018/19 Test Year, Manitoba Hydro forecasts Power Smart electric capital and operating spending of \$101.1 million for electric capital and operating spending.

The evidence is that demand side management spending exerts an upward pressure on consumer rates. Retained Earnings would be \$4.2 billion greater by 2036 if no money was spent on demand side management and no energy savings achieved. While demand side management energy savings can be sold into the export market, there is currently a differential between domestic and export prices, which leads to lower overall revenues for Manitoba Hydro.

7.1 Manitoba Hydro's Position

Manitoba Hydro's position is that, while there continues to be uncertainty in how Efficiency Manitoba will pursue its mandate, it would be poor planning to arbitrarily reduce forecasted demand side management in the face of a legislative mandate that exceeds Manitoba Hydro's current plan. Manitoba Hydro argues that assuming savings on programming that is moving from Manitoba Hydro's control, but not its financial responsibility, is imprudent. Manitoba Hydro estimates that an additional \$1 billion in Utility investment, over and above the currently planned \$1.2 billion investment, is needed to meet *The Efficiency Manitoba Act* annual savings target of 1.5% of sales.

7.2 Intervener Positions

The Consumers Coalition raises significant concerns about the reliability of projected demand side management expenditures due to a demonstrable failure by Manitoba Hydro to undertake post-NFAT integrated resource planning. Specifically, the Consumers Coalition's position is that Manitoba Hydro has not demonstrated optimized demand side management spending, given excess load, reduced marginal cost thresholds, and the flexibility that exists under *The Efficiency Manitoba Act* to make recommendations regarding appropriate targets. With respect to the latter, the Coalition argues that the legislation supports an ongoing dialogue about the target itself and any efficiency plan that Efficiency Manitoba puts forward. This dialogue should include issues related to accessibility of demand side management programs for all ratepayers. In addition, declining marginal values may leave some demand side management uneconomic.

The Consumers Coalition submits that the Board should direct the formation of a working group on integrated resource planning, involving stakeholders, Efficiency Manitoba, and Manitoba Hydro. The Board should also recommend that funds paid by Manitoba Hydro to the Province be used to fund more extensive demand side management programs specifically targeted to lower-income and high consumption consumers.

The Green Action Centre submits that the Utility's revenue requirement should include sufficient additional funds in a dedicated account to cover rate discounts for the energy poor. As well, these funds should support more aggressive demand side management in order to meet the legislated targets and provide geothermal heating system subsidies as a rate mitigation measure for electric space heating customers.

The Manitoba Industrial Power Users Group argues that it is not apparent that Manitoba Hydro's "status quo" approach to demand side management is reasonable given that export prices and related marginal values have materially declined. The level of demand side management spending included in the financial forecast should be consistent with integrated resource planning, including a material reduction to reflect the decrease in marginal value by approximately one-third. Demand side management should be encouraged where it is proven cost-effective, including where it can benefit customers to manage electricity bills without negatively affecting other ratepayers.

7.3 Board Findings

The Board finds that Manitoba Hydro's revenue requirement should be reduced to reflect lower demand side management spending as a result of the new lower marginal value. The Board agrees with the Manitoba Industrial Power Users Group that the level of demand side management spending included in the financial forecast should be

consistent with integrated resource planning, including a material reduction to reflect the decrease in marginal value by approximately one-third. As discussed below, the Board also recommends that Manitoba Hydro reduce its demand side management expenditures from the level incorporated in MH16 Update with Interim that targets 1.2% in energy savings on average in each year over the next 10 years.

The Board's approved rate increase takes into consideration a reduction in demand side management spending as well as an increase in domestic load that will result from fewer demand side management programs. This reduction in the revenue requirement is appropriate for rate-setting purposes while Manitoba Hydro remains responsible for demand side management spending and programming. Considerations other than the reasonableness of expenditures for rate-setting purposes will apply once Efficiency Manitoba has assumed demand side management programming and presents a demand side management plan to the Board for review.

While Manitoba Hydro has forecast demand side management spending to achieve energy savings over the next 10 years at a level of 0.3% below the energy savings target in *The Efficiency Manitoba Act*, the amount of spending is not justified for the Test Year. Efficiency Manitoba is not yet operational and once it is, there are legislated steps that must occur prior to the entity's implementation of an approved efficiency plan. The adverse rate impacts that arise from Manitoba Hydro's plan are not reasonable in the present context.

Reduced demand side management spending for rate-setting purposes is supported by the change in circumstances since the NFAT review in 2014. In 2014, new generation resources – such as Keeyask - were required as early as 2024 under the load forecast accepted in the NFAT Report, with additional generation resources needed by 2030. With reductions to the load forecast since 2014, including the loss of expected Top

Consumer Petro/Oil/Gas sector loads, the next new generation resource is not needed until approximately 2040, even with new export contract obligations since the NFAT. The 2017 marginal value is lower than the 2013 marginal value by approximately one-third, which affects the economics of demand side management programs. As well, as noted by Manitoba Hydro and expert witnesses in the proceeding, rate increases above inflation will themselves have a conservation impact.

The Board finds that, in light of the new, lower, levelized marginal value, some of Manitoba Hydro's demand side management programming may no longer be cost effective. This was acknowledged by Manitoba Hydro witnesses and is not contested. Consumer rates should not, at this time, recover the costs of demand side management programs that are no longer cost effective, unless justified by having a lower-income target market. Given the evidence adduced in this proceeding about energy poverty and bill affordability, it is reasonable for consumer rates to recover the costs of lower-income demand side management programs, even if not cost effective as assessed against the new lower marginal value.

In light of the above, the Board recommends that Manitoba Hydro reduce its demand side management spending. Manitoba Hydro should review its demand side management programming for cost effectiveness and cease or modify spending on programs that are no longer cost effective, except for programs targeted at lower-income and First Nations on-reserve consumers. In addition to continued Utility investment in lower-income demand side management programs, the Board recommends that the provincial government amend Efficiency Manitoba's mandate to explicitly include consideration of bill affordability. This would include targeting of lower-income consumers with demand side management programs, as well as consideration of the impact of demand side management costs being paid by non-participants.

Amendment of Efficiency Manitoba's mandate to include bill affordability is appropriate in light of the interplay between demand side management, which seeks to mitigate the impact of rate increases, and bill affordability. The Board remains concerned about bill affordability, including in the context of projected annual rate increases over the forecast period. As such, lower-income demand side management programs that are uneconomic or do not meet a cost-effectiveness assessment should continue to be pursued once the transfer to Efficiency Manitoba is complete.

Finally, the interrelationship between demand side management, the need for new generation resources, and the cost of those resources reinforces the recommendation in the NFAT Report that integrated resource planning be implemented in Manitoba.

From one perspective, Manitoba Hydro is financially worse off over the forecast period for undertaking demand side management due to the difference between domestic rates and the price for which Manitoba Hydro can sell energy saved by domestic customers into the export market. However, this analysis neglects the benefits of deferring new generation resources that may be considerably more expensive than the aggregate demand side management investments. For example, in its NFAT report, the Board concluded that:

...treating the DSM savings from the Supplemental 2014 Power Smart Plan as a separate, independent energy resource, yields capacity savings that amount to more than 80% of the net system capacity addition from the proposed Conawapa Project. Similarly, the annual dependable energy savings from the Power Smart Plan exceed 85% of the dependable energy output from the proposed Conawapa Project. To achieve these electricity savings, Manitoba Hydro budgets to spend \$822 million, which is less than 8% of the \$10.7 billion cost of building Conawapa.

In the current proceeding, by 2031, the 2016 Demand Side Management Plan is expected to deliver capacity and energy savings of 1,232 MW and 4,506 GWh at a cost of \$1.2 billion. This compares to Keeyask, which provides 630 MW of winter peak capacity and 4,400 GWh of energy in an average year, at a cost projected by Manitoba Hydro to be \$8.7 billion. This is illustrative of the importance of integrated resource planning.

8.0 Export Revenue Forecast

Manitoba Hydro cites a deterioration of its anticipated export revenues as a factor in the Utility seeking higher domestic rate increases than in previous rate applications. While export prices are still forecast to increase over time, that increase is less than previously expected by Manitoba Hydro. Manitoba Hydro now tempers its export price growth as the outlook for low costs of fossil fuel continues and also because American utilities have local options for carbon-free electricity.

A higher forecast of export prices, all else equal, will require lower revenues from domestic ratepayers on a forecast basis. However, if the export price forecast is projected at a level higher than actual revenues achieved, then Manitoba Hydro will not realize the expected export revenues and, as a result, domestic ratepayers will be asked to pay higher rates to make up the shortfall.

Manitoba Hydro's export revenue forecast is comprised of three main components:

- The volumes of energy and generation capacity that are surplus to the needs of Manitobans.
- The forecast of export prices for the surplus energy and capacity. Manitoba Hydro predominantly has two types of export sales: firm, also known as dependable, and opportunity. Firm export energy sales are made from energy which is forecasted to be available if the worst drought conditions previously experienced are repeated. Firm capacity sales are made from energy that is surplus to domestic needs based on winter or summer peak demand. Opportunity sales are from energy that is surplus to domestic requirements and firm sales.
- The revenues from firm export contracts that Manitoba Hydro has negotiated with counterparties.

The exportable volumes are determined based on Manitoba Hydro's domestic load forecast and the generating capability of the Utility's resources. Export revenues are forecast for the first year in the Integrated Financial Forecast based on the actual water inflow conditions, the most current reservoir and lake level elevations, and the expected inflows through to the end of the fiscal year. For the second forecast year, export revenues are now determined for each of the entire range of flow conditions based on expected reservoir levels. Previously, Manitoba Hydro determined the export revenue projections for the second year by using a single median flow scenario and expected reservoir levels. For the third and subsequent years of the forecast, the methodology is unchanged from previous and export revenues are determined for each of the entire expected range of flow conditions and reservoir levels. For each of these 'flow cases' for the second and subsequent years, Manitoba Hydro calculates the expected export revenues by multiplying the exported volumes by the forecasted price. Manitoba Hydro then averages the expected export revenues to arrive at a forecast of export revenues for each year of the financial forecast.

8.1 Manitoba Hydro's Position

To forecast export prices, Manitoba Hydro continues to use a consensus forecast for a 'reference case' derived from the equal weighting of four independent price forecasting consultants; however, as in the past, the Utility has made its own adjustments to the export price forecast.

In this GRA, Manitoba Hydro has removed the premium that has historically been applied to uncontracted long-term dependable energy forecast prices because utilities in the Midcontinent Independent System Operator market have other, competitive options for long-term, fixed-price, and carbon-free energy supplies. The Utility also removed the value of capacity from the pricing of potential uncommitted export sales made from

surplus capacity as there is surplus capacity in the Midcontinent Independent System Operator market. The financial effect of Manitoba Hydro's revisions to the export price forecast is to value all surplus energy at opportunity prices rather than ascribe a higher value for its dependable surplus product.

Lost opportunity export revenues from the delay in the Keeyask in-service further decrease export revenues.

Manitoba Hydro assumes no new firm long term contracts will be negotiated for the substantial surplus dependable energy and capacity in the 20-year forecast. Manitoba Hydro further assumes existing long-term firm contracts will expire without negotiating extensions.

The following is the current list of Manitoba Hydro's long term contracted export sales:

Power Sale Contract	Contract Start	Contract End
Minnesota Power 50 MW System Participation	May 2015	May 2020
Minnesota Power 250 MW System Participation	Jun 2020	May 2020
Minnesota Power 50 MW ZRC System Participation	Jun 2017	May 2020
Great River Energy 200 MW Seasonal Diversity	Nov 2014	Apr 2030
Northern States Power 125 MW System Power	May 2021	Apr 2025
Northern States Power 375/325 MW System Power	May 2015	Apr 2025
Northern States Power 350 MW Seasonal Diversity	May 2015	Apr 2025
Northern States Power 75 MW Seasonal Diversity	Jun 2016	May 2020
Wisconsin Public Service 100 MW Sale	Jun 2021	May 2027
Wisconsin Public Service 108 MW System Participation	Jun 2016	May 2021
SaskPower 100 MW System Participation	Jun 2020	May 2040
SaskPower 25 MW System Participation	Nov 2015	May 2022
American Electric Power 79 MW ZRC	Jun 2016	May 2018
American Electric Power 50 MW ZRC	Jun 2018	May 2020
Basin Electric 50 MW ZRC System Participation	Jun 2018	May 2020
Basin Electric 50 MW ZRC System Participation	Jun 2020	May 2021
NextEra 30 MW ZRC Sale	Jun 2015	May 2018
NextEra 100 MW ZRC Sale	Jun 2016	May 2018

Source: Appendix 3.1, pg 16

8.2 Independent Expert Consultant Evidence

Daymark Energy Advisors reviewed Manitoba Hydro's forecast of exportable volumes of energy and capacity and found those forecasts reasonable. Daymark assessed the revenues from Manitoba Hydro's firm export contracts and likewise found those revenues reasonable and were appropriately included in Manitoba Hydro's forecast of total export revenues.

In Daymark's view, Manitoba Hydro did not demonstrate that the independent price forecasts it purchased from the four external forecasting firms were "reference case" or "P50" forecasts, and therefore the resulting average of these forecasts may not be a true P50 forecast.

Daymark found that Manitoba Hydro did not use the consensus forecast for capacity prices. Daymark also found that not including a dependable energy premium or any revenue potential for capacity sales does not result in a P50 forecast, but rather a P100 forecast. Daymark found that not including the premium or capacity value may be reasonable in the short term but not in the long term, as there is evidence that the Midcontinent Independent System Operator market will be short capacity by 2022 and United States Federal and State policies may still favour Manitoba Hydro's carbon-free, firm electricity exports.

In summary, Daymark found that Manitoba Hydro's export revenue forecast is conservative or low relative to Manitoba Hydro's stated goal of having a P50 forecast of export revenues.

8.3 Intervener Positions

The Consumers Coalition argues that Manitoba Hydro's export revenue forecast is biased low as it is based on policy decisions, is not a true "P50" forecast (i.e. results being higher 50% of the time and lower 50% of the time), and does not reflect the benefits of Manitoba Hydro's new transmission interconnection with the Midcontinent Independent System Operator market in the United States. The United States Federal Energy Regulatory Commission and the United States Energy Information Administration reports support the view of Daymark that Manitoba Hydro's export forecast is conservatively low. The Consumers Coalition submits that this puts unnecessary upward pressure on the domestic rate increases.

The Manitoba Industrial Power Users Group maintains that Manitoba Hydro's Integrated Financial Forecast should include the best estimate for the prices at which the Utility can sell its surplus capacity and energy, including values for capacity, premiums, and

continuing bilateral contracting arrangements. Manitoba Hydro is being pessimistic by assuming its major export contracts that expire in 2025 will not be renewed or replaced with anything that offers more than opportunity export energy value. Manitoba Hydro has assumed the worst-case scenario, and as such the Utility's approach is inconsistent with P50 forecasts in an integrated financial forecast. This Intervener argues that this should be considered by the Board in determining the appropriate rate increases to be awarded.

8.4 Board Findings

The Board finds Manitoba Hydro's forecast of export revenues to be conservative such that, on a probability basis, it will under-forecast the revenues expected to be realized from export sales. Under-forecasting export revenues results in Manitoba Hydro forecasting a need for higher domestic rates. Manitoba Hydro's failure to provide a "P50" probability export revenue forecast is a factor considered by the Board in reducing the rate increase requested by the Utility.

Accepting the evidence of Daymark Energy Advisors, the Board finds Manitoba Hydro's export revenue forecast to be conservative for the following reasons:

- Manitoba Hydro's export revenue forecast is not consistent with a financial forecast that has a probabilistic goal of P50; and
- Manitoba Hydro's change of methodology - to remove capacity values and dependability premiums from the substantial surplus dependable energy - is reasonable in the near term, but is not reasonable in the long term as it biases the export forecast to be low and is not consistent with third party forecasters nor with the needs in the Midcontinent Independent System Operator and Minnesota markets.

Despite Manitoba Hydro purchasing capacity price forecasts from four independent price forecasters, Manitoba Hydro did not use these forecasts to develop a consensus capacity price forecast, and instead assumed zero capacity prices and revenues. With respect to the carbon price forecasts of the independent price forecasters, Manitoba Hydro argued that the goal to have an unbiased consensus forecast is achieved by accepting other experts' views of the future and not imposing its own biases by choosing forecasts to produce a predetermined result. Yet, it appears Manitoba Hydro did not do this when it ignored the consensus forecast of capacity prices and instead forecast zero capacity prices and revenues.

Additionally, the Board finds that Manitoba Hydro's export revenue forecast is low as it does not reflect the estimated 2% to 5% increase in export prices (and 2% to 5% reduction in import prices, which will increase the net export revenues) that will be achieved once the Manitoba-Minnesota Transmission Project and the Great Northern Transmission Line are in service.

9.0 Load Forecast

Manitoba Hydro's electric load forecast is used for several purposes. Short-term forecasts of sales are needed to forecast revenue for rate design and accounting purposes. Short-term forecasts of energy and peak demand are needed for system operations planning. Long-term forecasts of energy and peak demand are required for power planning to determine long-term supply requirements. Manitoba Hydro's 2017 Electric Load Forecast was created as the Utility's best estimate of Manitoba's future energy requirements on a P50 basis, meaning there is a 50% chance that the future load will exceed the forecast and a 50% chance that it will be less than the forecast.

9.1 Manitoba Hydro's Position

In this GRA, Manitoba Hydro cites a reduced forecast of domestic load growth as a contributing factor for the deterioration in the Utility's financial outlook. The reduced forecast of domestic load growth delays the Manitoba domestic need for energy from Keeyask until the mid-2030s and also, in the Utility's view, lessens the opportunity for Manitoba Hydro to look to load growth to address its financial challenges.

Manitoba Hydro expects no net load growth over the next 10 years when the impact of its current Demand Side Management Plan is included. Over the next 20 years, the net load growth is expected to average 0.7%. Manitoba Hydro identified several other factors that will further depress its load forecast that were not incorporated into the 2017 Electric Load Forecast. One factor is the cancellation of a project in the Top Consumers' Petroleum/Oil/Gas sub-sector that will reduce the load forecast by approximately 500 GWh in 2021. Another factor not included in the 2017 Electric Load Forecast is the six years of 7.9% rate increases that form part of Manitoba Hydro's current plan. The 2017 forecast is based on five years of 7.9% rate increases.

The primary driver of energy load growth in Manitoba is the population and the secondary driver is the economy. The population of Manitoba has grown from 1,185,000 people in 2006/07 to 1,323,000 people in 2016/17, averaging 1.1% growth per year. Manitoba's population is forecast to grow to 1,638,000 by 2036/37, averaging 1.1% per year. 'Real' (i.e. with inflation removed) Manitoba Gross Domestic Product ("GDP") is expected to grow 2.0% in 2017/18 and average 1.6% annually for the next 20 years.

The three main components of Manitoba's electricity use are:

- Residential Basic, with 480,365 customers, including mostly residential structures that include single-family dwellings, multi-family dwellings, and individually metered apartment suites. This residential component of the Load Forecast accounts for 32% of Manitoba Hydro's Total Consumer Sales and is projected to grow at an average rate of 1.3% per year over the next 20 years (excluding demand side management impacts). Customer growth, paralleling population growth, is growing 1.1% per year.
- General Service Mass Market, with 67,676 customers, are small to large commercial and industrial customers. The load growth for this group of customers accounts for 41% of Manitoba Hydro's Total Consumer Sales and is forecast to grow at an average of 1.5% per year (excluding demand side management impacts), which is higher than the historic growth of 1.1% per year over the past 10 years. The growth is primarily due to expected growth in residential customers and GDP.
- General Service Top Consumers, are 10 high-usage companies with 26 individually metered accounts that are forecast individually. This group of customers accounts for 26% of Manitoba Hydro's Total Consumer sales.

The load growth for these Top Consumers customers is forecast at an average rate of 0.9% per year, which is higher than the 0.2% growth per year experienced during the past 10 years. However, it is less than the 3.2% growth per year

during the period 10 to 20 years ago. The 20-year historical growth of the Top Consumers has been 1.7% per year.

9.2 Independent Expert Consultant Evidence

The Board engaged Daymark Energy Advisors as Independent Expert Consultants to assess Manitoba Hydro's load forecasting methodologies, evaluate historical performance, and assess changes between the Utility's 2014 and 2017 load forecasting methodologies. Daymark concluded that Manitoba Hydro's changes to the forecasting methodology for Potential Large Industrial Load for the Top Consumers category result in a more conservative methodology and significantly reduce the load forecast. Daymark also concluded that Manitoba Hydro has not fully considered fuel switching or the short-term impact of the proposed and projected rate increases on Top Consumers, which could reduce the load forecast and cause the forecasted loads to be lower than the actual future loads. This Independent Expert Consultant also gave evidence that Manitoba Hydro's estimated price elasticity for all sectors of customers may not be reliable. Price elasticity estimates the responsiveness of electricity demand to changes in the price of electricity.

Daymark recommended improvements to Manitoba Hydro's load forecasting methodology, as follows. According to Daymark, Manitoba Hydro should:

- incorporate scenario analysis into its load forecasts. Scenarios should be based on plausible alternative futures. Such scenarios may entail a combination of factors such as high or low growth of population, GDP, or electric vehicles, or high or low adoption of energy efficiency. Considering different scenarios allow utilities to more effectively plan and understand where and how future loads may differ from present forecasts,

- perform probabilistic assessments of the load forecast to determine the sensitivity to input variables such as population or GDP forecasts. This would help Manitoba Hydro and stakeholders understand the uncertainties in the load forecast,
- utilize more than two years of load history to determine the weather dependency of electricity consumption,
- utilize fewer than 25 years of weather data to generate the normal weather baseline, and
- test its econometric models for statistical concerns, such as multi-collinearity.

Dr. Yatchew, an Independent Expert Consultant retained by the Board to provide economic analysis, assessed the likely impacts on and responses of various customer groups to rate increases of the magnitude included in Manitoba Hydro's financial plan as well as the implications for the economy as a whole. Dr. Yatchew found offsetting forces such that electricity price increases will cause a reduction in consumer demand but, as the provincial Gross Domestic Product grows over time, the consumption of electricity to support that economic growth will increase. Factoring in Manitoba Hydro's requested and projected 7.9% rate increases in its 10-year financial plan as well as the expected provincial growth, the net result is that load in Manitoba is likely to be stagnant over the coming decade.

9.3 Intervener Positions

The Consumers Coalition accepts Manitoba Hydro's price elasticity values as being reasonable but questions the conservatism used by the Utility in forecasting long-term load as well as the significant uncertainty relating to the mobility of large industrial customers who may respond to large rate increases by relocating businesses. This Intervener recommends that Manitoba Hydro revise its methodology for estimating the

load of the large industrial customers as well by providing alternative load forecast scenarios through stochastic modelling.

The Manitoba Industrial Power Users Group compared Manitoba Hydro's 2013 Electric Load Forecast, which underpinned development Plan 5 – which is akin to the plan recommended by the Board and which includes Keeyask and the new interconnection with the United States – at the NFAT proceeding, with the 2017 Electric Load Forecast. Compared to the 2013 forecast, in the year 2026/27, there is a 7.1% decrease in load. Of that decrease, approximately 5.3% arises due to customer responses to the assumed five years of 7.9% rate increases as compared to 3.95% rate increases assumed for the NFAT forecast. Absent the effect of successive 7.9% rate increases on load growth, the decline in the load forecast would only be approximately 1.8%, with some portion of this smaller decrease attributable to assumed demand side management activities. Put another way, this Intervener submits that, if approved rate increases are more in line with 3.95%, the load forecast will be higher, resulting in increased domestic rate revenue for the Utility and an improved financial situation for Manitoba Hydro.

9.4 Board Findings

The Board finds that, compared to the methodology used in 2014, the new methodology used by Manitoba Hydro in 2017 generates a lower long-term forecast of consumers' electricity consumption in Manitoba. The Board is prepared to accept the results of Manitoba Hydro's Electric Load Forecast for financial forecasting and rate setting purposes, but concludes that different considerations from those used by Manitoba Hydro support the forecast. The total load in the Test Year should be higher than that forecasted by Manitoba Hydro due to the decrease in the overall approved rate increase from 7.9% to 3.6% and the Board's recommendation in this Order that Manitoba Hydro

reduce its demand side management, all else being equal. The change in the methodology to forecast the long-term Potential Large Industrial Load, while responsive to the Board's prior direction in Order 73/15, may now be an overly conservative methodology, as was found by Daymark Energy Advisors. The Board finds that the overly conservative nature of the Potential Large Industrial Load forecast is partially offset by the fact that the 2017 forecast does not factor in the cancellation of the project in the Top Consumer Petroleum/Oil/Gas sub-sector.

The Board agrees with Dr. Yatchew's assessment that the load growth will be essentially flat over the coming years. The Board finds that any long-term load forecast cannot be relied upon, due to the inherent limitations in forecasting the effects and impacts of disruptive technology, such as customers generating their own electricity with solar photovoltaic systems and storing that electricity in batteries.

The Board finds that Manitoba Hydro's price elasticity for all three of the customer sectors may not be reliable. The Board accepts the evidence in the literature cited by Dr. Yatchew, although the Board also notes that applying those elasticities results to Manitoba Hydro's load data yields results not dissimilar from Manitoba Hydro's load forecast. That literature suggests the price responsiveness of industrial customers can be greater than residential customers. In addition, as discussed in a subsequent section, the Board's recommendation that Manitoba Hydro reduce its demand side management spending will increase domestic load growth.

The Board encourages Manitoba Hydro to review and study the areas Daymark Energy Advisors and Dr. Yatchew identified for improvement and enhancement of the load forecasting methodology. Manitoba Hydro is directed to consider the areas recommended by the Independent Expert Consultants for improvement and enhancement of the load forecasting methodology and to provide details of the

implementation of these recommendations, or reasons for not implementing them, at the next GRA.

10.0 Operating & Administrative Expenses

Operating and administrative expenses (“O&A”) are one of Manitoba Hydro’s highest expense categories in its revenue requirement. These expenses primarily consist of labour and benefits, materials, contracted services, and overhead costs associated with operating and maintaining Manitoba Hydro’s facilities and providing services to customers. O&A expenses do not include capitalized salaries and benefits for employees who work on capital projects, or materials and services related to those projects. The salaries of approximately one out of three Manitoba Hydro employees are capitalized and are therefore not included in O&A expenses.

Dating back to at least Order 116/08, the Board has expressed concern regarding the level of growth in Manitoba Hydro’s O&A costs.

In Order 5/12, the Board noted that, from 2005 to 2010, Manitoba Hydro’s O&A expenses grew at a compound average growth rate of almost 5% annually, while inflation for the same period was under 2%. The Board concluded that a major reason for the increase of O&A expense was due to staffing levels having increased by 900 additional Equivalent Full-Time positions, or a 15% increase, in the period of 2004 to 2012. Of the additional 900 positions, 498 were in the Power Supply Business unit, which at that time managed the planned development of Keeyask and Conawapa.

In the 2014/15 & 2015/16 GRA, Manitoba Hydro expressed a commitment to reducing the growth of O&A expenses to one percent, excluding the impact of accounting changes. Since that time, Manitoba Hydro has pursued a cost containment strategy. First, over the period of 2014/15 to 2016/17, Manitoba Hydro reduced its operations by 429 positions through attrition and process efficiencies. As a result, Manitoba Hydro achieved cumulative savings of \$43.2 million.

In February of 2017, Manitoba Hydro announced a plan to reduce its total workforce by 15%, or 900 positions. This plan commenced with a reduction of the executive leadership team by 30%, or three Vice-President positions, and a reduction of the senior management team by 25%. Manitoba Hydro also implemented a Voluntary Departure Program to achieve the remaining position reductions. By mid-2018, the Voluntary Departure Program will result in 817 employees leaving Manitoba Hydro (plus four employees related to Manitoba Hydro's subsidiaries), approximately 70% of which are assumed to be operational in nature. Including the position reductions resulting from the Voluntary Departure Program, the total reduction of senior management is approximately 40 positions.

10.1 Manitoba Hydro's Position

Manitoba Hydro estimates the salaries associated with the reduced positions to be \$91.9 million. These savings do not include the approximately \$2 million value of the salaries for those employees who did not leave the Utility through the Voluntary Departure Program but were severed.

The costs of the restructuring program include the severance and salaries paid pursuant to the terms of the Voluntary Departure Program (forecast to be \$53 million). In addition, the Utility estimates reorganization costs (for retraining, information technology, and potential benefit impacts) to be \$12 million in 2018/19.

Manitoba Hydro also introduced cost reductions through a Supply Chain Management initiative, intended to realize savings on goods and services purchased, reduce or avoid operating costs, reduce working capital, and reduce capital expenditures. Since these initiatives began in 2014/15, the accumulated realized savings to date total approximately \$8 million. Manitoba Hydro estimates future annual cost savings between

\$20 million and \$50 million over the five-year period 2017/18 through 2021/22, with 30% related to operational savings and the remainder related to capital projects.

Due to the timing of the Voluntary Departure Program, Manitoba Hydro did not file detailed O&A budgets as part of the GRA and all detailed schedules embedded in the Application and filing materials for 2017/18 and 2018/19 are incomplete. In addition, Manitoba Hydro has not yet determined the impact of the Voluntary Departure Program on the Utility's pension liability. Manitoba Hydro does not expect to be in a position to forecast the pension liability until the 2018/19 fiscal year. The O&A target for 2017/18 was based on the year-end projection for 2016/17 actual results, adjusted for known wage settlements and the assumptions associated with senior management reductions and the Voluntary Departure Program. The forecast assumed savings for a partial year from a staffing reduction of 500 positions. The O&A target for 2018/19 was based on the preliminary 2017/18 forecast adjusted for known wage settlements and a partial year of operating costs for Bipole III. The forecast was then reduced by the full year impact of the assumed reduction of 500 positions. While 821 and not 500 employees left as a result of the Voluntary Departure Program, there were also differences in timing from the forecast and increased costs associated with the number of employees leaving, such that Manitoba Hydro maintained its forecast amount for 2017/18 and the Test Year.

Manitoba Hydro's position is that it has implemented effective cost reduction measures that have resulted in a growth in O&A costs at or below inflation since 2009/10. While the International Brotherhood of Electrical Workers presented evidence that O&A reductions have sacrificed the safety of Manitoba Hydro employees and customers, and have the potential to lead to decreased reliability of service, Manitoba Hydro maintains

that it continues to operate safely and effectively. It submits, however, that further reductions would result in undue risk to service levels and reliability.

Manitoba Hydro cautions against making comparisons between utilities due to the myriad of factors that can influence the organizational structure, operations, and decisions of an individual utility.

10.2 Intervener Positions

The Consumers Coalition argues that, while Manitoba Hydro provides reliable service, it has failed to demonstrate that it offers economic or efficient service. This position is based on benchmarking undertaken by the Boston Consulting Group which identified that Manitoba Hydro is not generally a top quartile or second quartile performer. The Consumers Coalition indicates concern over Manitoba Hydro's suggestion that it has been able to reduce over 1,100 operational positions since 2014 while continuing to claim that it can provide reliable and quality service. The Consumers Coalition suggests that benchmarking is a useful tool for determining the appropriate level of a utility's costs, including in the context of maintaining services while reducing operational positions, and recommends that a benchmarking working group be convened for 2019/20 and 2020/21.

Representatives of the General Service Small and General Service Medium Customer Classes and Keystone Agricultural Producers submit that, prior to the next GRA, an independent Manitoba Hydro cost benchmarking and customer impact analysis should be performed. This Intervener argues that there is not presently enough detail or information to make a determination on whether Manitoba Hydro's cost control measures are sufficient. It recommends that the Board encourage Manitoba Hydro to

follow through with full cost reduction measures and to file with the Board data that would allow the Board to assess the results and whether further measures are required.

The Manitoba Industrial Power Users Group argues that Manitoba Hydro should fully pursue O&A expense reductions, including reductions to staffing of 900 positions. The Manitoba Industrial Power Users Group is supportive of Manitoba Hydro responding to longstanding Board concerns over staffing levels, dating back to at least 2008.

10.3 Board Findings

The Board accepts the O&A forecast for the Test Year for financial forecasting and rate-setting purposes. The Board accepts that the level of detail needed for a full testing of the forecast is not available until the results of the Voluntary Departure Program are known. The Board directs Manitoba Hydro to file with the next GRA the details of its O&A expenditures with an explanation of the operational plan developed to continue running operations with a workforce that has been reduced by 15%, including any advice or recommendations received from external consultants retained by the Utility to assist with the restructuring and transition. This explanation should include confirmation that and details as to how Manitoba Hydro's operations are being run safely after the workforce reductions are complete. The Board further directs Manitoba Hydro to file with the next GRA details of its actual O&A expenditures dating back 10 years through to the date of the filing, along with forecast O&A expenditures by cost element and business unit, including the details of the Utility's pension liability related to the reduced staffing levels. The actual O&A expenditures are to include the compound annual growth both before and after accounting changes.

The Board acknowledges Manitoba Hydro's efforts to implement cost containment measures. While the level of cost containment has not met the 1% target on average over the five-year periods from 2009/10 through 2013/14 and from 2014/15 through 2018/19, based on the average of both actual and forecast costs, growth in O&A expenditures is at the level of inflation on average over these periods. Further, Manitoba Hydro forecasts a 3.3% reduction in O&A expense in each of 2017/18 and 2018/19, primarily due to staffing reductions. The Utility's review of its operations, at a time of restructuring and transition, presents an opportunity to find further areas to reduce O&A costs. The Board recommends that Manitoba Hydro continue these efforts, both in terms of staff reductions and Supply Chain Management, after the Voluntary Departure Program transition concludes.

The Board notes that, in Order 116/08, Manitoba Hydro was directed to undertake and file with the Board an independent benchmarking study of key performance metrics, using the most currently available data. Completion of this directive was deferred pending Manitoba Hydro's implementation of International Financial Reporting Standards ("IFRS"). While IFRS was adopted April 1, 2015, the benchmarking study directed in order 116/08 has not been filed. The Board views this as an outstanding directive and finds that independent benchmarking should be completed; however, the study should not be performed until after the transition period resulting from the Voluntary Departure Program concludes. The Board will expect an update on the status of the post-Voluntary Departure Program re-organization at the next GRA, including with respect to how the safety of employees and customers has been maintained.

11.0 Accounting Issues

The accounting treatment of Manitoba Hydro's spending has implications for the revenue requirement in the Test Year, as well as in the financial forecast. Five items were at issue in the GRA proceeding: depreciation expense, the regulatory treatment of Conawapa costs, ineligible overheads, the Bipole III Deferral Account, and the Demand Side Management Deferral Account.

11.1 Depreciation Expense

Depreciation expense is Manitoba Hydro's third highest expense category. In Integrated Financial Forecast MH16 Update with Interim, Manitoba Hydro forecasts \$396 million in depreciation expense for 2017/18 and \$471 million for 2018/19. Depreciation expense is projected to grow to \$752 million by 2026/27 as a result of both new major generation and transmission assets and planned Business Operations Capital expenditures.

Two common methods of recording depreciation expense are Equal Life Group and Average Service Life. The Equal Life Group methodology groups assets according to their lifespan, not the type of asset. Average Service Life methodology groups assets by the type of asset and then depreciates the assets in the group according to their average service lives. The Equal Life Group methodology typically increases depreciation costs in the early years of the life of each group of assets, which increases the revenue requirement and therefore the rates that need to be recovered from consumers in those years. Most Canadian Crown-owned electric utilities use the Average Service Life methodology for rate-setting.

In the 2012/13 & 2013/14 GRA, Manitoba Hydro indicated to the Board that it planned to switch to the Equal Life Group methodology of recording depreciation for financial reporting purposes and asked the Board to consider the impact of the change for rate-setting purposes. Manitoba Hydro previously used the Average Service Life methodology.

In Directive 8 of Order 43/13, the Board ordered Manitoba Hydro to file updated depreciation rates and schedules based on an IFRS-compliant Average Service Life methodology with the next GRA. In Directive 9 of Order 43/13, Manitoba Hydro was to file, with the next GRA, a chart showing a comparison of the impact on its Integrated Financial Forecast of asset depreciation pursuant to the Average Service Life methodology (without net salvage) and the Equal Life Group methodology (without net salvage), applying both methodologies to all planned major capital additions.

In Order 73/15, the Board ordered Manitoba Hydro, for purposes of rate-setting, to continue to determine depreciation expense based on the Average Service Life methodology. The Board directed that the Average Service Life methodology be maintained until Directives 8 and 9 from Order 43/13 have been complied with and the Board has been provided with an IFRS-compliant depreciation study based on Average Service Life.

As Manitoba Hydro uses the Equal Life Group methodology for financial reporting purposes, Manitoba Hydro defers the difference between depreciation expense calculated for financial reporting and depreciation expense calculated for rate-setting purposes in a regulatory deferral account. Manitoba Hydro also makes a corresponding adjustment through the net movement in regulatory balances account such that, for rate setting purposes, the revenue requirement reflects depreciation expense based on Average Service Life depreciation rates.

In Integrated Financial Forecasts MH16, MH16 Update, and MH16 Update with Interim, Manitoba Hydro proposed ceasing the deferral of the difference between the two depreciation methodologies in 2022/23, which in effect is a reversion to Equal Life Group. Manitoba Hydro also amortizes the cost of the deferral over 20 years and charges it through net income.

Manitoba Hydro's Position

Manitoba Hydro indicates that its preference is to have a single method of depreciation for both rate setting and financial reporting purposes, so as to avoid the growth expected in the deferral account and the administrative costs associated with maintaining two sets of records for calculating depreciation balances. With respect to an IFRS-compliant Average Service Life depreciation study and the amortization of the deferral account balance for rate setting, Manitoba Hydro asks that the Board hold an alternative process, such as a technical conference, where the issues can be explored in more detail outside of a GRA process and before 2019/20.

Although Manitoba Hydro's GRA filing requested the Board's endorsement of the proposed amortization for the disposition of the regulatory deferral associated with the differences in depreciation methodology, in its closing argument, Manitoba Hydro stated that it is not seeking approval of the amortization period at this time.

Intervener Positions

The Consumers Coalition argues that there should be no amortization of the deferral account pending Manitoba Hydro's IFRS-compliant Average Service Life depreciation study and resolution of the issue of depreciation methodology.

The Manitoba Industrial Power Users Group recommends that the Board direct the implementation of depreciation rates consistent with the Average Service Life methodology, with no reversion to Equal Life Group in the financial forecast. The Manitoba Industrial Power Users Group agrees with the Consumers Coalition that there should be no amortization of the difference in rates.

Board Findings

The Board finds that depreciation is to continue to be recorded using the Average Service Life methodology for rate setting purposes, without reversion to Equal Life Group in the financial forecast. The Board orders Manitoba Hydro to not amortize the difference between Average Service Life and Equal Life Group for rate setting.

The Board finds that Manitoba Hydro has not fully complied with the Board's prior directives on depreciation methodology. In Order 73/15, the Board ordered that the Average Service Life methodology be maintained until the directives from Order 43/13 are complied with and the Board is provided with an IFRS-compliant Average Service Life depreciation study. This study has not been performed. In the absence of full compliance with the Board's past directives, the Board will not make a final disposition with respect to the appropriate long-term depreciation methodology for rate setting purposes. As was the case at the time of Order 73/15, the Board does not currently have sufficient information upon which to make a decision, especially given that a change in methodology leads to significant long-term consumer rate consequences.

By extension, the Board is not in a position to endorse any amortization of the deferral account. As noted by the Consumers Coalition witness, William Harper, the appropriate time to assess the amortization of the regulatory account balance is once Manitoba Hydro has provided the study directed by the Board, when the implications of the

change in depreciation methodology will be better understood. In addition, as indicated by the Manitoba Industrial Power Users Group witness, Patrick Bowman, the principle is that the two depreciation methods will match over time as under both methods, assets are fully amortized upon retirement. This means that any difference will naturally amortize and balance over time, therefore not requiring amortization of the deferral that is intended to recognize the difference.

While Manitoba Hydro proposes that the Board hold an alternative process, the Board has previously established the process to be followed for resolution of this issue. Once Manitoba Hydro has completed and provided to the Board its IFRS-compliant Average Service Life depreciation study, the Board will make a final disposition.

11.2 Conawapa Costs

Manitoba Hydro incurred approximately \$380 million in costs related to the development of the Conawapa Generating Station. Following the Board's NFAT Report recommendation, the development of Conawapa was discontinued. Manitoba Hydro expects that its auditor will view this asset as a stranded asset and will require that the asset be written off.

The issue in this hearing is whether the write-off of Conawapa should be recognized as a regulatory asset, which should then be amortized and recovered from ratepayers over a set time period. Pursuant to IFRS, regulatory assets represent the timing differences between when an expenditure must be recognized for financial reporting purposes and when an expenditure is to be recognized for rate setting purposes, as directed by an entity's regulator.

Manitoba Hydro initially advised that expenditures related to Conawapa would be maintained in the Construction Work In Progress category through to the end of fiscal 2018/19. Consistent with this, MH16 included an assumption that, for financial reporting purposes, Manitoba Hydro would be required to write off 100% of the \$380 million deferred Conawapa expenditures to net income in fiscal year 2020. However, in the course of the oral GRA hearing, Manitoba Hydro indicated that, as a decision was made to discontinue any further development of the station at this time, the Utility anticipated its auditor would require that the costs would be written off in 2017/18.

In 2015/16, Manitoba Hydro capitalized \$19.6 million of interest on the borrowing costs of Conawapa. In 2016/17, the capitalized interest was \$15.0 million. Effective December 31, 2016, with the completion of all wind-down activities on the project, Manitoba Hydro ceased capitalizing the Conawapa interest amounts. This was done in accordance with IFRS, which does not allow the capitalization of borrowing costs for projects which are not proceeding. As interest is no longer being capitalized, but still must be paid annually on the expenses, the non-capitalized interest costs are included in finance expense in the Utility's 2017/18 financial statements and in "interest paid" under Operating Activities on the Cash Flow statement.

Manitoba Hydro's Position

Manitoba Hydro proposes that the costs pertaining to the construction of Conawapa be recorded in a regulatory deferral account effective March 2018, with amortization of the costs to income on a straight-line basis over a period of 30 years beginning on April 1, 2018. Manitoba Hydro has not forecast the inclusion of the non-capitalized interest subsequent to December 31, 2016 on Conawapa in the regulatory asset, but rather in finance expense on the financial statement.

Manitoba Hydro submits that its proposal to recognize Conawapa costs as a regulatory asset and amortize those costs over time minimizes the impact on customers. Manitoba Hydro advises that, while the non-capitalized interest on the Conawapa borrowing costs is not currently included as part of a regulatory deferral account asset in the Test Year, the inclusion of that interest is in the discretion of the Board.

Intervener Positions

The only Intervener to take a position on Conawapa costs was the Consumers Coalition, which accepts Manitoba Hydro's proposed treatment.

Board Findings

The Board accepts Manitoba Hydro's proposed treatment of the Conawapa costs. This treatment is appropriate because the decision to discontinue Conawapa construction was part of the NFAT review of the Utility's long-term system planning for long-lived assets. Further, this approach smooths out the impact of this one-time cost on consumers.

The Board finds that the non-capitalized interest related to Conawapa from January 1, 2017 on should not be included with the regulatory deferral account asset, consistent with Manitoba Hydro's forecast treatment of the interest.

11.3 Ineligible Overheads

In its transition to IFRS, Manitoba Hydro reduced the extent of overhead costs capitalized in Property, Plant and Equipment as certain annual overhead costs were deemed ineligible for capitalization under IFRS. In the 2014/15 & 2015/16 GRA, Manitoba Hydro proposed that a higher level of O&A costs than in previous proceedings

be expensed due to changes made by the Utility in compliance with IFRS. In Order 73/15, the Board did not accept for rate-setting purposes the higher level of O&A costs requested and directed that the remaining administrative costs continue to be capitalized.

For rate-setting purposes, Manitoba Hydro defers \$20 million annually of O&A charges in a deferral account.

Manitoba Hydro's Position

In Integrated Financial Forecast MH16, the deferral of ineligible overheads discontinues in 2023/24, when the regulatory account balance is expected to be \$160 million. Manitoba Hydro proposes that the balance be amortized over a 20-year period, commencing in 2017/18.

Manitoba Hydro argues that, in Order 73/15, the Board did not provide any direction for how long the capitalization of ineligible overhead costs should be continued. It submits that an indefinite deferral is not appropriate given that the deferral and amortization is a non-cash adjustment and there is no impact to net income by the end of the amortization period. This is true regardless of the amortization period used. Manitoba Hydro supports finding an alternate process where the issue of the indefinite deferral of ineligible overhead can be discussed in more detail.

Intervener Positions

The Consumers Coalition submits that the \$20 million in ineligible overhead should be continued and the deferral account balance should be amortized over 30 years.

The Manitoba Industrial Power Users Group recommends that the deferred ineligible overhead account should be amortized over 30 years as this is approximately equal to the average age of Manitoba Hydro's overall asset base. The witness for the Manitoba Industrial Power Users Group, Patrick Bowman, recommended a 34-year amortization period to match the average service life of the assets. The Manitoba Industrial Power Users Group further states that the deferral should be continued in perpetuity to mimic the continued capitalization directed by the Board in Order 73/15.

Board Findings

The Board finds that the \$20 million annually in ineligible overhead should continue to be deferred. This is consistent with the Board's direction in Order 73/15 that Manitoba Hydro is to continue this practice.

With respect to the amortization period, the Board finds that, if these costs were capitalized, the costs would be amortized over the in-service lives of the assets. As supported by the expert witness for the Manitoba Industrial Power Users Group, Patrick Bowman, the deferral account balance should be amortized over 34 years to match the average service life of the assets. This recognizes that the balance relates to a deferral of capital costs that are linked to service that will be provided by capital assets in the future.

11.4 Bipole III Deferral Account

The Bipole III transmission line is being constructed to improve domestic reliability and to permit exports into the United States. However, while the construction of Bipole III is tied to revenue-generating assets such as Keeyask, the transmission line itself will achieve only limited revenue (approximately \$20 million in incremental revenue) through additional export revenue from reduced line losses. As such, there are in-service revenue requirement impacts, with yearly amounts having to be recovered in domestic customers' rates.

In Order 43/13, the Board established a deferral account to assist in funding Bipole III in-service costs and to defray a portion of the rate impacts of Bipole III. Due to the significant rate increases needed at the time Bipole III comes into service, the Deferral Account is a means by which to gradually increase rates and to partially fund the depreciation, interest, and operating costs in order to avoid rate shock at the time the asset enters service. In Order 43/13, the Board directed that the revenues from a 1.5% rate increase were to flow to the Bipole III Deferral Account. Additional rate increases were directed to the Bipole III Deferral Account in subsequent Orders, as follows:

- 0.75% in Order 49/14
- 2.15% in Order 73/15
- 3.36% in Order 59/16
- 3.36% in Order 80/17

In total, Manitoba Hydro has received 11.6% compounded in consumer rates above what the Board determined was necessary for the Utility's general operations in order to assist in mitigating the rate impacts of Bipole III coming into service. At the time Bipole

III is scheduled to enter service in July of 2018, Manitoba Hydro forecasts that there will be approximately \$400 million in the Deferral Account.

Manitoba Hydro's Position

As Bipole III is scheduled to enter service in 2018/19, Manitoba Hydro proposes that the Deferral Account begin to be recognized in domestic revenues following the in-service date, effective August 2018. Specifically, Manitoba Hydro proposes that the Deferral Account be amortized over a five-year period through July 2023.

Manitoba Hydro proposes the amortization of the Bipole III Deferral Account over a five-year period as it will help mitigate the initial expected increases in annual in-service costs related to Bipole III. Manitoba Hydro reasons that, after 2023, additional export revenues from Keeyask will be available to help offset those charges, so further recognition of the deferral will not be required at that time.

Intervener Positions

The expert witness for the Manitoba Industrial Power Users Group, Patrick Bowman, testified that, while he opposed the Deferral Account when the Board first introduced it, in retrospect he believes that it was a “very wise decision”. No Interveners took issue with Manitoba Hydro’s proposed treatment of the Deferral Account.

Board Findings

The Board finds that the Bipole III Deferral Account should begin to be recognized in domestic revenues once Bipole III enters service and amortized over a five-year period.

The Board directs that, once Bipole III enters service, the revenues currently being deferred should no longer be deferred and instead accrue to general revenue. However, the deferral is to continue until the in-service date, including any period of delay. The Board notes that a delay of the in-service date of Bipole III will have an impact on net income in the Test Year, as the compounded cumulative 11.6% in rates will continue to flow to the Deferral Account. This will increase the amount in the Deferral Account, will decrease the amount that is recognized in general revenue in the Test Year, and will correspondingly reduce net income.

11.5 Demand Side Management Deferral Account

In each Integrated Financial Forecast prepared by Manitoba Hydro, the Utility forecasts the level of demand side management spending based on its Power Smart Plan, thereby incorporating these expenditures in the revenue requirement. In response to Directive 12 in Order 43/13, to the extent that Manitoba Hydro's actual spending on demand side management falls below the level included in the Utility's revenue requirement, the amount of the underspending is accumulated as a regulatory deferral debit balance. There is a corresponding regulatory deferral credit balance. This means that, while the Demand Side Management Deferral Account had a March 31, 2017 "balance" of \$48.8 million, this amount is purely notional and has no impact on the Utility's net income. The only demand side management amount that is amortized into rates is the amount of actual demand side management expenses, over a 10-year period.

In March 2017, the provincial government introduced legislation to establish a new Crown Corporation, Efficiency Manitoba, to assume responsibility for energy efficiency initiatives in the province. *The Efficiency Manitoba Act* came into force during the GRA proceedings, on January 24, 2018.

Manitoba Hydro's Position

Manitoba Hydro's position is that, until Efficiency Manitoba is fully established and delivers its initial plan, it is uncertain what the impacts will be on future domestic load and what actions are necessary to clear the Demand Side Management Deferral Account balance. Manitoba Hydro states that it therefore continues to incorporate the costs and savings reflected in its current Power Smart Plan.

Intervener Positions

No Interveners offered specific recommendations with respect to the deferred demand side management costs.

Board Findings

The Board finds that there is no cash balance related to this regulatory asset as Manitoba Hydro has established an offsetting regulatory liability. To avoid the misconception that there is a specific reserve for demand side management spending, this accounting practice should be discontinued. The Board will review Manitoba Hydro's disposition of the regulatory asset and liability at the next GRA.

12.0 Macroeconomic Impacts of Rate Increases

The economy is a complex web of interactions and a change in one sector creates ripples through the rest of the economy as households and industries adjust. Households, firms, and governments will adjust their spending patterns – spending more on electricity bills means spending less on other goods and services or inputs.

Manitoba Hydro did not provide a study on the economic impacts on the Utility's ratepayers and the provincial economy arising from Manitoba Hydro's 10-year financial plan. The Board and Intervenors further examined this issue through independent expert witness reports and testimony. Expert witnesses in the proceeding filed written evidence and were cross examined on the economic impacts of electricity rate increases. All witnesses agreed that there would be significant negative economic impacts from the proposed and projected rate increases. A number of presentations were also made to the Board highlighting the negative economic impacts of the projected rate increases.

Through computer modelling, including the use of the latest Statistics Canada Input-Output tables for Manitoba, the economic impact of the requested and projected electricity rate increases is measurable. There will be initial direct effects, secondary indirect effects, as well as induced effects.

Doctors Compton and Simpson gave evidence that the electricity rate increases over seven years of Manitoba Hydro's proposed financial plan would result in the decline of Manitoba's GDP of between 2.16% and 3.63%, which is approximately equivalent to a loss of one year of growth in the Manitoba economy. They further found that, relative to electricity rate increases equal to the rate of inflation, Manitoba Hydro's planned rate increases will result in permanent job losses of between 2,480 and 4,105 jobs. Based

on the 467 average monthly jobs created in the Manitoba economy over the past 10 years, Manitoba Hydro's projected rate path is estimated to cost the economy approximately five to eight months of employment growth.

Dr. Yatchew gave evidence that, as the long-term price responses are roughly three times short-term price elasticities (i.e. how much less electricity might be used on an incremental basis due to customer price response to higher rate increases), the economic impacts of the requested rate increases will not be fully realized for some time to come. According to Dr. Yatchew, steady energy price increases that are spread over a number of years do not necessarily lead to disastrous adverse effects on aggregate economic activity. One of the reasons is consumers have some opportunity to adjust and take the price effects into account in their planning for the future. In contrast, large unexpected energy price changes can have a significant disruptive effect on the economy. Large rate increases will induce a price response. This is sub-optimal in a period of energy surpluses, particularly for Manitoba Hydro as its existing surplus of energy will increase when Keeyask enters service and will continue until its energy is needed for domestic load in the mid-2030s.

The City of Winnipeg's witness, Mr. Tyler Markowsky, calculated the direct and indirect costs of electricity rate increases as planned by Manitoba Hydro as well as the increased tax revenue that would result from the City's tax on electricity for non-heating purposes over a 20-year time span. Mr. Markowsky calculated the net increase in electricity costs for the City over this 20-year time period would exceed \$100 million. This would result in increases in property and business taxes and user fees, as well as reductions in services.

Dr. Yatchew explained that, while Manitoba has a diversified economy, residential ratepayers, businesses, industries, and community organizations will be negatively affected – possibly severely – by the proposed rate increases. By way of example, some companies may choose to relocate or to scale back production; some will consider very carefully whether to make major new capital investments in Manitoba. The spectre of increasing electricity rates, in the near or more distant future, may have already discouraged investment. The risk of future electricity rate increases that cumulate to 50% or more would likely be part of the decision matrix for any electricity-intensive firm in Manitoba.

The Board heard from the Chair of Manitoba Industrial Power Users Group that its member companies are among the largest electricity users in the province. Collectively, the Manitoba Industrial Power Users Group companies provide \$165 million of revenue to Manitoba Hydro each year, contribute \$233 million annually in taxes, have invested over \$6.4 billion of capital, and directly employ 6,000 Manitobans with an additional 1,300 jobs through contract labour.

The Chair of the Manitoba Industrial Power Users Group echoed the concerns by Dr. Yatchew that Manitoba Hydro's 10-year financial plan ignores the risks of plant closures and downstream effects if the rate increases lead to job losses, out migration, or reduced household budgets. He testified that low energy costs were one of the prevailing reasons that member companies initially invested in Manitoba.

These risks were also discussed by representatives of Manitoba Industrial Power Users Group member companies and other industry representatives who gave oral presentations in this proceeding. Member companies such as Gerdau Long Steel North America ("Gerdau"), Maple Leaf Foods, and Koch Fertilizer Canada have no ability to pass through incremental costs to customers, giving rise to competitiveness concerns in

a global market. A representative from Chemtrade, a sodium chlorate plant located in Brandon, gave evidence that its decisions to further invest in and grow the Brandon facility are being re-evaluated in light of Manitoba Hydro's projected rate path, particularly as many other competing jurisdictions have announced either no or modest electric rate increases for 2018. Similarly, a representative from Gerdau stated that the impact of Manitoba Hydro's rate increases may cause the company to limit investments in its Selkirk facility and to shift production to facilities in other jurisdictions. In 2007, Gerdau shut down its New Jersey location, mainly as a result of high electricity cost forecasts. Testimony from a representative of Maple Leaf Foods reflected similar concerns. In the short-term, Maple Leaf Foods stated that it estimates that electricity rate increases will lead to reductions in discretionary spending, employee headcount, capital spending, and community donations, while in the long-term, Maple Leaf Foods may scale down the work done at its Brandon facility.

Roquette, a company that produces speciality foods in locations across the world, presented evidence that it recently decided to invest in a new \$400 million pea processing facility in Portage La Prairie, which in the construction phase will generate approximately 300 jobs. Manitoba's low and stable electricity costs were a factor in Roquette's decision to locate in Portage La Prairie; however, at the time of its decision to build a facility in Manitoba, Roquette was not aware of Manitoba Hydro's plans to accelerate rate increases above the 3.95% level. Manitoba Hydro's projected 7.9% rate increase path would significantly affect the operation and profitability of Roquette's Portage la Prairie facility and would cause Roquette to be less likely to make further investments in Manitoba.

A representative from the Mining Association of Manitoba echoed the concern that higher electricity rate increases will erode Manitoba's competitiveness, will jeopardize ongoing investment decisions by mining operators, and will cost the province billions of dollars in total economic activity over the forecast period.

Beyond industry, representatives from municipalities and community recreation organizations presented evidence that, in combination with a provincial government freeze on municipal operating funds, Manitoba Hydro's planned rate increases will have a negative impact on public recreation facilities and municipal operating budgets. This will result in increased user fees and reduced services. The Board heard evidence that between 20 and 50 recreation facilities in the Interlake region could close as a result of five years of electricity rate increases of 7.9%.

Presenters on a ratepayer panel sponsored by the Consumers Coalition testified that, as opposed to higher rate increases in the near-term with the possibility of rate decreases after 10 years, stable and predictable rate increases are preferred. In particular, Mr. Dan Mazier, who farms 1,000 acres in Elton, Manitoba, and is the President of Keystone Agricultural Producers, expressed concern that Manitoba Hydro's indicated rate plan includes rates that increase too quickly when compared to the expected growth of agricultural businesses, leading to Manitoba's agricultural producers being uncompetitive.

Dr. Yatchew opined that the projected rate increases in Manitoba Hydro's new financial plan are likely to have a modest net effect on aggregate Manitoba output in the long-run, though there could very well be job losses and reduced output in the short-run. The immediate main effects will be distributional, in that portions of certain sectors will be disproportionately affected. Specifically, lower-income households and remote and First Nations communities will be more strongly affected as well as others who do not have

access to alternative sources of energy, in particular natural gas. In addition, lower incomes will hamper substitution of capital goods, such as improved insulation and efficient windows and doors.

In a presentation on behalf of the Business Council of Manitoba, Mr. Murray Taylor testified that a 7.9% increase in the Test Year would not make Manitoba uncompetitive with any other jurisdiction. This witness questioned where businesses could relocate in order to receive electricity rates at a low enough level that the costs of relocation would be economic.

12.1 Intervener Positions

The Consumers Coalition maintains that, compared to inflationary rate increases, the Manitoba Hydro path of sustained 7.9% rate increases would slow the economic growth of the province, the growth in labour income, and the growth in jobs.

Representatives of the General Service Small and General Service Medium and Keystone Agricultural Producers agree with all the expert witnesses who concluded there would be significant negative impacts on the Manitoba economy should Manitoba Hydro's rate plan be followed. This Intervener is also critical of Manitoba Hydro for not factoring into its consideration of the proposed rates the additional carbon tax impact on the agricultural and small and medium business sectors.

The Manitoba Industrial Power Users Group submits that, concurrent with the economic stimulus from the construction of Keeyask ending, the successive 7.9% rate increases in Manitoba Hydro's financial plan will impose material adverse impacts on the overall provincial economy. The impacts are exacerbated as the revenues from the increased rates are planned to be used for debt repayments and not injected back into the Manitoba economy.

The Assembly of Manitoba Chiefs raises concerns that the level of rate increases projected by Manitoba Hydro will substantially increase energy poverty.

The City of Winnipeg is critical of Manitoba Hydro for not undertaking an economic assessment of the impact of its proposed 7.9% rate increases considering the Utility has multiple economists on staff. According to the City of Winnipeg, Manitoba Hydro ignored half of the test of what needs to be considered when setting rates: the impact on ratepayers. The City of Winnipeg's GDP will be reduced by the Utility's proposed rate increases. As with businesses, and for the additional costs that cannot be absorbed within its operating budget, the City will need to pass on the costs of Manitoba Hydro rate increases through increased fees, reduced services, and increased taxes. The impact on residential and business customers will be magnified as a result of the trickle-down effect.

12.2 Board Findings

Manitoba Hydro did not provide evidence as to the macroeconomic impacts of its proposed rate plan, including the Test Year increase. This is a factor in the Board's conclusion that Manitoba Hydro did not meet its onus to establish that the rate increase sought by the Utility is just and reasonable.

Evidence was, however, provided by expert witnesses retained by Intervenors and the Board. The Board accepts the evidence that the projected rate path may lead to short-term job losses and negative impacts for some industries that are more economically vulnerable based on the electricity intensity of their production. While the Business Council of Manitoba witness asserted that a 7.9% increase would not make Manitoba businesses uncompetitive, this was not supported by the evidence, including that provided by representatives of Manitoba industries. The Board notes the compelling

evidence from the industrial and large commercial presenters in this regard. While there was evidence regarding potential job losses that could occur, the Board did not hear enough about the long-run general equilibrium effects.

The Board accepts Dr. Yatchew's evidence that the immediate main effects of the projected rate path will be distributional. In the first instance, this involves a transfer of money from ratepayers to the Utility. The Board also accepts Morrison Park Advisors' evidence that rate increases above inflation take money out of the economy and that is a factor to be considered in setting electricity rates. Secondly, rate increases affect lower-income households and remote and First Nations communities more significantly than other electricity customers.

Based on evidence presented, the Board determines that principles of rate stability and predictability are important for residential ratepayers, industry, business, and community organizations. The Board further finds that the rate increase sought by Manitoba Hydro for the Test Year departs from these principles.

13.0 Consumer Rate Increases

As noted above, Manitoba Hydro's GRA sought the Board's approvals for three separate rate increases:

- the 3.36% rate increase to all customer rates, previously approved on an interim basis effective August 1, 2016 in Orders 59/16 and 68/16. Manitoba Hydro requests this interim rate be finalized in this GRA without adjustment.
- a 7.9% interim rate increase for all rates to all customer classes to be effective August 1, 2017. As a result of the interim hearing process, the Board issued Order 80/17 approving a 3.36% average rate increase on an interim basis, effective August 1, 2017. This interim rate was to be further reviewed and considered in this GRA hearing. Manitoba Hydro now requests this interim rate be approved on a final basis with no adjustment.
- an additional 7.9% rate increase for all rates to all customer classes proposed for April 1, 2018.

13.1 Manitoba Hydro Position

While Manitoba Hydro's three rate requests are the subject of adjudication in this proceeding, the Utility also presented a new 10-year financial plan including rate increases beginning with the 2017/18 fiscal year rate increase requested in this GRA. The Utility's new 10-year projected rate plan begins with the 3.36% increase in 2017 and indicates 7.9% rate increases annually for six years followed by a 4.54% rate increase and then returning to inflationary rate increases of 2% in each year thereafter.

Manitoba Hydro acknowledges that the 7.9% rate increase request for 2018/19 and proposed for five years thereafter is an exceptional rate increase not previously sought by the Utility in recent decades. Manitoba Hydro states that "the previous plan has failed". Manitoba Hydro presented extensive evidence as to how the additional

revenues from the 7.9% rate increases would enhance cash flow to facilitate payments of operating expenses, interest expense, and capital expenses while reaching a 25% equity target in a decade so as to be better financially prepared to manage risks.

Manitoba Hydro considers that a 7.9% rate increase fairly shares the burden of rate increases between current and future ratepayers. The Utility's concerns include the prospect that, without 7.9% rate increases now, future rate increases will have to be even larger.

While Manitoba Hydro has implemented cost cutting measures including staff reductions, it determined that lower load growth and lower export revenues from previous forecasts means that higher rate increases than previously forecast are now required.

With respect to the two interim rates, Manitoba Hydro's view is that these rates do not present a challenge to the Board's decision making as the Utility is not seeking to retroactively vary the interim rate increases and no Intervener gave evidence that those rates should be adjusted. Manitoba Hydro advises that it is not seeking an increase in the level of the rates awarded because it chose to focus on the 2018/19 rate increase, recognizing the compounding effect that ratepayers would face if the interim rates were finalized at a higher level at the same time as a general rate increase was implemented for 2018/19.

Manitoba Hydro indicates that it welcomes assistance from the Board in bringing to an end a regulatory cycle that includes frequent interim rate requests.

13.2 Intervener Positions

The Consumers Coalition has long been opposed to the consideration of Manitoba Hydro rate increases through interim hearing processes. Accordingly, should Manitoba Hydro seek a further rate increase for its 2019/20 fiscal year, the Consumers Coalition recommends that the Utility be directed to file its next GRA by the fall of 2018, such that it avoids the need for any interim rate hearing.

This Intervener submits that both the August 1, 2016 and August 1, 2017 3.36% interim rate increases are already built into rates and therefore are ‘immunized’ through the passage of time. This Intervener directed its focus to the 7.9% rate increase sought for April 1, 2018, rather than deploy resources on the historic interim rate increases.

As for the requested 7.9% rate increase for April 1, 2018, the Consumers Coalition maintains that Manitoba Hydro has not satisfied its legal onus to demonstrate that the requested rate increase is just and reasonable in achieving the needed balance as between the interests of the ratepayers and the financial health of the Utility. According to the Consumers Coalition, the GRA evidentiary record demonstrates that a 7.9% rate increase is more likely to harm Manitoba ratepayers and the Manitoba economy compared to the impacts of a smoothed rate increase at or below the 3.95% NFAT range. Smoothing rate increases at or below the 3.95% NFAT range makes sense, according to the Consumers Coalition, given the long lived and ‘lumpy’ nature of the Keeyask and Bipole III assets and considerations of regulatory stability, intergenerational equity, risk, and affordable access to the capital markets.

The conclusion of the Consumers Coalition is that, even assuming unbiased forecasts by Manitoba Hydro, appropriate implementation of Board Orders on accounting matters, and prudent management, Manitoba Hydro has not demonstrated a material change in

its financial circumstances to justify the Utility's requested radical departure from the 3.95% NFAT range of rate increases. This Intervener submits that the rate increase for the 2018/19 Test Year could be in the range of 2.95% to 3.5%, where the higher end of the range recognizes the risks related to Keeyask costs and the lower end of the range would send a message of accountability to the Utility for its forecasting inaccuracies. Ultimately, this Intervener recommends a 2.95% rate increase for Manitoba Hydro's next fiscal year.

The Manitoba Industrial Power Users Group concludes that the evidence in the full GRA proceeding sufficiently demonstrated a need for the two 3.36% interim rate increases and that both should be approved by the Board as final without adjustment.

According to the Manitoba Industrial Power Users Group, comparing the previous GRA to this GRA:

- on a net income basis, Manitoba Hydro is now better off;
- on a comparative risk basis, the Utility is now much better off;
- on a total costs over time basis, Manitoba Hydro is approximately equal to previous forecasts;
- on a maximum debt level basis, and with the cost overruns on Keeyask and Bipole III, the Utility is now 'a bit worse off'.

The Manitoba Industrial Power Users Group suggests that, considering this mix of 'ups and downs', it would be reasonable to consider Manitoba Hydro's overall financial position as comparable to previous years.

The Manitoba Industrial Power Users Group submits any rate increase for Manitoba Hydro's 2018/19 fiscal year should fall between 3.36% and 3.57%, based on the evidence on the public record. However, this Intervener advocates this range should be

lowered by the Board because of confidential information related to the understated or pessimistic export revenue forecast and load forecast that were reviewed by the Board. This Intervener also recommends the Board take into account the improvements to Manitoba Hydro's financial forecast resulting from a higher load forecast that would result from a lower rate increase.

The City of Winnipeg argues that nothing has changed from what was presented to the Board when it issued interim Order 80/17 approving a 3.36% August 1, 2017 rate increase, and as such, that rate increase should not now be altered.

As for the 2018/19 requested rate increase, this Intervener adopts the submissions by the Consumers Coalition and maintains Manitoba Hydro has not demonstrated the need for a 7.9% increase or to depart from the NFAT 3.95% rate trajectory. The City of Winnipeg maintains Manitoba Hydro has not justified the change in its financial forecast modelling, which relies on speculation and hypothetical concerns of water flows, export prices, and interest rates to promote a 10-year timeline for reaching a 25% equity level. This Intervener submits the requested 7.9% rate increase is an "exceptional rate increase", is "larger than any previous increase sought from the Public Utilities Board" by Manitoba Hydro, and has not been borne out by the evidence. The City of Winnipeg concludes such a rate increase is neither just nor reasonable nor in the public interest.

The Green Action Centre takes no position on the rate increases. This Intervener accepts the conclusions and recommendations from expert witnesses that the 7.9% proposed and projected rate increases represent a long-term problem for energy poverty in Manitoba, such that only direct rate assistance and energy efficiency plans can mitigate the impacts.

The Business Council of Manitoba encourages the Board to deviate from the historic rate path and order a 2018/19 rate increase along the lines of that requested by Manitoba Hydro. This Intervener submits the accuracy or inaccuracy of previous forecasts is irrelevant to the issues that have been raised as the focus needs to be on the issues that will occur in the near term.

Representatives of General Service Small and General Service Medium Customer Classes and the Keystone Agricultural Producers indicate that the rate increase request by Manitoba Hydro for 2018/19 cannot be considered in isolation. This Intervener maintains that the Board should consider the totality of Manitoba Hydro's 10-year financial plan and all of the 7.9% requested and projected rate increases. If 7.9% rate increase is approved for 2018/19, based on a perceived need to reach a debt-to-equity target by a certain timeframe, this would signal that 7.9% is also needed for the following years in order to achieve the date for that target. Put differently by this Intervener, the only justification for 7.9% rate increases is if the Board concludes a 25% equity level must be achieved by 2027. This Intervener submits that meeting this debt-to-equity target is not required within 10 years and that a 2018/19 rate increase of 3.95%, consistent with the prior rate paths, is appropriate.

A further recommendation by this Intervener is that the Board should schedule annual, shorter reviews of the Utility's rates.

The Assembly of Manitoba Chiefs takes no position on the appropriate rate increase for 2018/19, but submits that the 7.9% rate trajectory in Manitoba Hydro's 10-year financial plan will increase energy poverty in the province and will magnify the problems of affordability for First Nations customers.

Manitoba Keewatinowi Okimakanak adopts the submissions and positions taken by the Consumers Coalition and concludes that there has not been a material change in Manitoba Hydro's financial circumstances since that forecast at the 2014 NFAT such that the maximum rate increase for 2018/19 should be 3.9%. Manitoba Keewatinowi Okimakanak urges the Board, after determining the average electricity rate increase for 2018/19, to reduce the rate charged to First Nations customers by an amount which would serve to remove the portion that accounts for mitigation costs paid to First Nations. Manitoba Keewatinowi Okimakanak's position is that First Nations should not be paying for these costs as they are the beneficiaries of such mitigation payments.

13.3 Board Findings

The approach taken by Manitoba Hydro in this GRA is different than in prior proceedings. In this GRA, the Utility focused on reaching a particular debt-to-equity target in a 10-year time period, rather than a 20-year period as it proposed previously. In addition, Manitoba Hydro constructed a new cash flow analysis that was presented in this GRA as a "new view" of the Utility's cash flow situation. This cash flow analysis was presented to the Board, although Manitoba Hydro advises that it is not used in their audited financial statements or financial forecasts, nor is it presented to credit rating agencies. The Utility placed emphasis on this new cash flow analysis due to its view that traditional financial metrics, including the capital coverage ratio and interest coverage ratio, are deficient in certain aspects.

2016 and 2017 Interim Rate Increases

Based on an assessment of the full GRA evidentiary record, the Board approves as final each of the 3.36% interim rate increases which were effective August 1, 2016 and August 1, 2017. The dissenting member in Order 80/17, Sharon McKay, is in agreement

with the decision to finalize the interim rate that was effective August 1, 2017, based on the review of the full record in the GRA hearing.

No evidence was presented as to why the 3.36% rate increases were not appropriate. However, the lack of testing by Interveners and limited focus from Manitoba Hydro underscores the Board's previous concerns about interim rate applications. The Board reiterates its conclusion in Order 59/16 that "interim rate applications ought not be the 'norm' for Manitoba Hydro. Interim rate applications do not offer the same level of public review as General Rate Applications." Interim rate processes are not to be used for purposes of convenience or as substitutes for the proper planning of GRAs. Both ratepayers and Manitoba Hydro benefit from a robust process that results in final rates that are just and reasonable. Future GRAs by Manitoba Hydro are not expected to be of this magnitude or duration as process improvements have and will continue to be implemented to focus the scope and expedite proceedings. In addition, the Board agrees with the Consumers Coalition that interim rates may create a regulatory *status quo* that is difficult to overturn, despite a lack of full regulatory review. Therefore, in the absence of unforeseen or emergency circumstances, the Board will not consider future interim rate increases.

To avoid future interim rate applications, should Manitoba Hydro request a rate increase for April 1, 2019, it must file a GRA by no later than September 1, 2018. Filing of a GRA after September 1, 2018 but before December 1, 2018 is required for consideration of a request for a revised rate in fiscal year 2019/20. For the next GRA, the Board will not consider rate increases for more than two Test Years.

The Board appreciates Manitoba Hydro's desire to establish a regulatory timetable that does not require the use of interim rates. The Board is prepared to work with Manitoba Hydro and other parties towards the development of that regulatory timetable.

Rate Increase for 2018/19

Manitoba Hydro's request for an April 1, 2018 rate increase of 7.9% is denied. The Board finds that Manitoba Hydro has not met its onus of proving that a 7.9% rate increase is just and reasonable. A 7.9% rate increase is not required for Manitoba Hydro's operations in the Test Year. In addition, the Board does not accept that achieving a 25% equity level in 10 years is an adequate reason in itself to justify a rate increase of 7.9% in 2018/19.

The Board finds that Manitoba Hydro failed to present economic impacts of the 7.9% rate increase or the impact on customers in various sectors – such as residential, commercial, and industrial. In future rate applications, the Utility is to assess the broader impacts of rate increases beyond only the financial health of Manitoba Hydro. The Board is concerned about the impact of electricity rate increases that are four times the rate of inflation in light of impending carbon taxes, both of which will affect individuals and Manitoba businesses, groups, and organizations. Representatives from industry, as well as agricultural representatives and individual ratepayers that presented evidence, stressed the need for stable and predictable rate increases. A summary of the evidence provided by presenters in the GRA proceeding is contained at Appendix C to this Order.

Based on a balancing of the interests of the ratepayers with the financial health of Manitoba Hydro, the Board approves on a final basis an overall rate increase of 3.6% effective June 1, 2018. As discussed below, the Board also approves rate increases that vary by customer class.

The Board finds an overall rate increase of 3.6% to be just and reasonable and in the public interest as it affords Manitoba Hydro sufficient revenues for financial purposes including cash flow and payments of operating expenses, interest expense, and capital

expenses. With this rate increase, the Board finds that Manitoba Hydro has sufficient revenue to operate its business, manage its risks, and pay its finance expenses. From the evidence, the Board finds that the overall rate increase awarded in this Order will provide the revenues required to maintain Manitoba Hydro's cash flow and to allow the Utility to manage its debt advantageously for ratepayers. The Board's recommendations on capital expenditures and demand side management will also assist the Utility in this regard.

The Integrated Financial Forecast filed in the proceeding as Manitoba Hydro Exhibit 93 supports the Board's decision on the level of the overall rate increase. This financial scenario included: continued deferral of \$20 million in ineligible overheads, amortized at a 30-year rate; Average Service Life depreciation methodology, without amortization of the difference with the Equal Life Group methodology; achievement of a 25% equity level over a longer period of time, specifically by 2035/36; and debt management based on a weighted average term to maturity of 12 years. In many respects, and as a departure from Manitoba Hydro's plan and Integrated Financial Forecast assumptions, Manitoba Hydro Exhibit 93 is therefore reflective of many of the Board's decisions in this Order.

Beginning in the Test Year, the Manitoba Hydro Exhibit 93 Integrated Financial Forecast scenario results in equal annual rate increases of 3.57%. The Board finds that with minor adjustments, this scenario is directionally consistent with the Board's decisions in this Order.

The Board finds that the 3.6% overall rate increase is to be effective June 1, 2018 in order to begin to move Manitoba Hydro back to a regulatory cycle that is consistent with the start of its fiscal year. The Board accepts that there is a benefit to both Manitoba Hydro and ratepayers in moving back to a regular regulatory cycle. If Manitoba Hydro

does not adjust its planning to allow for sufficient time for the Board's review of the next GRA, any rate increase granted will not be effective April 1, regardless of the Board's intention to return the Utility to a regular regulatory cycle.

14.0 Payments to Government

Manitoba Hydro makes payments to the Province of Manitoba for water and land rentals, debt guarantees, and capital and other taxes. Manitoba Hydro also pays grants in lieu of taxes to municipalities. In Integrated Financial Forecast MH16, Manitoba Hydro forecasts that it will pay \$433 million to governments in 2018/19, with \$406 million to be paid to the Province for water rentals, debt guarantee fees, payroll tax, and the capital tax.

Pursuant to *The Water Power Act*, water rentals are paid to the Province for Manitoba Hydro's use of water resources for its hydroelectric generation. Land rentals are annual payments for the use of Manitoba Crown lands used for water power purposes.

The debt guarantee fee is an annual fee payable to the Province in exchange for the Government's guarantee of the Utility's debt (with the exception of Manitoba Hydro-Electric Board Bonds). The fee is calculated using a rate of 1% multiplied by the applicable outstanding debt at March 31st of the previous fiscal year. The debt guarantee fee is capitalized to the capital project to which the payment of the fee relates, and forms part of the cost of project.

The Utility pays capital tax to the Province at a rate of 0.5% which is applied to the taxable paid-up capital of Manitoba Hydro. The only corporations that pay a capital tax to the Province are Crown Corporations and financial institutions.

Manitoba Hydro pays grants in lieu of taxes on its land and buildings. The amount of grants in lieu paid is determined based on property valuations and municipal and school division mill rates, similar to the manner in which property taxes are determined for other taxpayers in Manitoba.

Payroll tax is based on a tax rate of 2.15%, which is applied to the Utility's gross payroll.

Business taxes are paid with respect to commercial space occupied by Manitoba Hydro in both leased and owned properties. The Utility pays property taxes to the landlords of leased premises as part of the required lease payments.

Manitoba Hydro also makes other municipal payments with respect to the Town of Gillam and the Frontier School Division.

As noted in the NFAT Report, the Utility's payments to the Province totaled \$262 million, representing 16% of Manitoba Hydro's revenues. Since then, the ongoing construction on the \$8.7 billion Keeyask and the \$5.0 billion Bipole III projects, as well as other capital projects, has increased the annual amounts paid and payable to the Province. Even though Bipole III is not yet in service, in fiscal year 2018, Manitoba Hydro will pay \$43 million to the Province for the debt guarantee fee and an additional \$22 million to the Province for capital tax. Each of those amounts will increase when Bipole III is fully in-service in fiscal 2019. Likewise, even though Keeyask's in-service date has been delayed 21 months, in fiscal year 2018, Manitoba Hydro will pay \$44 million to the Province for the debt guarantee fee and an additional \$22 million for capital tax. No water rental fees for Keeyask will be paid to the Province until that generating station enters service when those water rental fees will reach \$18 million per year in 2025.

When those two major capital projects are completed and beginning in 2023, Manitoba Hydro estimates it will pay approximately \$490 million to the Province each year. The amount paid to the Province will decrease once Manitoba Hydro is repaying debt, thereby reducing its debt guarantee fees.

A comparison of payments to government by Manitoba Hydro and other Canadian Crown-owned electric utilities was provided in evidence and is set out in the chart reproduced below. In addition, the chart separately shows dividend payments in the jurisdictions where dividends are paid. Manitoba Hydro reiterated that there is no policy or policy discussion in Manitoba for paying dividends to the Province and the Utility's rates are not set on the basis of generating a rate of return for the Province. As illustrated in the chart below, Manitoba Hydro's total payments to Government (excluding dividend payments) as a percentage of gross revenue are higher, by a minimum of 7%, than other Canadian Crown-owned electric utilities. When dividend payments are factored in, Manitoba Hydro's total payments to Government as a percentage of gross revenue are second only to Hydro Quebec, which paid \$2.146 billion in dividends to the Province of Quebec in 2016 pursuant to a dividend formula.

Payments to Governments (\$ Millions)						
(\$ Millions)	Manitoba Hydro (Forecast 2018/19)	British Columbia Hydro (Forecast 2018/19)	Hydro-Quebec (2016 Actual, forecast not available)	Newfoundland Labrador Hydro (Forecast 2018/19)	SaskPower (Forecast 2018/19)	New Brunswick Power (Forecast 2018/19)
Water Rentals	103	350.1	667	0	21	0
Debt Guarantee Fee	185	0	218	2.2	0	31.8
Capital & Other Taxes	145	238.7	284	0	50	45.1
Other	0	0	0	0	35	0
Payments to Gov't	433	588.8	1,169	2.2	106	76.9
Gross Operations Revenue	2,246	4,836.8	13,339	696.5	2,697.6	1,705.5
Payments to Gov't as Percentage of Gross Revenue	19.3%	12.2%	8.8%	0.3%	3.9%	4.5%
Dividends	0	70.8*	2,146**	0	21	0
Total Payments to Gov't (with dividend)	433	659.6	3,315	2.2	127	76.9
Total Payments to Gov't (with dividend) as Percentage of Gross Revenue	19.3%	13.6%	24.9%	0.3%	4.7%	4.5%

Source: MIPUG-30

* BC Hydro was historically mandated to pay a dividend equal to 85% of net income, subject to an 80:20 debt-to-equity cap; however, this formula was amended by Order in Council, such that beginning in fiscal year 2018, the dividends payable will be reduced by \$100 million per year until zero is reached and will thereafter remain at zero until BC Hydro reaches a debt-to-equity ratio of 60:40.

** The amount of dividends paid by Hydro Quebec in 2016 was a result of the formula in that province that requires a dividend of 76% of net income be paid to the Quebec government, unless the Utility's equity ratio would fall below 26%. Hydro Quebec's high net income in 2016, which largely resulted from high run-off and favourable weather conditions, allowed the Utility to pay more than \$2 billion in dividends to the Quebec government.

14.1 Intervener Positions

The Consumers Coalition requests that the Board recommend to Government that a portion of capital taxes, water rental fees and debt guarantee fees be redirected by the Province toward extensive demand side management programs for vulnerable customers, such as lower-income customers.

The Manitoba Industrial Power Users Group submits that the Board should recommend that Government implement a 10-year forgiveness of capital tax and debt guarantee fees on Keeyask and Bipole III, commencing with their respective in-service dates. The resulting financial benefits of any such relief could be split between the core objectives of permitting accelerated achievement of longer-term equity level targets and bringing average rate increases to within the range of inflation. This Intervener argues that applying these high capital tax and debt guarantee fees to major new capital projects is not appropriate so long as such charges aggravate concerns regarding equity or reserve levels and add pressures to increase domestic electricity rates above inflation. In addition, these payments have certain features that are consistent with hidden taxes. In the Manitoba Industrial Power Users Group's submission, if the Government is seeking to raise revenues, there are fairer ways than through electricity bills. This Intervener quantified the impact of its suggestion as being worth an approximate 10.6% impact on rates by 2022.

Manitoba Keewatinowi Okimakanak also submitted that the Government of Manitoba should forego some of the revenues it receives from Manitoba Hydro, as did British Columbia's government in respect of B.C. Hydro.

14.2 Board Findings

The Board finds that as a percentage of gross operations revenue, Manitoba Hydro's payments to the Province of Manitoba are high, both before and after considering the jurisdictions where dividends are paid by Crown-owned electric utilities. The evidence demonstrated that, excluding payments made to municipal governments, approximately 17 to 18 cents of each dollar of gross revenue is directed by Manitoba Hydro to the Province of Manitoba.

While the majority of Manitobans are both taxpayers and ratepayers, there is an important distinction. Consistent with the Board's responsibility for setting just and reasonable rates, ratepayers should be responsible for the economic costs associated with electrical services in Manitoba. Economic costs include both the direct costs of producing and supplying electrical power. Ratepayers are therefore billed based on their own consumption. In contrast, taxpayers should be responsible for the broader policy objectives as set by the elected members of Government. This means that the Government, on behalf of taxpayers, is custodian of the economy, owns Crown land and natural resources, and pursues social policies in the collective interest. As citizens of the province, taxpayers contribute revenues towards collective goals and collective good – such as the cost of a hospital that an individual taxpayer may never use. Nor are ratepayers and taxpayers economically identical: although most households are both, the proportion of income paid for electricity bills versus taxes varies considerably across households. As a result, any shift in the burden from taxpayers to ratepayers can have significant distributional impacts.

Consideration must be given to the appropriate allocation of revenues and costs as well as to risks and benefits as between taxpayers and ratepayers. In Manitoba, this issue is informed by the distribution of revenues and costs between the provincial government

and the Crown-owned Utility. In general, the costs of Manitoba Hydro's capital projects are borne by ratepayers once the assets are in service.

The Bipole III project was initially scoped, designed, and engineered by Manitoba Hydro using the most cost effective route. However, as a result of a policy decision by the provincial government, the routing of Bipole III was changed to a western route at an additional cost of approximately \$900 million. This decision created a \$900 million burden for ratepayers with no apparent technical benefit for the new route. The Board finds that this was a policy decision of government that should be a cost to taxpayers, not Manitoba Hydro's ratepayers.

As such, the Board recommends that the Government suspend payment of the Bipole III debt guarantee fee and capital taxes made by Manitoba Hydro to the provincial government starting with the 2018/19 fiscal year. Manitoba Hydro – and ultimately the ratepayer – should be reimbursed through suspension of such payments for approximately 13 years until the \$900 million burden of a policy decision made by government with respect to the Bipole III western route is satisfied.

With respect to Keeyask, after it is fully in-service, Manitoba Hydro will pay approximately \$140 million per year to the Province of Manitoba for water rentals, debt guarantee fees, and capital and other taxes. As noted by the Board in its 2014 NFAT Report:

While ratepayers will shoulder a significant rate burden over the next 20 years, the Province of Manitoba will reap substantial incremental revenues through capital tax and water rental payments from Manitoba Hydro as a result of the Keeyask Project. The Province should give serious consideration to using some of these incremental revenues to fund energy affordability programs targeted to vulnerable consumers, particularly lower income consumers and customers

residing in northern and First Nations communities. This could involve rate relief programs as well as targeted DSM programs.

In response to the Board's NFAT recommendations, the provincial government issued a letter on July 2, 2014 to both the Chair of the Manitoba Hydro-Electric Board and to the President and CEO of Manitoba Hydro stating:

The Manitoba Government will also consider the Panel's specific recommendation respecting Government revenues from new hydro development, as well as potential alternatives to support vulnerable consumers to reduce their bills.

As revenues are already accruing to the Province as a result of Keeyask and in the context of projected annual electricity rate increases, the Board continues to be of the view that the Government should use some of the revenues it receives from Keeyask to fund a comprehensive bill affordability program, as discussed in detail below.

Finally, the inter-relationship between Manitoba Hydro and the provincial government will be enhanced with provincial carbon pricing. In the transition to a low-carbon economy, the Province of Manitoba does and will benefit from the strength of its clean hydroelectric resources. As the provincial government will receive revenue from the planned carbon tax, the Board further recommends that the provincial government transfer a portion of the carbon tax revenues to further strengthen Manitoba Hydro's financial health which may allow for lower consumer rate increases.

15.0 Cost of Service Study and Implementation of Order 164/16

Cost of Service is a method of allocating a utility's costs to the various customer classes it serves. Its purpose is to determine the allocation of the utility's approved costs, also referred to as the revenue requirement, among the customer classes. The Utility's Cost of Service Study determines each customer class's share of Manitoba Hydro's overall revenue requirement. A Cost of Service Study is normally filed with each GRA and, together with the proposed revenue requirement, rate design, and other pertinent information, forms the background supporting rate setting.

Through a process that began in December of 2015 and culminated in Order 164/16, the Board reviewed Manitoba Hydro's Cost of Service Study methodology. Order 164/16 provides an explanation of the concepts and terminology related to the Cost of Service Study.

In Order 164/16, the Board determined that the principle of cost causation – the idea that customers should pay for the costs they “cause” the Utility to incur - is paramount in determining the appropriate Cost of Service Study methodology. As such, ratemaking principles and goals should not be considered at the Cost of Service Study stage.

Following the Board's review, Manitoba Hydro implemented Board directives from Order 164/16 in the Prospective Cost of Service Study for Year Ending March 31, 2018 (“PCOSS18”). In scope for the current GRA hearing was the issue of whether the cost treatment of PCOSS18 follows the directions and principles of Order 164/16. Specifically, the matters raised for Board consideration are:

- the classification of wind resources, which was directed to be 100% energy in Order 164/16 on the basis that wind energy cannot be relied upon to meet peak demand and capacity needs. However, Manitoba Hydro now includes wind in its

resource planning for capacity purposes, giving rise to the question of whether the classification of wind resources should be revised;

- the allocation of General Customer Services costs in the remaining general Customer Services sub-category to General Service Large 30-100kV and General Service Large >100kV customers. In PCOSS18, Customer Services activities have now been disaggregated and separated into three distinct categories: (1) Industrial and Commercial Solutions to General Service Large customers, the costs of which are allocated only to that customer class using the C23 allocator, (2) the costs of comparable services provided to smaller customers, which are allocated to all customer classes except General Service Large using the C13 allocator, and (3) the remaining general customer services, the costs of which are allocated to all customer classes on the basis of class revenues using the C10 allocator. The general customer services costs include outage calls, line locates, marketing research & development, safety watches & building moves, and rates & regulatory. These costs are allocated to all customer classes proportionately by revenue;
- the functionalization of Generation Outlet Transmission and specifically, whether there are other Generation Outlet Transmission facilities than those identified by the Board in Order 164/16 that meet the Board's criteria to be functionalized as Generation;
- whether radial transmission lines, also known as non-tariffable transmission, should be included in the allocation of export revenue as these assets are not integrated with the networked transmission system and therefore do not facilitate exports;
- the completion of the further study directed in Order 164/16 of the allocation of common costs, the service drops allocator, and the treatment of primary and secondary distribution lines; and
- how Bipole III revenues should be treated in the Cost of Service Study.

15.1 Manitoba Hydro's Position

Manitoba Hydro submits that PCOSS18 is essentially fully compliant with the methodology directed in Order 164/16. With respect to the remaining Customer Service activity costs allocated using the C10 allocator, Manitoba Hydro argues that the disaggregation of these activities into three distinct categories demonstrates that there is no overlap in the allocation of customer costs. Moreover, the activities in this sub-category are public safety-related and therefore allocable to all customers.

Manitoba Hydro acknowledges that there are two outstanding directives from Order 164/16 that remain to be addressed in the next Cost of Service Study, specifically: updating the allocator for service drops and studying the allocation of common costs. Manitoba Hydro will complete these directives in the next Cost of Service Study, but states that it does not expect that there will be a material impact on allocated costs. With respect to primary and secondary distribution lines and the Board's directive to continue with the existing methodology unless and until additional study and data are presented to justify any changes, Manitoba Hydro states that its records do not distinguish the costs of primary and secondary lines, so the data required are not available.

Manitoba Hydro submits that it annually reviews the facilities functionalized as Generation Outlet Transmission.

While Manitoba Hydro now attributes some capacity to wind generation in its resource planning, the Utility is not looking to vary the Order 164/16 Cost of Service treatment of wind costs.

With respect to the treatment of Bipole III Deferral Account revenues, Manitoba Hydro proposes returning the revenue to domestic classes on the same basis by which the revenues were accumulated in the fund (i.e. proportionally by class). Manitoba Hydro submits that this approach most fairly apportions the reserve account to each class.

15.2 Intervener Positions

The Manitoba Industrial Power Users Group submits that, while PCOSS18 largely follows Order 164/16, the evidence does not support the use of the C10 allocator to allocate the costs of contact centre – outages, marketing research and development, line locates, or building moves and safety watches to the industrial classes. Of these costs, \$2.6 million are allocated to the General Service Large classes, but the costs are either driven by the distribution system, do not relate to the services received by the industrial classes, or relate to activities whose costs are already allocated to General Service Large 30-100kV and >100kV customers through the C23: Industrial & Customer Solutions sub-function allocator. The Manitoba Industrial Power Users Group recommends that C10 costs, other than education & safety and rates & regulatory not be allocated to the General Service Large 30-100kV and General Service Large >100kV classes.

15.3 Board Findings

The Board finds that, aside from the issues addressed below, Manitoba Hydro's PCOSS18 is consistent with the methodology arising from the Board's review in Order 164/16. The Board continues to find, as found in Order 164/16, the principle of cost causation is paramount in determining the appropriate Cost of Service Study methodology. As such, ratemaking principles and goals should not be considered at the Cost of Service Study stage.

Classification of Wind

The Board finds that no adjustment is needed to the classification of wind. As the Consumers Coalition expert witness testified, refinement in order to address the now-recognized capacity benefit of wind would add complexity to the Cost of Service Study methodology with minimal benefit. In addition, as a resource, wind is transacted on an energy basis through contracts with suppliers. Manitoba Hydro does not invest in wind assets in order to serve peak demand. This supports the continued classification of wind as 100% energy.

General Customer Service Costs (C10 Allocator)

The Board finds that the activities of education & safety and rates & regulatory should be allocated to all customer classes using the C10 allocator.

The Board finds that cost causality supports allocating the costs of the education & safety and rates & regulatory activities to all customer classes. Education and safety programs include safety around dams, waterways, substations, and overhead powerlines. Rates & regulatory activities relate to the work done by that department of Manitoba Hydro, including for General Rate Applications. It was not contentious in this proceeding that these costs are incurred for the benefit of all customers. As no party proposed an alternative allocator for the education & safety and rates & regulatory costs, Manitoba Hydro is to continue with the PCOSS18 methodology of allocating these costs on the basis of class total revenue.

Building moves and safety watches, contact centre – outages, line locates, and marketing research and development costs should not be allocated to the General Service Large 30-100kV and General Service Large >100kV customer classes.

Manitoba Hydro is directed to allocate the costs of these customer service activities to all classes other than General Service Large 30-100kV and General Service Large >100kV. The costs for these activities relate primarily to distribution-level assets or service to smaller customers or are already solely allocated to the General Service Large 30-100kV and General Service Large >100kV classes through the Industrial & Commercial Solutions sub-function. As detailed below, the evidence does not establish that General Service Large 30-100kV and General Service Large >100kV customers cause these costs to be incurred.

Building moves & safety watches relate primarily to distribution facilities. The safety watches activity primarily relates to on-site safety watching for residential homeowner and contractors during work in close proximity to distribution facilities, although Manitoba Hydro does not track these services by type of electric plant.

Similarly, with respect to contact centre – outages, Manitoba Hydro does not track outage reports by customer class. While Manitoba Hydro states that the contact centre is the initial point of contact for all customers, the Utility could not confirm if General Service Large customers have used the call centre. In addition, industrial customers can directly contact their key account representative, the costs of which are allocated within the C23 costs.

The costs of marketing to large customers are also specifically included in the C23 costs. Manitoba Hydro could not provide information to show that the costs in the C10 activity of marketing research & development are focused in some aspect on the General Service Large >100kV customers.

Line locates relate primarily to distribution facilities. General Service Large 30-100kV and General Service Large >100kV customers use transmission facilities, not distribution facilities. The Board understands that Manitoba Hydro does not have underground transmission lines in its system, therefore Manitoba Hydro does not incur line locating costs related to transmission lines.

Functionalization of Generation Outlet Transmission

The Board finds that Manitoba Hydro conducted a review of the functionalization of Generation Outlet Transmission and no further study is required at this time, other than reviews of the functionalization Generation Outlet Transmission that the Utility states it undertakes from time to time.

Non-Tariffable Transmission

The Board finds that non-tariffable transmission costs are not to be included in the allocation of export revenues. By definition, these lines are not used to facilitate export revenues. As such, it is consistent with the principle of cost causality to exclude the costs from the allocation of export revenues.

Matters for Further Study

Manitoba Hydro is directed to complete the study of the Service Drops Allocator and the Common Costs study that were ordered in Order 164/16 in time for its next Prospective Cost of Service Study. Manitoba Hydro has committed to completing these directives in this time frame.

The Board will not direct further study on primary and secondary lines. The necessary data are not available to conduct such a study. Moreover, Order 164/16 did not direct that this study be completed; rather, the Board directed Manitoba Hydro to continue with its existing methodology unless and until additional study and data are presented to the Board to justify any methodology changes. There is therefore no outstanding directive on the study of primary and secondary lines.

Treatment of Bipole III Revenues

The Board finds that the Bipole III Deferral Account revenues are to be returned in the Cost of Service Study to the domestic classes proportionally. No party opposed this treatment and it is consistent with the basis by which the revenues were accumulated in the fund as each class contributed to the Deferral Account proportionally. If the revenues were applied directly against the cost of the asset, classes that make relatively greater use of Generation facilities would disproportionately benefit, notwithstanding that each class has contributed 11.6% compounded in rates towards the Deferral Account. Inconsistent treatment as between the revenue collection and the recognition of the revenue for cost of service purposes is not justified.

16.0 Revenue to Cost Coverage Ratios and Differentiated Rates

As detailed by the Board in Order 164/16:

One of the outputs of a COSS is the calculation of total costs allocated to each customer class. The COSS output is a tool that can be used in the ratemaking process to assign target revenue for each rate class. This step includes comparisons showing scenarios of target class revenue to the cost of service-based costs allocated to the respective class. The ratio of target revenues by class to the allocated class costs results in a Revenue to Cost Coverage ratio (“RCC”). A RCC ratio less than unity (1.0) means that the revenue generated by a class is not sufficient to recover all the costs allocated and assigned to that class; conversely, a RCC ratio greater than unity (1.0) means that Manitoba Hydro is recovering more revenue from that class than its allocated and assigned costs.

The Revenue to Cost Coverage ratios are calculated by dividing each customer class's revenue by the allocated costs for the class. In addition to revenue from domestic rates, Manitoba Hydro also receives revenues from its export business and those revenues are credited back to the domestic customer classes in the Cost of Service Study. Historically, when calculating class Revenue to Cost Coverage ratios, Manitoba Hydro added each class's share of export revenue to its domestic revenue, and then divided this total revenue number by allocated costs.

An alternative calculation methodology is to treat export revenue as a reduction to allocated class costs, such that domestic class revenue is divided by allocated costs less the class share of export revenue. If this methodology is used, classes move further from unity, particularly those that are outside of the zone of reasonableness, such that they are under- or over-contributing revenue to a greater degree.

Many utilities do not set rates in order to achieve class Revenue to Cost Coverage ratios of exact unity. This is because, despite the appearance of arithmetic exactness, every Cost of Service Study contains a degree of imprecision due to the need to make decisions by applying judgment and limitations on the available data with respect to customer loads. Thus, instead of unity, a zone of reasonableness is used to target the Revenue to Cost Coverage ratios of the customer classes. Revenues that are within this range are deemed to represent full cost recovery. Since 1996, Manitoba Hydro has used a zone of reasonableness of 95-105%. In the current GRA, Manitoba Hydro proposes that the Board consider expanding the zone of reasonableness to a broader 90-110% range.

One use of a Cost of Service Study is to assess class Revenue to Cost Coverage ratios against the zone of reasonableness to indicate where adjustments could be made to customer class rates to address any under- or over-recovery of revenues. The means of making such adjustments is through differentiated rates. As opposed to an across-the-board rate increase, where all components of all class rates are increased by the same percentage, differentiated rates shift revenues between customer classes to bring classes outside of the zone of reasonableness within the zone. Such adjustments may be upwards – the collection of more revenue than the average rate increase – or downwards – the collection of less revenue than the average rate increase.

Revenue to Cost Coverage ratio movement may also occur naturally as new assets of significant magnitude enter service and increase the costs that are allocated to the domestic customer classes in the Cost of Service Study. Manitoba Hydro anticipates that when Bipole III enters service, there will be a degree of immediate impact to class Revenue to Cost Coverage ratios. This is because the increased annual costs associated with Bipole III will be functionalized as Generation. As a result, once Bipole

III enters service, classes with a greater proportion of allocated Generation costs relative to their total costs, such as General Service Large >100kV, will see their allocated costs increase to a greater extent than those classes that do not, such as Residential. As illustrated below, one impact is that the General Service Large 30-100kV, General Service Large >100kV, and Residential customer classes, which are currently outside of the 95-105% range, move closer to unity when Bipole III enters service.

The class Revenue to Cost Coverage ratios are as set out below, including for the Manitoba Hydro PCOSS18 calculation methodology, the alternative calculation methodology, and the estimated ratios in 2020 when Bipole III is in service:

Customer Class	PCOSS18 Revenue to Cost Coverage Ratio	Alternative Methodology Revenue to Cost Coverage Ratio	Estimated 2020 Revenue to Cost Coverage Ratio with Bipole III*
Residential	94.8%	93.5%	96.7%
General Service	112.5%	115.7%	115.3%
Small Non-Demand			
General Service	101.0%	101.3%	101.3%
Small Demand			
General Service	98.3%	97.8%	97.4%
Medium			
General Service	99.1%	98.7%	96.5%
Large 0-30kV			
General Service	109.3%	113.0%	103.5%
Large 30-100kV			
General Service	108.6%	112.3%	101.5%
Large >100kV			
Area & Roadway	100.3%	100.3%	118.2%
Lighting			

* Based on Manitoba Hydro's PCOSS18 methodology of calculating the Revenue to Cost Coverage ratios

16.1 Manitoba Hydro's Position

Manitoba Hydro submits that the Cost of Service Study and its resultant Revenue to Cost Coverage ratios are tools that may be used when setting rates, but the results of the study should not be used in a purely mechanistic manner. Rather, there should be a reasonable balance with the Utility's ratemaking objectives.

Manitoba Hydro argues that the Board should expand the zone of reasonableness to a broader 90% – 110% range in order to address fairness and equity matters that are no longer guiding principles of the Cost of Service Study. With this expansion of the zone of reasonableness, only the General Service Small Non-Demand class is outside of the zone.

The Utility argues further that revising the method of calculating the Revenue to Cost Coverage ratio would require an expansion to the zone of reasonableness because the alternative approach generates results with a much broader set of outcomes, suggesting a need for a more dramatic and immediate rate adjustment. As such, changing the calculation methodology should not be done in isolation, but rather in concert with acceptance of a broader zone of reasonableness. In addition, the alternative methodology would represent a significant departure from the traditional and long-standing calculation that has been used by Manitoba Hydro to report PCOSS outcomes, producing results that will not be directly comparable to those historically reported.

Manitoba Hydro submits that any evaluation of the current Revenue to Cost Coverage ratios must consider the directional changes that are expected in the next Cost of Service Study once Bipole III is in service and reflected in the revenue requirement. Manitoba Hydro states that the impacts by class of Bipole III entering service are

predictable based on each class's relative usage of the bulk power system and the change in cost structure to the significant, lumpy increase in the amount of Generation-related revenue requirement included in the study. The expected change in costs is sufficient to move the Revenue to Cost Coverage ratios for the Residential and General Service Large classes into the zone of the reasonableness as soon as Bipole III enters service, without any additional rate differentiation.

Based on the foregoing, Manitoba Hydro is not proposing to shift revenues between customer classes to adjust Revenue to Cost Coverage ratios.

16.2 Intervener Positions

The Consumers Coalition notes that the most common zones of reasonableness employed by Canadian regulators are 90% to 110% and 95% to 105%, but submits that the 90% to 110% range is preferred. It argues that, even with the current zone of reasonableness of 95% to 105%, the result of Bipole III entering service will be to move the Residential class well within the zone. There is therefore no basis for a disproportionately higher rate for the Residential class. As well, Residential class rates tend to be significantly above marginal costs, so differential rates for the class are not justified from an economic efficiency perspective.

Representatives of the General Service Small and General Service Medium Customer Classes and Keystone Agricultural Producers argue that the Board should consider improvements to the Revenue to Cost Coverage ratios for certain classes, and in particular the General Service Small Non-Demand class, which is outside the zone of reasonableness at 112.5% (using the PCOSS18 calculation methodology) or 115.7% (using the alternative calculation methodology). Differential rates would therefore be consistent with the rate-making principle of fairness, which seeks to avoid a situation

where any class pays an arbitrarily high rate through a contribution to costs that has the effect of subsidizing another class. There should be adjustment to the ratio for General Service Small Non-Demand in the range of a 1% lower rate increase.

The Manitoba Industrial Power Users Group submits that the calculation of Revenue to Cost Coverage ratios should be performed using the alternative methodology. It argues that the zone of reasonableness of 95% to 105% is appropriate for a large utility with a sophisticated Cost of Service Study like Manitoba Hydro. In evaluating the current Revenue to Cost Coverage ratios, the Board should set rates with positive movement towards the zone of reasonableness to reflect principles applied to utility regulation and to address longstanding overpayment of costs by the General Service Large classes. The degree of adjustment should be a rate increase 1% - 2% lower than average for the classes above 105% to reflect gradualism and to ensure that reversal will not be required in the near-term when Bipole III enters service.

16.3 Board Findings

The Board finds that the Revenue to Cost Coverage ratios are to be calculated using the alternative methodology of treating export revenues as a reduction to allocated class costs. Although this is a departure from the calculation methodology historically used by Manitoba Hydro, the goal of consistency has less weight at this time when the Cost of Service Study methodology itself has changed as a result of the Board's review in Order 164/16. Aside from the means of calculating the Revenue to Cost Coverage ratios, the results from previous Cost of Service Studies are already not directly comparable to post-Order 164/16 results given that significantly different methodologies are employed.

Further, the Board finds that the alternative methodology is consistent with cost causation. As stated by the Board in Order 164/16, “export revenues are not a ‘dividend’ that can be assigned or based on considerations other than cost causation”. The domestic customer classes incur costs to facilitate Manitoba Hydro’s export business. Treating export revenues as a reduction of allocated costs in the Revenue to Cost Coverage ratio aligns with the economic justification for major capital projects such as Keeyask, which is based on using the full quantum of export revenues to lower the cost of new generation and transmission.

As such, the Revenue to Cost Coverage ratios arising from PCOSS18 are:

Customer Class	Revenue to Cost Coverage Ratio
Residential	93.5%
General Service Small Non Demand	115.7%
General Service Small Demand	101.3%
General Service Medium	97.8%
General Service Large 0-30kV	98.7%
General Service Large 30-100kV	113.0%
General Service Large >100kV	112.3%
Area & Roadway Lighting	100.3%

In evaluating class Revenue to Cost Coverage ratios, the Board does not accept that the zone of reasonableness should be expanded to 90% to 110% and finds the zone of reasonableness should remain at 95% to 105%. While rate-making principles may justify accepting Revenue to Cost Coverage ratios that are outside of the zone, those principles do not support broadening the zone itself. A 95% to 105% range recognizes the sophistication of Manitoba Hydro’s Cost of Service Study and departure from this range has not been justified.

The Board finds that the Revenue to Cost Coverage ratio output of the Cost of Service Study is to be used at this time to more closely align the revenues collected from each customer class with the costs of the electrical system that are caused by each class. As determined in Order 164/16, the Cost of Service Study is a tool that can be used in rate-making. With Manitoba Hydro's implementation of the methodology changes resulting from the Board's review of the Cost of Service Study in Order 164/16, the Utility now has a valid, regulator-approved cost of service result. While the cost of service should not necessarily be the overriding factor in designing rates, it is consistent with the rate-making principle of fairness to consider the output of the Cost of Service Study.

The Board directs Manitoba Hydro to begin to implement differentiated rates to collect the approved revenue requirement. General Service Small Non-Demand, General Service Large 30-100kV, and General Service Large >100kV are all overpaying costs to a significant degree outside of the zone of reasonableness, at 115.7%, 113.0%, and 112.3% respectively. The two General Service Large classes have been overpaying in almost every year since 1996, even using the previous ratio calculation methodology which tended to narrow the range of class ratios.

Manitoba Hydro is to adjust class revenue targets in order to begin to move the General Service Small Non-Demand, General Service Large 30-100kV, and General Service Large >100kV customer classes Revenue to Cost Coverage ratios into the zone of reasonableness. This will result in these customer classes receiving a level of rate increase that is slightly lower than the average rate increase.

For the 2018/19 Test Year rates, Manitoba Hydro is to assume a 10-year timeframe to move all classes within the zone of reasonableness, based on the alternative calculation methodology as directed in this Order. The rate increase impact of doing so is to be shared across all customer classes that are either below or within the zone of

reasonableness: Residential, General Service Small Demand, General Service Medium, General Service Large 0-30kV, and Area & Roadway Lighting. As a result, the Residential customer class, which is currently the only class below the Zone of Reasonableness, will begin to move into the zone of reasonableness.

This approach to the implementation of differentiated rates is consistent with the principle of gradualism and limits the revenue recovery responsibility of the other customer classes, while maintaining overall revenue neutrality. This approach will also assist in limiting the prospect of over-correction of the issue at the time Bipole III enters service.

Manitoba Hydro is directed to include in its compliance filing for 2018/19 differentiated rates consistent with the Board's direction in this Order.

The Board will examine the Revenue to Cost Coverage ratios arising from the Prospective Cost of Service Study filed with the next GRA and will consider adjustment to the differentiation of rates as necessary, including to consider the impact of Bipole III entering service.

17.0 Rate Design

Manitoba Hydro designs its rates to collect the required amount of revenue from each customer class. In selecting a rate design, Manitoba Hydro considers its general rate-making objectives, which it identifies as: recovery of revenue requirement, fairness and equity, rate stability and gradualism, economic efficiency, competitiveness of rates, and simplicity and understandability.

Manitoba Hydro's existing customer class rate designs use a combination of the following charges: (1) a basic charge, which is a fixed charge that includes the direct costs of metering, portions of the distribution system, as well as billing administration, (2) a demand charge, which is a variable charge based on the maximum use of electricity within a specified time period and recovers costs that vary with peak electricity usage, and (3) an energy charge, which is a variable charge based on the electric energy consumed that recovers costs that vary with the consumption of electricity.

A simplified illustration of the existing class rate structures, based on the rates in effect as of August 1, 2017, is contained in the table below:

August 1, 2017	Basic Charge	Energy Charge (¢/kWh)	Demand Charge (/kVA)
Residential	\$8.08	8.196	N/A
GSS Non-Demand (1 phase)	\$21.91	8.609 * 5.976 ** 3.944	N/A
GSS Demand (3 phase)	\$30.89	8.609 * 5.976 ** 3.944	\$10.10
GSM	\$32.61	8.609 * 5.976 ** 3.944	\$10.10
GSL 0-30kV	N/A	3.709	\$8.57
GSL 30-100kV	N/A	3.448	\$7.34
GSL >100kV	N/A	3.342	\$6.53

* First 11,000 kWh

** Next 8,500 kWh

Source: PUB 42-5-1

If a customer class's rate structure is changed, the general result will be to redistribute the collection of revenues between the customers within that class. Some customers within the class will pay more in rates than they would have under the previous rate structure, while others will pay less.

In the current GRA, Manitoba Hydro is seeking to have the requested 7.9% rate increase apply to all components of customer rates, without any change to the existing rate structures. This would increase the basic charges, energy charges, and demand charges by the approved rate increase.

In this proceeding, there were a number of proposals from Intervenors and expert witnesses related to changing the rate structure, as well as an illustrative residential electric heating rate design filed by Manitoba Hydro.

First, the expert witness retained by the Green Action Centre, Paul Chernick, recommended that Manitoba Hydro be required to: 1) reduce demand charges over time while increasing energy charges and 2) eliminate the use of demand ratchets (rate provisions that charge demand-metered customers based on their maximum demand in current and previous months). Mr. Chernick gave evidence that these changes would send appropriate price signals to customers.

Second, Mr. Chernick proposed the implementation of a residential conservation rate, also referred to as an inverted block rate. This form of rate design includes a first block of consumption, set at a specified level of consumption exceeds the first block threshold – also referred to as the tail block – is priced at a higher level, based on the marginal value of energy. Because customers under this rate design pay less for consumption in the first block, and more for all kilowatt hours consumed in the tail block, there is a price signal to conserve energy.

Mr. Chernick's inverted block rate design recovers all of the requested rate increase in the tail block, with no increase to the basic charge or the energy charge for the first block of consumption.

Manitoba Hydro last used an inverted block rate structure between 2008 and 2011; however, in Order 40/11, the Board eliminated this rate design because it did not consider home heating load such that electric space heating customers were negatively affected due to their higher winter electricity consumption.

Third, Mr. Chernick proposed a rate design for residential electric space heating customers. Manitoba Hydro also filed an illustrative rate design scenario for residential electric space heating customers. The rationale for a reduced rate for electric space heating customers is that almost 20% do not have the choice of switching to natural gas

space heating which is a lower-cost heating fuel. Natural gas is not available in many areas of the province and, where it is available, converting to natural gas heating may not be economically viable. As a result, rate increases place a burden on consumers who do not have the option of switching to alternative fuel sources.

Mr. Chernick's electric space heating rate design is an inverted block rate with seasonal blocks, such that the level of consumption for the first block threshold varies based on seasonality. The discount for all consumption in the first block of energy is 4¢/kWh. His objective with this rate design was to offset the cost of electric space heating, without reducing incentives to conserve energy, by targeting the reductions to usage blocks that will not be the customer's marginal usage.

Manitoba Hydro's illustrative rate design scenario is aimed at shielding electric heating customers from a portion of the proposed rate increase. Non-electric heating residential customers bear the additional revenue responsibility. This rate design scenario was not approved by the Manitoba Hydro-Electric Board and is not proposed by Manitoba Hydro for regulatory approval.

Fourth, Mr. Chernick and the expert witness retained by the Manitoba Industrial Power Users Group, Patrick Bowman, each proposed time-of-use rates for the General Service Large customer classes. A time-of-use rate recovers the Utility's costs primarily through an energy charge, which is differentiated between on-peak and off-peak hours. This creates an incentive for customers to shift consumption to off-peak times, when the energy charge is lower. Manitoba Hydro previously applied for time-of-use rates in the 2014/15 & 2015/16 GRA, but the Board determined that the issue would be addressed in the Cost of Service Study review. The Cost of Service Study proceeding ultimately excluded the review of rate-related matters from scope and deferred these to the next GRA. In this GRA, Manitoba Hydro did not submit a time-of-use rate proposal as such a

rate design would shift revenue responsibility to customers who cannot make use of off-peak periods to reduce costs, exacerbating the bill impacts from the requested rate increase.

In his evidence, Mr. Chernick recommended that time-of-use energy charges be introduced to encourage reduction of usage in high-load periods. He proposed a three-period (on-peak, shoulder, and off-peak), seasonally differentiated rate with a narrow “critical peak” period. His proposal to eliminate demand charges would be a step towards the introduction of time-of-use rates.

Mr. Bowman proposed an optional time-of-use rate for industrial customers that could make use of off-peak energy at reduced rates to reduce electricity costs. Mr. Bowman’s evidence was that this would help address the issue of industrial customers having a limited number of ways to control costs without burdening customers who could not make use of the program. Mr. Bowman acknowledged that an optional time-of-use rate could result in revenue loss to Manitoba Hydro as only customers that could reduce their bills would opt for it, but suggested that the effect is likely to be a very small percentage of what the General Service Large >100kV class has been paying above costs for many years.

17.1 Manitoba Hydro’s Position

Manitoba Hydro argues that there should be no change to the rate structure at this time, as the introduction of such changes in an environment where the average customer bill is proposed to increase by 7.9% would result in some customers facing bill increases in excess of 7.9%. As such, Manitoba Hydro proposes that the rate increase of 7.9% apply to all components of the customer class rate structure.

Manitoba Hydro submits that demand charges are appropriate to provide a meaningful price signal to general service customers, without which customers may place greater demand on the system than they would otherwise. Demand charges also provide the Utility with a greater degree of revenue stability. Minimum billing demand and contract demand provisions reinforce the price signal to customers of the cost of demand that they impose on the system.

Manitoba Hydro argues that inverted block rates should not be implemented at this time due to the need to assess this rate design against the future conditions that may be experienced with Keeyask entering service, as well as with the significant change in marginal value. The tail block rate proposed by Mr. Chernick is considerably in excess of the leveled marginal value of electricity and would send an inappropriate price signal to customers.

Manitoba Hydro does not endorse the illustrative residential rate design scenario for a residential electric heating rate. With respect to Mr. Chernick's electric heating rate design, Manitoba Hydro submits that no weight can be given to the proposal as no proof of revenue was provided, making it impossible to test the design to ensure that it produces the appropriate level of revenue.

Manitoba Hydro does not accept that there should be an optional time-of-use rate, as this would result in a revenue shortfall to the Utility of approximately \$1.5 million. The suggestion from the witness for the Manitoba Industrial Power Users Group that non-participating customers would not make up the revenue shortfall means that Manitoba Hydro would not be compensated for this revenue loss. This would violate the rate-making objective of full recovery of the revenue requirement.

17.2 Intervener Positions

The Consumers Coalition does not support an alternative residential rate design. At a time when any rate increase is likely to be significantly above inflation, intra-class revenue adjustments would compound consumer challenges. There is also no basis for an inverted block rate due to the differential between estimated marginal costs and the actual residential rate, based on current rates and their projected trajectory. As well, the Consumers Coalition believes that Manitoba Hydro's illustrative rate scenario is not justified by cost causation or efficiency reasons. The Revenue to Cost Coverage ratio for non-electric heating customers is already higher than that for electric heating customers, and it is likely that the marginal cost for electric heating customers is also higher.

The Green Action Centre recommends that it be a strategic priority for Manitoba Hydro and Efficiency Manitoba to address affordability for electric space heating customers through initiatives that reduce and affordably finance the capital costs of geothermal systems. The Green Action Centre also submits that the Board should accept the marginal cost calculation performed by Mr. Chernick, which indicates that current rates are below marginal costs and further supports the implementation of an alternative rate design.

The Manitoba Industrial Power Users Group argues that the Board should direct Manitoba Hydro to bring forward for the Board's review at the next GRA an optional time-of-use rate for General Service Large customers. The rate should be prepared by Manitoba Hydro in consultation with affected customers.

17.3 Board Findings

The Board finds that there will be no change to the rate design, except as may be required to achieve the class revenue targets as directed in the previous section.

First, the Board does not accept that there should be a reduction in demand charges or elimination of the demand ratchet. This change in the existing rate structure would contribute to the magnitude of bill impacts that some customers will have to absorb, including the general rate increase as well as the shift in revenue responsibility as a result of differentiated rates. In addition, the Board heard evidence in this proceeding about the potential for increased use of disruptive technology for non-utility generation, such as customer solar photovoltaic installations. This could potentially require the review of demand charges in the near future in order to ensure that class revenues are fully recovered and that the value of grid reliability is properly assessed when used by customers as a back-up power resource.

Second, the Board finds that the implementation of a residential inverted block rate is not supported on the evidence. Due to the updated marginal value, which is less than the current residential energy rate, an inverted block rate would send an inappropriate price signal and would be contrary to the rate-making principle of efficiency. However, the Board notes that the General Service classes have declining block rate structures and an explanation for this rate design was not provided in this GRA, despite the updated marginal value information. Manitoba Hydro is directed to provide in its next GRA filing the rationale for the rate design for the General Service customer classes and an evaluation of the block thresholds and charges.

Third, the Board finds that neither of Manitoba Hydro's illustrative residential rate design nor the electric space heating residential rate design proposed by Mr. Chernick are to be implemented. These rate designs are not justified on a cost of service basis, given the higher cost to serve electric space heating customers. Due to their higher cost to serve, electric space heating customers are already subsidized by non-electric heat customers. The Board also notes the lack of proof of revenue provided for Mr. Chernick's rate design proposal. However, as discussed further below, the Board is concerned about bill affordability issues for lower-income electric space heating customers and recommends that bill assistance for these customers be provided through a comprehensive Government bill affordability program.

Finally, with respect to time-of-use rates, the Board continues to be of the view that time-of-use rates should be implemented for General Service Large customers; however, due to the updated marginal values filed in this proceeding, further study is required. The Board therefore accepts the recommendation of the Manitoba Industrial Power Users Group and directs Manitoba Hydro to bring forward for the Board's review at the next GRA a time-of-use rate design proposal. The proposal is to be based on further analysis in the context of the updated marginal values. Manitoba Hydro is directed to consult with General Service Large customers before filing its proposal with the Board and to include the results of that consultation with the information provided to the Board.

18.0 Bill Affordability

The Board has long been concerned with utility bill affordability issues. Evidence with respect to energy poverty in the province of Manitoba has been brought before the Board for at least a decade. The Board recognizes that Manitoba Hydro has, over time, developed programs to assist customers in managing their energy consumption, thereby reducing individual customer bills, and such programs include targeted support for lower-income customers. However, the Board has consistently expressed concern that measures focused on energy efficiency implemented by Manitoba Hydro to date, while commendable, have been insufficient to address the energy burden faced by lower-income customers. This is particularly the case in a time of major capital construction by the Utility, which has and is forecast to continue to put upward pressure on electricity rates at a level greater than the rate of inflation. This concern is heightened with Manitoba Hydro's projected rate path that, if implemented, would increase consumer rates by 77% cumulatively over 10 years. The history of the substantial discussions on this important matter bears repeating.

Ten years ago, in Order 116/08, the Board noted that the lower-income, high energy burden problem is pervasive in Manitoba and that "a low-income bill assistance program would assist in reducing the energy burden faced by low-income households. Significant non-energy benefits would arise, including increased comfort, reduced health costs, lower bad debt write-offs etc." The Board went on to hold that "Energy affordability for low-income families is very much an issue that requires more or less immediate attention in Manitoba." The Board directed Manitoba Hydro to propose for Board consideration a lower-income bill assistance program no later than September 30, 2008. Following a Review and Vary Application by Manitoba Hydro, the Board revised its directive to remove the deadline date and to require Manitoba Hydro to provide a new

date for the earliest implementation of a Lower-Income Bill Assistance Program in its update to the Board required by November 30, 2009.

Manitoba Hydro filed a report on lower-income bill assistance on March 4, 2009. In the report, Manitoba Hydro discussed possible bill assistance program expansion and indicated that it would investigate the viability of potential program expansion, citing many variables that required investigation. In Order 32/09, the Board accepted that implementation of a program would require the addressing of issues that are complex and far-reaching. The Board directed Manitoba Hydro to provide a report with respect to Manitoba Hydro's plans for a program after the Utility's planned consultation with stakeholders and subsequent recommendation to the Manitoba Hydro-Electric Board. The Board reiterated the vital importance of protection for lower-income customers, noting Manitoba Hydro's plans for a capital program predicated on consistent future rate increases and the Board's expectations that Manitoba Hydro would put forward its preferred lower-income bill assistance program.

In Order 5/12, the Board expressed its concern with the slow pace of the overall energy poverty relief effort and stated that more should be done, particularly for First Nation communities and specifically First Nation diesel communities. However, the Board found that, before it would require Manitoba Hydro to develop a definitive bill assistance program, more information was required as to existing funding made available by Government and the programs available to directly or indirectly alleviate poverty.

In the NFAT Report, the Board again expressed concern about the impact of projected rate increases on lower-income consumers, including customers living in First Nation communities. The Board noted the significant rate burden on consumers over the next 20 years and the likely substantial incremental revenues that would accrue to the Province of Manitoba as a result of Keeyask. The Board recommended that the

Government of Manitoba direct a portion of the incremental capital taxes and water rental fees from the development of Keeyask be used to mitigate the impact of rate increases on lower-income consumers.

In Order 73/15, the Board recognized that higher electricity rates – then forecast to be at the level of annual increases of 3.95% for 17 years – would have an impact on lower-income ratepayers, and particularly electric space heating ratepayers. On the recommendation of the Green Action Centre's expert witness in the proceeding, the Board directed Manitoba Hydro to initiate a collaborative process to develop a bill affordability program harmonized with Manitoba Hydro's other programs supporting lower-income ratepayers. The Board stated that, upon completion of the collaborative process, the Board would evaluate the options presented and decide on their implementation.

In response to the Board's directive in Order 73/15, Manitoba Hydro established the Bill Affordability Working Group ("Working Group"), which was comprised of a variety of stakeholders who represent, work with, or provide services to lower-income Manitoba Hydro customers. The Working Group participants were:

- Consumers' Association of Canada (MB)
- Employment & Income Assistance (Manitoba Department of Families)
- Green Action Centre
- Manitoba Housing
- Manitoba Hydro
- Manitoba Industrial Power Users Group

- Manitoba Keewatinowi Okimakanak
- Manitoba Metis Federation
- Southern Chiefs Organization
- Social Planning Council of Winnipeg
- Winnipeg Harvest

The Working Group carried out the first collaborative in-depth examination of energy affordability in Manitoba. The collaborative process took place over sixteen months and, in January of 2017, culminated in The Manitoba Hydro Bill Affordability Collaborative Process Summary Report & Recommendations (“Working Group Report”). The Working Group’s primary findings included:

- A definition of energy poverty in Manitoba.

The Working Group established the following definition of energy poverty: “Energy poverty refers to circumstances in which a household is, or would be, required to make sacrifices or trade-offs that would be considered unacceptable by most Manitobans in order to procure sufficient energy from Manitoba Hydro.” For the purposes of the Working Group Report, the Working Group considered a household to be energy poor if it spends more than 6% or 10% of pre-tax income on energy and also has a level of income lower than the current Low Income Cut-Off 125 (“LICO-125”), which is 25% above the Statistics Canada lower-income measurement;

- Greater understanding and insights into energy poverty in Manitoba, including an improved understanding of which Manitobans are affected or likely to be affected by energy poverty, and why.

Based on research conducted as part of the Working Group process, the Working Group concluded that the relationship between unpaid bills or arrears and energy poverty is relatively weak;

- Assessment of existing affordability programs for lower-income customers, including evaluation of program delivery, uptake and success in meeting stated objectives.

Manitoba Hydro's existing programs and approaches to bill affordability reviewed by the Working Group were the Power Smart Affordable Energy Program, Neighbours Helping Neighbours, the Equal Payment Plan, deferred payment plans, arrears management, and community outreach. The Working Group also considered other assistance and options available in the province, including Employment and Income Assistance, Manitoba Housing programs, and contributions by Indigenous & Northern Affairs Canada towards the cost of Manitoba Hydro bills for customers on First Nations reserves who receive social assistance;

- Research and evaluation of bill affordability programs in other jurisdictions, to better determine if successful initiatives from elsewhere in Canada and the United States could be implemented here.

Based on a jurisdictional scan, the Working Group concluded that Ontario appears to be the only Canadian jurisdiction to have implemented a rate assistance program. The Ontario Electricity Support Program ("OESP") was introduced in 2016 and provides fixed monthly bill credits to eligible customers. The OESP was initially ratepayer funded, but as a result of provincial legislation, is now taxpayer funded with higher fixed credit amounts;

- Potential impacts of proposed Manitoba Hydro rate increases, determined by a rate-modelling exercise to evaluate how increases would likely affect lower-income customers.

This showed that impacts of higher energy costs are anticipated to be most pronounced for households that already spend a significant proportion of their total income on energy; and

- Rate assistance mechanisms and options that could improve affordability for lower-income customers, as well as analysis of estimated revenue losses associated with each option.

The Working Group identified and modelled three rate assistance options: (1) basic monthly charge waiver (2) straight rate discount (3) percentage of income payment plan.

Ultimately, the Working Group concluded that its findings illustrate:

the deeply complex, multi-faceted nature of energy poverty. Energy poverty spans issues of income, geography, cultural identity, family size, awareness of available support programs, and more. The Working Group's findings make it clear that no single initiative or program will solve the issue of energy poverty. Rather, the Working Group's recommendations reflect the consensus view that a suite or "toolkit" of improvements is required to improve energy affordability in the province.

The Working Group's recommendations addressed lower-income energy efficiency initiatives, electric heating, emergency assistance, landlord and tenant initiatives, extreme weather impacts, equal payment plans, bill collection, arrears management and bill forgiveness, and funding. While improvements to Manitoba Hydro's existing lower-income offerings were recommended, the Working Group did not reach consensus on any specific rate options or rate assistance program.

18.1 Jurisdiction of the Board to Order Lower-Income Rate Assistance

In Order 116/08, the Board found that it would be acting within its legislative mandate if it were to direct Manitoba Hydro to implement a bill assistance program.

In Order 73/15, the Board again considered an argument from Manitoba Hydro that the Board does not have jurisdiction to order the Utility to implement a bill affordability program. On review of the Board's constating legislation, the Board rejected Manitoba Hydro's submission and reiterated its finding from Order 116/08 that ordering a bill affordability program is within the Board's legislative powers. The Board concluded that

any future proposals for bill assistance would therefore be evaluated from a comprehensive policy perspective, rather than being focused on the issue of the Board's legal jurisdiction.

Manitoba Hydro's Position

Manitoba Hydro argues that, based on the text, context, and purpose of The Crown Act, The Hydro Act, and The Board Act, the Board does not have jurisdiction to order the implementation of lower-income rates or other bill affordability programs. Although the Board has previously concluded that it does have such jurisdiction, Manitoba Hydro submits that this conclusion is inconsistent with the legislation, remains untested in the courts in Manitoba, and that the Board ought to reconsider the issue. In particular, Manitoba Hydro argues that none of the statutory factors which the Board may consider in reviewing rates explicitly permit consideration of affordability or ability to pay. Rather, the Board's rate-setting function must be interpreted as being limited to accomplishing Manitoba Hydro's mandate of providing for the supply of power adequate to meet the province's needs and to promote economy and efficiency in all matters related to the generation, transmission, distribution, and use of power. Finally, Manitoba Hydro submits that the amendments to The Hydro Act that brought in uniform residential rates were intended to create a single rate for residential electricity users. A program targeting First Nations living on reserve would necessarily classify customers based on geographic location in violation of subsection 39(2.2) of The Hydro Act.

Intervener Positions

The Assembly of Manitoba Chiefs takes the position that the Board has jurisdiction to order a bill affordability program and that this jurisdiction is affirmed by *Charter* values.

Similarly, the Consumers Coalition concludes that the Board does have jurisdiction to order implementation of a bill affordability program.

The Green Action Centre takes the position that the issue of Board jurisdiction to order a bill affordability program has long been decided and should not be revisited. It argues that the Board's constating legislation gives the Board wide latitude to take into consideration any compelling policy considerations that the Board considers relevant to setting rates, and any other factors that the Board considers relevant. This jurisdiction is similar to that of the Ontario Energy Board, which the Ontario Divisional Court concluded has the jurisdiction to consider "ability to pay" in setting rates. It argues further that, in order to achieve its mandate of supplying economic power to ratepayers at fair rates, Manitoba Hydro must deal with the issue of affordability.

Manitoba Keewatinowi Okimakanak also argues that the Board has jurisdiction with respect to bill affordability programs. It submits that the Board's mandate to set equitable rates must be governed by the direction set out in *The Path to Reconciliation Act*.

Board Findings

The Board finds that it has legal jurisdiction to order implementation of lower-income rate assistance. This issue was raised previously before the Board and addressed in Orders 116/08 and 73/15, in both of which the Board concluded that it has the legal jurisdiction. The previous position of the Board was supported by many of the parties in

this hearing other than Manitoba Hydro. The Board continues to be of the view that it has jurisdiction.

The Board's jurisdiction with respect to Manitoba Hydro is derived from a suite of legislation, primarily consisting of The Board Act, The Crown Act, and The Hydro Act. While the Board's jurisdiction over Manitoba Hydro is largely limited to the review of rates, that jurisdiction is broad. As set out in paragraph 25(4)(a) of The Crown Act, in reaching a decision with respect to rates charged by Manitoba Hydro with respect to the provision of power, the Board has the discretion to take into consideration, in addition to factors relating to the revenue requirement of the Utility:

25(4)(a)

viii. any compelling policy considerations that the board considers relevant to the matter, and

ix. any other factors that the Board considers relevant to the matter.

The considerations set out in paragraph 25(4)(a) serve as a guide to the Board in exercising its mandate under section 77 of The Board Act to fix just and reasonable rates. As the Manitoba Court of Appeal held in *Consumers' Association of Canada (Manitoba) Inc v Manitoba Hydro Electric Board*, 2005 MBCA 55, this requires the Board to balance two concerns: "the interests of the utility's ratepayers, and the financial health of the utility. Together, and in the broadest interpretation, these interests represent the general public interest." Each of these two concerns support the ability of the Board to consider the affordability of Manitoba Hydro's rates, whether broadly or within a class or sub-set of its customers. Affordability is not only relevant to the interests of the Utility's ratepayers, but also to the financial health of the Utility as rates that are in excess of what customers can afford may lead to depressed revenues

through a combination of reduced energy consumption, business closures or relocation, and as acknowledged by Manitoba Hydro, potentially an increase in arrears.

The scope of the Board's discretion in reviewing Manitoba Hydro's rates is not limited to Manitoba Hydro's mandate of providing for the supply of power adequate to meet the province's needs and to promote economy and efficiency in all matters related to the generation, transmission, distribution, and use of power, as set out in section 2 of The Hydro Act. Had it been the legislature's intention to narrowly circumscribe the Board's jurisdiction in this way, it would have done so expressly using the same statutory language contained in The Hydro Act. Instead, the legislature chose to grant the Board broad discretion to consider, "any compelling policy considerations" and "any other factors" that the Board considers relevant to the matter. Affordability is a factor that the Board may consider when setting rates.

As the Board held in Order 73/15, subsection 39(1) of The Hydro Act requires that the aggregate price of power realized by Manitoba Hydro achieve full cost recovery, but this is subject to the requirement that rates must be just and reasonable. Moreover, the Board's constating legislation does not prohibit the creation of a customer class that pays less than the average cost to serve such customers.

Amendments to The Hydro Act in 2001 resulted in the elimination of regional zone rates, which had charged higher rates for customers in Northern and rural Manitoba than for those in the City of Winnipeg based on lower customer densities having higher costs to serve. Subsections 39(2.1) and 39(2.2) of The Hydro Act provide as follows:

39(2.1) *The rates charged for power supplied to a class of grid customers within the province shall be the same throughout the province.*

39(2.2) *For the purposes of subsection (2.1),*

- (a) *grid customers are those who obtain power from the corporation's main interconnected system for transmitting and distributing power in Manitoba; and*
- (b) *customers shall not be classified based solely on the region of the province in which they are located or the population density of the area in which they are located.*

In defining a customer class, the classification of customers cannot be based solely on the region of the province in which the customers are located or the population density of the area in which they are located. However, once a customer class has been defined in accordance with subsection 39(2.2), the requirement is only that all customers within that class be charged the same rate. The classification of customers based on other characteristics, either instead of or in addition to region or population density, is not prohibited. For example, the legislation does not prohibit the creation of a lower-income customer class as such a class would not be based solely on region or population density, subject only to the limitation that all customers within the class be charged the same rates for power.

Manitoba Hydro argues that the Board should depart from its previous findings on jurisdiction based on the decision of the Nova Scotia Court of Appeal in *Dalhousie Legal Aid Service v Nova Scotia Power*, 2006 NSCA 74. In that decision, the Court found that the Nova Scotia Utility and Review Board does not have jurisdiction to implement a rate assistance program for lower-income customers, based on subsection 67(1) of the Nova Scotia Board's governing legislation. Manitoba Hydro submits that subsection

67(1) of the Nova Scotia legislation is similar to subsection 39(2.1) of The Hydro Act, and therefore this Board should follow the guidance of the Nova Scotia Court of Appeal.

The Board does not agree. Subsection 67(1) of the Nova Scotia legislation is considerably more restricted than the statutory framework contained in The Board Act, The Crown Act, and The Hydro Act. Subsection 67(1) of the Nova Scotia legislation provides:

67(1) All 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.

Due to the requirement that customers receiving “substantially similar” service, and the Nova Scotia Board’s finding that lower-income residential customers receive substantially the same level of service as all other residential customers, the Nova Scotia Court of Appeal concluded that the Board was prohibited from ordering differential rates based on the customer’s income.

Unlike the Nova Scotia Board, this Board is empowered to take into account “any compelling policy considerations” and “any other factors that the Board considers relevant to the matter”. In Manitoba, there is no similar restriction as in Nova Scotia that all customers receiving substantially similar service “shall always” be charged the same rate. Rather, the only limitation on the Board’s broad authority under *The Crown Act* is the requirement that customers not be classified solely based on region or population density. As detailed above, this does not prohibit the creation of a lower-income customer class.

Contrary to Manitoba Hydro's submission, this Board's jurisdiction is more closely aligned with the statutory framework in Ontario. In *Advocacy Centre for Tenants-Ontario v Ontario Energy Board* (2008), 293 DLR (4th) 684, the Ontario Divisional Court distinguished the Nova Scotia decision based on the restrictive wording of subsection 67(1) of the Nova Scotia legislation. In contrast, the Court in Ontario noted that section 36 of the Ontario Energy Board's governing legislation has broad language that empowers the Ontario Board to set "just and reasonable" rates. The Ontario Court concluded that the Board could, in setting rates, take into account income levels to achieve the delivery of affordable energy to lower-income consumers as this would meet the objective of protecting consumer interests.

The Ontario legislation does differ from the legislation in Manitoba in that subsection 36(3) expressly states that the Ontario Energy Board "may adopt any method or technique that it considers appropriate" in fixing just and reasonable rates. This provision provided greater flexibility to the Ontario Energy Board than it had previously under a statutory regime that required rate-setting on a very prescriptive cost of service basis. Similarly, the Manitoba legislation grants broad authority to this Board to take into account policy considerations and other relevant factors in rate-setting. Moreover, as the Supreme Court of Canada held in *Ontario (Energy Board) v Ontario Power Generation Inc*, 2015 SCC 44, "where a statute requires only that the regulator set "just and reasonable" payments... the regulator may make use of a variety of analytical tools in assessing the justness and reasonableness of a utility's proposed payment amounts." The Manitoba Court of Appeal has similarly determined that, in Manitoba, cost of service is a tool that may or may not be used in setting rates. Thus, although in Manitoba there is no express statutory provision akin to the Ontario subsection 36(3), the Board is empowered to employ a variety of analytical tools in fixing rates. Indeed, Manitoba Hydro itself in this GRA urges the Board to be guided by considerations in

rate-setting beyond pure cost to serve. Thus, the Board does not accept the argument of Manitoba Hydro that this Board's jurisdiction is more limited than the Ontario Board because of the absence of a provision similar to subsection 36(3) in Ontario.

Therefore, the Board has jurisdiction under its governing statutory framework to order a bill affordability program such as a lower-income rate, and to take into account affordability as a factor in setting just and reasonable rates.

18.2 Bill Affordability for Manitoba Hydro Customers

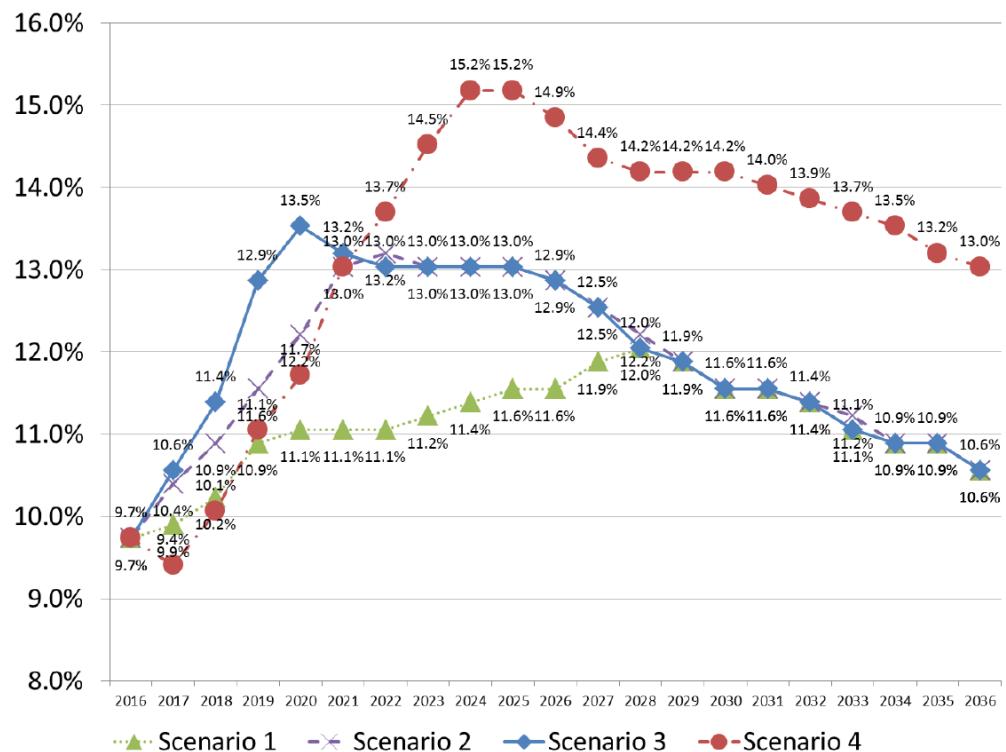
In the current GRA, which followed the completion of the Working Group Report, Manitoba Hydro did not propose an affordability rate or rate assistance program. In the GRA filing, Manitoba Hydro did provide a response to the specific recommendations of the Working Group, including actions to be taken with regards to each recommendation. However, with respect to an affordability rate or rate assistance program, Manitoba Hydro's position is that:

issues of poverty and distribution effects are complex and ought to be addressed through the setting of social policy which is within the purview of government. As such, Manitoba Hydro is of the view that of the provision of social assistance programs directed to low income customers is appropriately reserved for the Province of Manitoba.

However, in testimony in the oral hearing, Manitoba Hydro's President and Chief Executive Officer stated his recognition that the matter of bill affordability will become increasingly important to resolve as Manitoba Hydro proceeds with higher rate increases and therefore, there is a need to find solutions to the issue.

The figure below depicts the impact of various Manitoba Hydro rate increases on the proportion of Manitoba Hydro's total number of residential customers (households) that are LICO-125 and above the 6% energy poverty threshold. In the figure, the plotted line for "Scenario 4" is based on the projected rate plan contained in MH16 Update with Interim. As illustrated in the figure below, the projected rate plan would result in the proportion of energy poverty increasing from 9.7% to 15.2% in 2024, and remaining at a permanently higher level through at least 2036.

Percentage of Households That Are LICO-125 and Above 6% Energy Burden Threshold



Scenario 1 - 3.95% nominal electricity rate increases for 12 years; Scenario 2 - 5.95% nominal electricity rate increases for 6 years; Scenario 3 - 7.95% nominal electricity rate increases for 4 years; Scenario 4 - 3.36% nominal electricity rate increase in 2017, followed by 7.9% rate increases for 6 years and a 4.54% rate increase for 1 year

Source: AMC/MH II-23

The Board heard evidence from residential ratepayers who have to make sacrifices in their daily lives in order to be able to pay their electricity bills. As one ratepayer testified, rate increases add stress and, in the context of being on a fixed income, present difficult and limited opportunities for saving. Another ratepayer gave evidence that, if Manitoba Hydro receives the full amount of its planned rate increases, he may have to consider changing where he lives. He went on to explain that “I’m tired of working so I think it would be -- put more of a squeeze on us. I support my grandson right now. He’s out of work, lives with us -- I don’t know what else to say. It’s just getting tougher.”

A single mother of four children testified before the Board that, if Manitoba Hydro's planned rate increases are granted:

I will be forced to further dig in deeper into my food budget, decreasing the amount of groceries I am able to buy per month. And in terms of food, I will be looking at alternatives, cheaper, unhealthier alternatives in order to make my groceries last.

It will reduce the amount -- it will reduce the amount that I'm able to engage in social activities with my children, social outings. It will negatively impact us ... where it would not allow me to save up for the future or to have an emergency fund. It makes it more challenging for me to put money away in terms of getting a vehicle down the road and just saving -- saving money overall, it would be very challenging because I'm having a hard time with my utility bills as it is.

In addition to the evidence of the real-life experiences of ratepayers in Manitoba, expert witnesses in the proceeding provided specific proposals for an affordability rate. In particular, the expert witness retained by the Green Action Centre, Paul Chernick, proposed inverted block rate structures both for LICO-125 ratepayers and for LICO-125 ratepayers with electric space heating.

For LICO-125 ratepayers, Mr. Chernick designed a rate based on estimates of energy consumption. His proposal is to eliminate the basic monthly charge and discount the energy charge for the first block of energy consumed by 4¢/kWh. The size of the first block for this rate design is maintained at 500 kWh in each month. Mr. Chernick recommended that the lost revenues that would result from this rate design be recovered from all non-LICO customers, including general service customers, not just non-LICO residential customers.

For LICO-125 ratepayers with electric space heating, Mr. Chernick based his rate design on the distribution of residential electric use among seasons. As with the LICO-125 rate design, the basic charge is waived and the discount for the energy charge for the first block of energy is 4¢/kWh, but the size of the first block varies by season, with the greatest discount being in the winter months. Again, Mr. Chernick recommends that the lost revenues be recovered from all non-LICO customers.

The expert witness retained by the Assembly of Manitoba Chiefs, Philip Raphals, recommended that the Board order Manitoba Hydro to present a ready-to-implement affordability rate for implementation in 2019/20, and that Manitoba Hydro do so with the assistance of a working group to develop the details of the rate. With respect to eligibility, Mr. Raphals' evidence was that coverage at this time should be limited to energy-poor customers with electric space heat, but that there should be a *priori* eligibility for First Nation residents on reserve who pay their own energy bills.

Dr. Wayne Simpson, an expert witness retained by the Consumers Coalition, recommended that, along with enhancements to affordable energy programming, Manitoba Hydro and its stakeholders continue research into energy poverty and its characteristics. Dr. Simpson recommended that Manitoba Hydro be ordered to develop an efficient rate assistance program that provides assistance to lower-income energy poor households that is not directly tied to the level of energy consumption, along the lines of fixed credit approaches taken by Colorado and Ontario.

Manitoba Hydro's Position

Manitoba Hydro's view is that the provision of lower-income social assistance programs is appropriately reserved for the Province of Manitoba. Government already administers income-based programs, has the resources, and provides these programs through a

variety of existing mechanisms. While Manitoba Hydro offers programs to assist lower-income customers in lowering their energy bills through energy efficiency opportunities, it submits that the difficulties with the administration, implementation, and on-going operation of a rate assistance program pose significant challenges in identifying which customers truly require assistance. Unlike the Province of Manitoba, Manitoba Hydro does not have resources to administer a new income-based program, nor does it have access to pertinent data that would be necessary to successfully implement such a program.

Manitoba Hydro further argues that it is impossible to test Mr. Chernick's rate design proposal to ensure that it produces the appropriate level of revenue.

Intervener Positions

The Assembly of Manitoba Chiefs urges the Board to consider the goal of reconciliation, consistent with *The Path to Reconciliation Act*. The Assembly of Manitoba Chiefs states that on-reserve First Nations communities have higher rates of energy poverty, lower quality housing, lower incomes, and lower income growth than the rest of the province. Manitoba Hydro's rate increases will disproportionately affect First Nations communities. As such, the Board should order Manitoba Hydro to immediately implement bill affordability measures that offer discounts to residential customers in on-reserve First Nations communities.

Specifically, the Assembly of Manitoba Chiefs argues that Mr. Chernick's LICO-125 electric space heating rate should be ordered for implementation for on-reserve residential customers, with automatic eligibility for the first 500 kWh block of consumption, and an increased electric space heating discount that reflects the different consumption patterns on reserve. The resulting lost revenue should be recovered from

all classes as the burden of the additional costs from major new generation and transmission projects which facilitate export power sales falls disproportionately on First Nations, whose Treaty rights are adversely affected. For off-reserve residents, the Board should order an engagement process for bill affordability measures and require Manitoba Hydro to report back on the chosen program within one year.

The Consumers Coalition submits that energy poverty should be addressed through a lower overall rate increase, coupled with effective provincial social benefit programs. The Consumers Coalition does not endorse a ratepayer-funded bill assistance program due to the evidence in the proceeding regarding the likelihood of unacceptably low participation rates. It also does not accept the use of an inverted block rate design for lower-income residential consumers, due to the gap between estimated marginal costs and the actual rate, nor does it support bill assistance targeted at only First Nations customers, as too many vulnerable consumers are left out. Rather, the Board should recommend that the Government establish a taxpayer-funded program to address energy poverty.

The Green Action Centre submits that, given the environment of rising rates, moving forward with implementing a bill affordability program should not be delayed by administrative concerns or differences of opinion regarding the design of the program. The Green Action Centre recommends that Mr. Chernick's LICO-125 electric space heating rate design should be selected for piloting in 2018/19, with first application to LICO-125 customers whose energy burden exceeds 6%. The program can be reviewed at the next GRA, limiting any risk associated with administration. The costs of the program should be funded by all ratepayers and Manitoba Hydro should implement a separate account to be funded at a sufficient level in addition to the revenue requirement. The Green Action Centre also suggests that there should be a single

application process, amalgamated with other Manitoba Hydro assistance programs such as the Affordable Energy Program and arrears management.

Manitoba Keewatinowi Okimakanak argues that, consistent with the mandate under *The Path to Reconciliation Act*, the Board should create a separate class for First Nations residential and General Service Small and General Service Medium ratepayers – a class which can be easily identified with existing Manitoba Hydro data – and apply affordability measures to this separate class. Manitoba Keewatinowi Okimakanak suggests that lost revenues associated with the affordability measures implemented for a First Nations customer class should be allocated to all customer classes or natural gas heating customers or both. The Board should also recommend that the Government reduce the payments that Manitoba Hydro is required to make to the Government.

Board Findings

Provincial Government Bill Affordability Program

There is an important role for governments in advancing bill affordability for all Manitobans. The Board unanimously recommends that the provincial government introduce a comprehensive bill affordability program run by a government department to address energy poverty issues faced by Manitobans throughout the province. The Board heard evidence that there is a long-standing need to address this issue and the government is best situated to do so in a comprehensive fashion. The provincial government has social program infrastructure already in place.

The Working Group performed extensive research and analysis. On a consensus basis, the Working Group's Report identified three programs as options for rate assistance:

- A straight-rate discount, which would deduct a fixed percentage amount from the bills of qualifying customers. The Working Group identified three levels of discount: 25%, 35%, and 45%;
- A fixed charge waver, which would eliminate the basic monthly charge from the bills of qualifying customers; and
- A percentage of income payment plan, which would cap the energy bills of qualifying customers at a set level.

The program options identified by the Working Group provide a starting point for the provincial government's development of a bill affordability program. The Board recommends that the provincial government establish a stakeholder group to build on the research and analysis undertaken by the Working Group, as well as programs in other jurisdictions, such as the Ontario Energy Support Program.

Given Manitoba Hydro's expertise regarding its customers, billing system, and affordability issues, and the evidence of Manitoba Hydro's President and Chief Executive Officer of there being an increasing need to find solutions to the unaffordability of bills, the Utility should take initiative to work with the provincial government and other stakeholders to assist in the development of a comprehensive program.

As discussed elsewhere in this Order, the Board notes that there are new sources of revenues flowing to the provincial government and increased revenues from Manitoba Hydro – specifically as a result of the major capital projects – that can be used to fund a government bill affordability measure. This is consistent with the NFAT recommendation that the provincial government direct a portion of the incremental capital taxes and

water rental fees from the development of Keeyask be used to mitigate the impact of rate increases on lower-income consumers.

First Nations On-Reserve Residential Customer Class

A majority of the Board directs Manitoba Hydro to establish a First Nations On-Reserve Residential customer class for existing First Nations reserves and that this customer class will receive a 0% rate increase for the 2018/19 Test Year, such that the rate for this customer class will be maintained at the August 1, 2017 approved Residential rate. The 0% rate increase for 2018/19 is also to apply to First Nations diesel zone residential customers. This decision is not unanimous and Board member Larry Ring provides dissenting reasons below. This section sets out the reasons of the majority on this issue.

The issue of bill affordability has been a matter of serious concern for this Board for over a decade. Yet, despite the long history of substantial evidence and discussion before the Board on bill affordability, there have been impediments that have limited the achievement of a concrete plan or program. Particularly in the context of the continuation of rising rates over the recent past, the situation must begin to be addressed.

As noted by Manitoba Hydro's President and Chief Executive Officer, while Government has a role to play in addressing the issue of affordability, so too does Manitoba Hydro and rate design can assist the Utility in fulfilling its role. Under its mandate to set rates in the public interest, the Board can and should play a part.

The Board recognizes that there are potential administrative and program design hurdles associated with a bill affordability program, and that parties in this proceeding remain of the view that these hurdles give rise to impracticalities, inefficiencies, and cost

ineffectiveness. However, the Board concludes that there are steps that must be taken today to address bill affordability.

An appropriate starting point for bill affordability in Manitoba is a program targeted at on-reserve ratepayers, specifically through the creation of a First Nations On-Reserve Residential customer class with a differentiated rate to address energy poverty on Manitoba reserves. Manitoba Hydro is kept whole because the cost of the 0% increase for this new customer class has been factored into the level of the average general rate increase granted for the Test Year to all other customer classes.

The creation of this customer class is justified by the need to address energy poverty on-reserve, supported by evidence that 96% of First Nations people on-reserve live in poverty and that reserves in Manitoba have the highest rates of child poverty in Canada. In addition, the poor housing stock on reserves in Manitoba and the fact that the vast majority of First Nations on-reserve residential customers (61 out of 63 First Nations communities) have no access to the more economical option of natural gas for heating exacerbate the issue of energy poverty. In his testimony, Manitoba Hydro's President and Chief Executive Officer described the housing conditions on First Nations reserves that he has visited as "abysmal". This results in residents on First Nations reserves having to use more energy to heat their homes. On average, First Nations on-reserve customers consume more energy than off-reserve residential customers, despite the efforts of Manitoba Hydro to use demand side management programming to improve energy efficiency for homes on reserves. Taken together, these factors lead to higher utility bills and a population of Manitobans that is disproportionately vulnerable to rate increases.

The customer class and related affordability measure of a 0% increase are also consistent with the principle of reconciliation. As defined in *The Path to Reconciliation Act*, reconciliation is the ongoing process of establishing and maintaining mutually respectful relationships between Indigenous and non-Indigenous peoples in order to build trust, affirm historical agreements, address healing, and create a more equitable and inclusive society. The creation of a separate customer class is in response to the degree of poverty on reserves. This separate customer class is to continue until otherwise ordered. Shielding the customer class from the general rate increase in the 2018/19 Test Year recognizes the particular factors that make on-reserve ratepayers uniquely situated among residential consumers in Manitoba. As argued by the Assembly of Manitoba Chiefs, rate increases should not widen the existing gap between First Nations living on reserve and other Manitobans.

The First Nations On-Reserve Residential customer class is consistent with the requirements of The Hydro Act because this customer class is not defined solely on the basis of the region of the province in which the customers are located or population density. As a creation of Canadian Aboriginal law, reserves are tracts of land that are vested in and held by the Crown for the use and benefit of the respective bands for which they were set aside through treaties or agreements with the Crown. Reserves are defined by the legal relationship between the Crown and Indigenous peoples, not by the region of the province in which they are located. Beyond this, there are 63 First Nations reserves in Manitoba, located in regions throughout the province. There is no one region that can be isolated as being the location that gives rise to the classification of these customers. For this reason, an on-reserve customer class cannot be equated with the regional zone rates that were in effect prior to the amendments to The Hydro Act.

Moreover, the Board agrees with the Assembly of Manitoba Chiefs that many more factors distinguish on-reserve residents as electricity ratepayers, such that even if this classification were based in part on the region of the province in which the customers are located, it is not solely based on region. The circumstances of on-reserve residential customers include the particular housing infrastructure, energy consumption patterns, non-availability of natural gas heating, and poverty levels. The specific conditions of electricity needs, usage, and cost on First Nations reserves justifies the creation of a separate customer class.

This step in addressing bill affordability is also administratively simple and can be effectively implemented to reach the target recipients. As Manitoba Hydro already identifies on-reserve residential ratepayers in its billing system, the members of this new customer class are readily identifiable. No application process to determine eligibility is required. The new customer class can be created immediately and the affordability measure of a 0% rate increase can be applied at the same time with minimal administration.

Due to the administrative complexity and cost concerns raised by Manitoba Hydro regarding other bill affordability program options discussed in this proceeding, the Board will not, at this time, order Manitoba Hydro to implement a broader bill affordability measure. However, the Board views the 0% rate increase for the First Nations On-Reserve Residential customer class as a modest first step in addressing bill affordability. The Board is aware that there will be some obvious anomalies created where one household on-reserve will receive a lower rate than a nearby off-reserve household living in similar circumstances; however, this is a limited measure designed to reach a targeted group experiencing a high degree of poverty. The anomalies that result from this measure are best addressed by a more wide-reaching government bill

affordability program. The Board envisions that, with the introduction of a comprehensive government bill affordability program, the new First Nations On-Reserve customer class and lower rate built into the 2018/19 Test Year may no longer be required.

18.3 Dissenting Decision and Findings of Board Member Ring

I agree with the majority of Board members that Governments should develop and implement a comprehensive bill affordability program to address the needs of First Nations, remote and Northern consumers, and lower-income ratepayers. However, having read the majority reasons by my Board colleagues with respect to their decision to create a separate First Nations On-Reserve Residential customer class and order a 0% rate increase, I cannot support this decision.

Deviation from Cost of Service Regulation

In my view, the decision of the majority departs from principles of utility regulation in this province and enters a realm that is reserved for the federal and provincial governments. In particular, the context of how Manitoba Hydro operates and is regulated is not recognized in the approach taken by the majority. Manitoba Hydro is an energy utility, not a social service agency of the provincial government.

Manitoba Hydro is regulated on a cost of service basis, with rates set to recover the Utility's costs of supplying power. Board Order 164/16 set out that cost causation is paramount.

Legislated Uniform Residential Customer Class

Prior to the 2001 amendments to The Hydro Act, this regulatory principle was reflected in the use of regional zone rates, which were set to recover the higher costs to serve customers in low population density regions of Manitoba. Through legislative action by the provincial government, uniform rates were implemented and a single Residential customer class was created. Customers in low density and high cost to serve regions had their electricity rates reduced to be equivalent to the electricity rate paid by customers in the high density and lower cost to serve area of the City of Winnipeg. In effect, a policy decision of the provincial government introduced intra-class subsidization, as the cost of serving rural and Northern customers is not equivalent to the cost of serving customers in the City of Winnipeg, but the rate is nonetheless equal.

The Creation of Another Separate Residential Customer Class Should be Legislated

If there is to be another significant deviation or change to the long-standing approach to cost recovery on a cost of service basis, that change should be made by the Government as it was in 2001, and not by Manitoba Hydro or its regulator. That is particularly so with respect to the matter of energy poverty, which is a complex social policy issue that is interwoven with other issues of poverty, income adequacy, and economic development. As such, the affordability of energy bills should be resolved by elected representatives in Government, not the Utility or its regulator. In particular, the approach taken by the majority of selecting a particular sub-set of residential ratepayers to pay less than may be required to serve those customers is making social policy. Social policy should be made by the provincial government.

While I acknowledge the concerns of the majority about reconciliation, *The Path to Reconciliation Act* mandates that it is the provincial government that is to take the lead in advancing measures to promote reconciliation, through the responsible minister's development of a strategy for reconciliation.

I also cannot agree with the majority's selection of a rate increase exemption for a new customer class of First Nations On-Reserve Residential ratepayers. Beyond the issue of this being a matter outside of the role of this Board, the approach taken is significantly under-inclusive. I agree with the Consumers Coalition that bill assistance targeted only at on-reserve First Nations customers excludes too many vulnerable consumers. First Nations customers on reserve are not the only ratepayers who experience energy poverty, nor are they the only ratepayers who have no choice but to heat with higher-cost options such as electricity as opposed to natural gas.

In addition, the selection of First Nations on-reserve residential ratepayers ignores the issue of competing provincial and federal government jurisdiction on reserves. The Board heard evidence that the federal government is already involved in bill assistance for some on-reserve ratepayers. In granting a 0% increase for on-reserve customers, the Board may actually be subsidizing the costs of the federal government and not providing a form of rate relief to ratepayers.

Geographic Regions

I accept that the Board has jurisdiction to create a lower-income customer class. It does not have jurisdiction to create a discriminatory customer class based on regions of the province. A glance at most Manitoba maps will show these geographic regions.

Creating a Permanent Separate Residential Class

I am also concerned that the new customer class will become entrenched in the regulation of Manitoba Hydro rates, such that the class will be difficult to remove or revise in future proceedings. Even if the 0% rate increase is only implemented for 2018/19, it will create a rate differential with the general Residential rate that will, for all practical purposes, be permanently entrenched absent a government program that specifically eliminates the differential. Otherwise, to eliminate the differential would require the Board to approve a rate increase targeted to the First Nations On-Reserve Residential class over and above any rate increase approved for the Residential customer class.

Over time, and in the context of projected annual rate increases, the gap in residential rates will continue to grow. This would become onerous on other ratepayers that will be responsible for subsidizing through their rates the lost revenues not recovered from the First Nations on-reserve residential customer class.

19.0 Solar Generation Program Rate

Solar energy is generated by photovoltaic (“PV”) generating systems that produce direct current electricity from sunlight. The direct current electricity can in turn be used to power equipment or charge batteries, generally with the use of an inverter to convert the direct current electricity to alternating current electricity for residential use.

While solar PV systems can be configured as off-grid systems, residential solar PV installations are usually tied into the local electric grid system. This allows solar PV customers to benefit from reduced grid-electricity consumption while maintaining system reliability through access to the local grid for back-up electric energy. Similarly, any excess solar PV power not consumed by the solar PV customer can be sold back to the local utility, usually through a power purchase agreement. As a result, grid-connected solar PV installations incorporate a bi-directional electricity meter that records both the amount of energy supplied by the utility as well as the excess solar PV energy flowing back into the electricity grid. Such customers are typically known as net-metered customers.

To evaluate the opportunities, challenges, and technology requirements of solar PV in the Manitoba market, Manitoba Hydro introduced its Solar Energy Program in the spring of 2016 as an energy efficiency and load displacement program. This two-year pilot program, targeted at residential and small commercial customers with less than 200 kW of electrical load, offers incentives toward the capital cost of solar PV installations. Manitoba Hydro provides an incentive of \$1 per watt installed, which can represent approximately one-third of the total installed costs. The incentive is limited to the PV capacity that, at a maximum, generates less energy than that customer’s annual load. In addition, Manitoba Hydro’s Residential Earth Power Loan program is offered to solar PV customers to assist with the up-front capital costs of solar PV installations.

Once participating customers successfully complete the required electrical inspection, Manitoba Hydro awards the program incentives and installs a bi-directional meter that monitors power imported from the grid as well as power exported from the customer site to Manitoba Hydro's electricity grid. The meter will record the amount of energy supplied by Manitoba Hydro each month. As Manitoba Hydro explained in evidence in this proceeding, for both residential and commercial customers, the billing system will charge for this monthly consumption at the Board-approved August 1, 2017 residential energy rate. The meter will also record the amount of excess energy put on the grid by the customer's solar PV system. A billing line item reflecting the corresponding value calculated at the Board-approved residential rate is applied to the customer's monthly bill. Under Manitoba Hydro's billing system, customers with non-utility generation systems do not bank energy credits for use in later periods. Rather, energy bills are reconciled monthly using the Board-approved residential electricity rate.

Manitoba Hydro's two-year pilot Solar Energy Program will end in April 2018. At that time, the installation incentives will no longer be offered but Manitoba Hydro will continue to offer financing for solar installations through its Earth Power Loan program. Those customers who participated in the pilot program will continue to get credit for surplus energy that is within their own usage, although Manitoba Hydro is currently reviewing its policy of crediting a customer's excess electricity at the full residential rate.

As a result of the pilot Solar Energy Program, Manitoba Hydro currently has 2.6 MW of installed solar generation, which results in 3.47 GWh of energy annually displaced from the electricity grid.

19.1 Board Findings

The Board is concerned that Manitoba Hydro implemented the Solar Energy Program with a rate for excess solar energy without prior Board approval. Rate designs for net metered customers must be brought before the Board for review and rate approvals.

The Board has legal jurisdiction to review and approve the electricity rate that Manitoba Hydro applies to customers participating in the Solar Energy Program, or to customers with any on-site generation, for the return of excess energy to the grid. All rates for services, changes in rates for services, and new rates for services provided by Manitoba Hydro must be reviewed and approved by the Board. The Board's jurisdiction with respect to reviewing and approving rates is framed broadly under The Crown Act and extends to all rates, rate changes, and new rates for electricity "howsoever generated". There is no exclusion for customer-generated electricity.

The price paid by Manitoba Hydro for excess customer-generated solar power is currently unilaterally set by the Utility, which has a retail monopoly in the Manitoba market. This unilateral fee is a price charged by Manitoba Hydro, as it is an expense or cost that Manitoba Hydro sets for the supply of excess solar power. While Manitoba Hydro ultimately pays the cost for the power, this does not detract from the fact that Manitoba Hydro is setting the price for the supply of a particular form of power. Therefore, the price for customer-generated solar power is a "rate for service" subject to the Board's review and approval under The Crown Act.

The Board's conclusion with respect to jurisdiction is supported by section 38 of The Hydro Act, which provides that any person who is required by the Manitoba Hydro-Electric Board to supply power to the Utility may apply to the Board to review the price computed by Manitoba Hydro for the power. This section does not directly apply to the

purchase of customer generated solar power by Manitoba Hydro as customers are not “required” to supply the power; however, as Manitoba Hydro’s Solar Energy Program includes the Utility purchasing customers’ excess solar electricity, section 38 should be understood broadly as demonstrating the intention of the legislature to protect all persons who are paid a unilaterally set price in a monopoly market.

Moreover, the Solar Energy Program is a demand side management program. Demand side management programs introduced by Manitoba Hydro to support customer-generated renewable power, including the Solar Energy Program, are subject to review by the Board. This includes the rates paid for customer-generated energy.

Manitoba Hydro has not yet provided evidence demonstrating the appropriate rate for crediting of customers’ excess energy. For all net metering installations, the Board approves Manitoba Hydro crediting customers’ excess energy put on the grid at the rate of 8.196¢/kWh for 2018/19. For any future net metered rates or changes to the 8.196¢/kWh rate, Manitoba Hydro is directed to apply to the Board for approval. For the next GRA, Manitoba Hydro is directed to provide additional details on the Solar Energy Program and other net metering installations in Manitoba.

In future, rate designs for net metered customers must be brought before the Board for review and rate approvals.

20.0 Special Rates

As noted above, in addition to the general rate increase sought by Manitoba Hydro, the Utility is also seeking approval of a number of items related to special rates:

1. Final approval of the Light Emitting Diode (“LED”) rates for the Area and Roadway Lighting class (Outdoor Lighting) approved on an interim basis in Order 79/14, and approval of new LED rates for the Area and Roadway Lighting class (Sentinel Lighting) as discussed in Tab 9 of Manitoba Hydro’s Application;
2. Approval to remove the Area and Roadway Lighting (Festoon Lighting) and the Area & Roadway Lighting (Christmas Lighting) rates from Manitoba Hydro’s rate schedule, as discussed in Tab 9 of Manitoba Hydro’s Application;
3. Endorsement of modifications to the Terms and Conditions of Option 1 of the Surplus Energy Program (“SEP”) that were accepted on an interim basis in Order 43/13, as outlined in Tab 9 of Manitoba Hydro’s Application;
4. Final approval of all SEP interim *ex parte* rate Orders as set forth in Tab 10 of its Application, as well as any additional SEP *ex parte* Orders issued subsequent to the filing of Manitoba Hydro’s Application and prior to the Board’s Order in this matter; and
5. Final approval of Curtailable Rate Program (“CRP”) *ex parte* Order 54/16 as well as any additional *ex parte* Orders in respect of the CRP issued subsequent to the filing of Manitoba Hydro’s Application and prior to the Board’s Order in this matter.

20.1 Board Findings

The special rates were not contentious and were discussed by Manitoba Hydro during the oral hearing. The Board approves the special rates sought by the Utility, excluding finalization of the interim diesel zone rates which Manitoba Hydro is no longer seeking as part of this GRA.

Manitoba Hydro is directed to provide confirmation to the Board that the executed Settlement Agreement documents have been received by the Utility and that the documents are in proper form. With this confirmation, Manitoba Hydro is to advise the Board of its intention regarding finalization of the interim diesel zone rates.

21.0 Capital Project Review per Order in Council 92/2017

Order in Council 92/2017 assigned the Board the duty of considering Manitoba Hydro's capital expenditures as a factor in reaching a decision regarding rates for services. In the course of considering the evidence from Manitoba Hydro, Independent Expert Consultants, and Intervener Experts related to Manitoba Hydro's capital expenditures, the Board identified improvements that should be made to Manitoba Hydro's capital expenditure approval and execution processes in the future, as well as aspects that Manitoba Hydro has performed well and should therefore be continued.

21.1 Capital Project Cost Estimating

Manitoba Hydro, like all electric utilities, has significant capital assets and undertakes major capital projects in order to deliver reliable electrical service to Manitoba residents and businesses. Manitoba Hydro's initial capital cost estimates have often under-estimated the final in-service costs of these projects. The following table provides examples of changes in capital cost estimates from the original capital cost estimate to the most current estimate, and the percentage change.

**Comparison of Original Cost Estimates to Current Cost Estimates
for Major New Generation & Transmission Projects**

(\$ millions)	Original CEF* Estimate	Most Current CEF* Estimate	Percentage Change
<i>In Progress</i>			
Keeyask	3,700	8,726	136%
Bipole III	1,880**	5,042	168%
Manitoba-Minnesota Transmission Project	205	453	121%
<i>Completed</i>			
Pointe du Bois Spillway	318	576	81%
Wuskwatim (including transmission)	988	1,742	76%
Riel AC Station and Sectionalization	96	320	233%

* Manitoba Hydro's Capital Expenditure Forecast. The time between the development of the original CEF estimate and the most current CEF estimate varies for each project in this table.

** Original estimate in this table is based on the western routing with converter stations.

The above table shows the original approved cost estimate when it was first included in a Capital Expenditure Forecast. This original estimate is sometimes approved years in advance of the initiation of the project construction. As more detailed design, engineering, and project scope development are completed, the original estimates are revised – and approved – until such time as final pre-construction estimates are developed. For example, the original Keeyask estimate of \$3.7 billion was approved in 2008 but construction did not commence until 2014. During that period, additional design and engineering were completed, resulting in the final pre-construction estimate for Keeyask – approved in early 2014 during the NFAT – of \$6.5 billion.

METSCO, an expert for the Consumers Coalition, in an analysis of 49 generation, transmission, and distribution projects, similarly found that Manitoba Hydro significantly underestimated the capital cost of projects in comparison to the final actual costs. Compared to the original cost estimates used when the project is first approved by the Manitoba Hydro Executive, METSCO found the final actual costs to be 106% higher

(when weighted by project cost). At the original cost estimating stage, Manitoba Hydro has not generally completed detailed design, engineering, and scope development.

In contrast to the original cost estimates, when compared to the final pre-construction estimates, METSCO found that the actual costs for these 49 projects were only 6% higher. In other words, the accuracy of the estimates is significantly enhanced once detailed design, engineering, and scope development are completed prior to construction.

In this GRA, MGF introduced the concept of a ‘stage gate’ approval process, specifically for MMTP but which could apply to other large projects such as Keeyask. This is a project management tool, common in the energy industry, that shepherds a project through five phases: conception, concept selection, tendering, execution, and operation, with a decision gate following each phase. The ‘stage gate’ concept is that a project does not move from one stage to the next – that is, receive approval to go to the next stage – until a set of criteria is satisfied. The criteria may be technical, financial, commercial, or other criteria. In some cases, a peer review by engineering, commercial, and project management professionals is completed to ensure that the risks associated with the project are addressed.

MGF recommends other improvements for Manitoba Hydro’s estimating processes on future projects. Those improvements include having the estimate team prepare the estimate with input from each department, providing supporting back-up, and providing a more detailed explanation outlining the structure and relationship between the physical scope of work and resources to complete the work. MGF also suggested that a higher contingency, such as a P95 contingency, be used when evaluating the business cases of future projects.

MGF explained that preparation of a Basis of Estimate document is an industry best practice. A Basis of Estimate helps define the project scope, identifies risks and opportunities, provides a record of documents used in development of the estimate, provides a record of communications made during development of the estimate, and facilitates the review and validation of the estimate. Manitoba Hydro prepared a Basis of Estimate for Bipole III which, in MGF's view, was extremely well done.

As explained earlier in this Order, MGF found Manitoba Hydro's cost estimating methodologies (with respect to the \$4.65 billion and \$5.04 billion Bipole III estimates) are consistent with industry standard and best practices. This finding is supported by the cost increase of 8%, which is in line with the 6% average cost increase from final pre-construction budget to actual cost as found by METSCO.

Manitoba Hydro's Position

Manitoba Hydro appears to agree with METSCO that the previous cost estimating and capital approval process that resulted in these inflated final costs is not acceptable. In response to METSCO's findings, Manitoba Hydro explained that its previous process for obtaining corporate approval required estimates of these projects to be developed and submitted for approval prior to any engineering or planning being done, and the initial estimate was completed without a clear definition of project scope. According to Manitoba Hydro, this past process has been replaced with new scope development and approval processes, which allow for the scope of the project to be developed in greater detail before the cost is estimated and the investment considered for approval to execute.

According to Manitoba Hydro, the role of the newly-created position of Director of Strategic Business Integration is to ensure that spending on Business Operations Capital is integrated into Manitoba Hydro's financial planning processes. Previously, each division – Generation, Transmission, and Marketing & Customer Service (or Distribution) – provided its list of proposed capital projects and corresponding budgets to the Executive Committee for corporate approval.

Board Findings

The Board finds that Manitoba Hydro has been approving projects too early in the process, without sufficient development of scope, design, and engineering. The Board recognizes that, with additional scope, design, and engineering development prior to advancing the capital project for financial and economic analysis and subsequent executive approval, there will be additional front-end costs. In the Board's view, these additional sunk costs would be money well spent as the additional work will allow a more informed decision by Manitoba Hydro's Executive.

The evidence shows that when Manitoba Hydro undertakes more thorough design, engineering, and project planning, the final costs of the project are closer to the estimated costs. With the sample of projects reviewed by METSCO, the final pre-construction estimate to actual cost variances were only 6%. However, the Board notes that Keeyask does not align with this sample, as Keeyask has experienced a variance between the final pre-construction estimate and the current estimate of 34%. As explained elsewhere in this Order, Keeyask has not experienced an undue number of design changes nor have the concrete or earthworks quantities driven the costs higher. As a result, Keeyask may not have benefited from additional design, engineering, and planning prior to construction the way other projects have.

Manitoba Hydro's prior capital estimating and approval process leads to the capital expenditure forecast being understated in future years, potentially resulting in inaccurate financial forecasts. It also potentially means that projects are approved without management knowing the full cost implications. It is not known how many projects would not have received approval, or that may have had their scope amended, if Manitoba Hydro's Executive had a more realistic forecast for the project costs prior to approval.

The impact of this on revenue requirements and rates is two-fold. First, for projects that are included in the capital expenditure forecast but are several years out, the underestimate of the capital cost can result in understated revenue requirements in those future years. With understated revenue requirements, Manitoba Hydro's financial ratios and metrics are more favourable and the projected rate increases beyond the Test Years may be understated. Second, and conversely, when the final actual costs are realized, the revenue requirements are higher – as will be the rates – in order for Manitoba Hydro to recover the costs of those projects and achieve its financial targets. If the final actual costs were more accurately known earlier in the process, projects may not proceed or alternatives may be considered which have a lower revenue requirement impact.

The Board notes that, with the creation of the position of Director of Strategic Business Integration, Manitoba Hydro appears to be embarking on a more robust planning, scoping, and engineering process for Business Operations Capital. The Board finds that in the area of Business Operations Capital, Manitoba Hydro has made structural changes to its organization that should improve how capital cost estimating is done. Such scrutiny should be extended to Manitoba Hydro's Major New Generation & Transmission projects. The Board recommends that Manitoba Hydro review and revise

its capital project planning, scoping, and engineering processes to provide for a more certain in-service cost before such capital projects are economically and financially analyzed and presented to Manitoba Hydro's Executive for approval and, where required, subsequently to the Province of Manitoba.

There is a dilemma facing any project developer such as Manitoba Hydro, which is how much work – scope development, design, and engineering – should be completed before a decision is made whether to proceed with the project. Additional work to refine the cost estimate will result in increased costs being incurred prior to the final evaluation of the project. At the evaluation stage when the project is compared with alternatives, there is the issue of how to deal with these costs, which are also called “sunk costs”.

As recommended above by the Board, more work should be done prior to making a final decision whether to proceed with a project, although this will necessarily result in greater sunk costs. However, the Board acknowledges that, as was done at the NFAT, sunk costs of any project are excluded from the economic comparison with alternative projects since these costs, having already been incurred, can no longer be avoided by choosing an alternative project. Exclusion of sunk costs from the analysis can distort the comparison of the project with alternatives. In its NFAT report, the Board recommended not only cessation of all activities and spending related to Conawapa but that existing sunk costs should not become a future justification of Conawapa.

To address the sunk cost dilemma, the Board finds there is merit in Manitoba Hydro considering the “stage gate” approach put forward by MGF, in order to improve its past performance on cost estimating and completing projects on budget. The Board recommends that Manitoba Hydro engage an external consultant to assist in studying this matter.

As explained earlier in this Order with respect to Bipole III, the Board finds that when estimating costs for a project that includes new, unproven technology, the contingency amounts should be increased, not decreased as was done by Manitoba Hydro.

Order 73/15 Directive 13 requires Manitoba Hydro to report quarterly to the Board as to the status and cost against budget in order to ensure the Board is informed of accurate and timely cost and schedule information. The Board directs that this reporting is to continue, and be amended to include not only the control budget and control schedule, but also the most current forecast at completion cost and schedule milestones based on weekly or monthly reports made by or to Manitoba Hydro. These reports are to be provided to the Board no later than 45 days following the last day of each quarter.

21.2 Potential Capital Project Approvals by the Board

The Board's review of the Manitoba-Saskatchewan Transmission Line project in this proceeding is a precedent for how independent reviews can be conducted of Manitoba Hydro's capital projects.

The Board's concern with approval of Manitoba Hydro's capital expenditures is long standing. In Order 116/08, the Board stated:

In prior Orders, the Board has recommended to Government, that The Public Utilities Board Act be amended to make the regulation of MH equivalent to the regulation of Centra Gas by removing the exemption now provided under Section 2(5) of the Act. In Order 143/04 the Board noted: "Given the risks related to the very significant additional plant investments and associated borrowings contemplated, the Board is of the view that the Province of Manitoba should re-evaluate the existing legislation." The Board reiterates its past recommendation.

Also, as held in Order 73/15, in the context of Bipole III:

The Board has no inherent jurisdiction to review and approve the costs and economics of Bipole III. The Board agrees with the Coalition's suggested recommendation to the Province of Manitoba for a change in legislation and that the Board should have approval authority relative to Manitoba Hydro's major capital projects.

The Board continues to be of the view that it should have legislative authority to approve Manitoba Hydro's capital expenditures. The current process whereby the Lieutenant Governor in Council approves the debt for the development of capital projects does not appear to involve a detailed review of the projects.

As discussed in the previous section, the shortcomings in Manitoba Hydro's previous capital approval process led to inaccurate financial forecasts. The original cost estimates - which generally underestimate the final costs - artificially depress the revenue requirement when projects are years away but then put upward pressure on the revenue requirement when the final costs - which are generally higher - are known and accounted for. As capital project costs have a substantial influence on Manitoba Hydro's revenue requirement and the resulting rates the Board approves to recover the revenue requirement from ratepayers, the Board recommends that Government grant the Board authority to review and approve Manitoba Hydro's capital projects and expenditures.

The Board envisions that, if it were granted authority to approve Manitoba Hydro's capital projects, it would require Manitoba Hydro to submit projects for the Board's review and approval that have a higher level of scope definition, design, and engineering completed. The Board expects that this will result in the final approval to proceed being based on a more accurate estimate of the final cost. As discussed

above, the stage gate approval process could be used to improve the cost estimating at the approval stages while minimizing sunk costs.

21.3 Construction Contract Types and Structures

Manitoba Hydro uses contractors with specific expertise to design, engineer, procure, construct, and commission capital assets. Contracts let by Manitoba Hydro range in value from hundreds or thousands of dollars up to the largest contract for the Keeyask project, the General Civil Contract (“GCC”), which has a contract value in excess of \$1 billion.

As explained earlier in this Order, there are several types of pricing structure that can be used in a contract. The pricing structure in the Keeyask GCC is a “cost reimbursable - target price” structure. In a contract with a cost reimbursable-target price payment structure, the owner (Manitoba Hydro) is at risk for quantities, productivity, and efficiency of the contractor, while the contractor is at risk for its profit. Other types of pricing structures include ‘fixed price’ or ‘unit price’ structures. In a fixed price contract (also known as a lump sum contract), the contractor is at risk for quantities and productivity. In a unit price contract, the contractor is paid a pre-defined unit rate (or rate per quantity) multiplied by the quantity of work and is at risk for productivity but not the quantities of work; the quantity risk resides with the owner.

In MGF’s view, the root cause of the billions of dollars of cost overruns for Keeyask is that the cost reimbursable payment structure of the GCC fails to provide sufficient incentive for the general civil contractor to be responsible for productivity. MGF also identified that Manitoba Hydro is managing the Keeyask GCC as if it were a lump sum or unit rate contract and not in a manner that is required to exert control over a contract with a cost reimbursable payment structure. MGF states that, to properly manage a cost

reimbursable contract, the owner needs to hold the contractor accountable for its performance, hire experienced trades supervisors to assist the contractor with planning the work in a more efficient manner, understand why planned progress is not achieved, and develop realistic and achievable cost and schedule estimates.

Similarly, Klohn Crippen Berger found that the principal reason for the cost increase in the GCC and overall Keeyask budget is the nature of the payment structure in the GCC. Specifically, the general civil contractor is being paid in full for its actual costs for labour and materials rather than for quantities of work performed against fixed or unit prices.

Board Findings

As explained earlier in this Order, the Board agrees with Independent Expert Consultants MGF and Klohn Crippen Berger that the primary root cause of the cost overrun of the GCC, and the whole Keeyask project, relates to the nature of the cost reimbursable payment structure in the GCC. The reduction in profit that results from the contractor exceeding the GCC target price was not sufficient protection for Manitoba Hydro to ensure the contractor delivered the project on time and at the target price.

As explained earlier in this Order, the Board concludes that Manitoba Hydro did not exercise effective oversight of the Keeyask general civil contractor and did not manage the GCC as was required of a contract with a cost reimbursable payment structure. The Board therefore recommends that Manitoba Hydro use the services of an external construction management expert, particularly for high value projects and those with cost reimbursable payment structures, beginning with the initial study and planning through to project execution. Such a construction management expert would be able to assist Manitoba Hydro with effective project controls, enforcement of the contract terms, and identification of recourse in the event of contractor non-performance.

The Board finds nothing inherently wrong with the use of a cost reimbursable pricing structure, but the suitability of this payment structure depends on the circumstances in which it is used. If used, effective oversight of the contractor must be exercised, as explained by MGF.

The Keeyask GCC utilized a ‘cost reimbursable-target price’ payment structure for all aspects of the project work. The Board envisions a different approach be used in the future. When there are major portions of the construction project that involve below-grade construction – such as river management, removing earth and rock, and preparing the foundations for a generating station on bedrock – those below-grade aspects of the overall project cannot be known with certainty before the construction commences. Because of that uncertainty, it is more appropriate that the geological risk would be borne by Manitoba Hydro as the owner, and not the contractor in the contract. Unit price or cost reimbursable pricing structures are more appropriate for these portions of the project. Conversely, once the foundations are exposed and the remaining work is above grade, far more certainty can be obtained in the design of the project for which the contractor can and should bear more of the risk. A fixed price payment structure in the contract for this aspect of the work is therefore appropriate. There is no rule or requirement for the entire GCC to have the same payment structure.

The Board recognizes that the above approach would not solve all of Manitoba Hydro’s issues with capital cost overruns. Major construction projects throughout North America are frequently reported to be over budget. Contracts with fixed price or unit price payment structures are still susceptible to cost overruns, although these are usually related to design changes made by the owner in the case of the former and to uncertain quantities in the case of the latter. But, as identified by Klohn Crippen Berger, Keeyask

did not experience significant issues with design changes or inaccurate quantities of concrete or earthworks.

21.4 What Went Well on Capital Projects

This Order identifies a number of problems, shortcomings, and issues with Manitoba Hydro's capital project estimating, planning, and execution. The evidence in this proceeding also identified a number of positives related to Manitoba Hydro's capital projects. The following is a list of the major positives:

- Issues with interfaces between contractors, as were experienced on Wuskwatim, appear to have been reduced or avoided with the inclusion of increased scopes of work under the Keeyask GCC,
- The Keeyask design and geotechnical investigations were reasonable,
- Keeyask design changes and extra work orders have not been excessive,
- Keeyask quantity estimates, in aggregate, were close to actual quantities,
- While Manitoba Hydro originally allowed over 1,000 activities in the Keeyask GCC schedule to have negative float, the Utility was able to eliminate the negative float in the most current schedule presented to the Board,
- The Bipole III transmission line was contracted with an appropriate mix of fixed price, unit price, and cost reimbursable contracts, providing cost certainty to project,
- The Bipole III transmission line project was well organized and managed,
- The Bipole III transmission line estimating team is knowledgeable and capable,
- Preparation of a Basis of Estimate is an industry best practice that helps define the project scope, identifies risks and opportunities, provides a record of

documents used in development of the estimate, provides a record of communications made during development of the estimate, and facilitates the review and validation of the estimate. Manitoba Hydro prepared a Basis of Estimate for Keeyask and for Bipole III, the latter of which MGF found to be well written and followed best practices,

- Bipole III converter stations were competitively tendered with appropriate pricing mechanisms, in particular a fixed price contract to engineer, procure, and construct the HVDC converter equipment, shifting much of the cost, schedule, and productivity risk to the contractor, and
- Together, the Bipole III converter stations and transmission line are only 8% over the final pre-construction budget.

Board Recommendations For Future Capital Projects

MGF made numerous recommendations which Manitoba Hydro could use to improve the execution of its existing projects as well which could be used in the planning, estimating, and construction of future projects. The Board recommends that Manitoba Hydro consider these recommendations, some of which are itemized below, along with other recommendations made by the Board.

- Where possible, tailor the payment structure for contracts such that risk is appropriately allocated between Manitoba Hydro and the contractor, including potentially having multiple payment structures within the same contract,
- Prepare economic evaluations of projects based on a higher probability contingency, such as at a P90 or P95 level,
- Retain external construction management expertise, particularly for high value projects and those that utilize cost reimbursable pricing mechanisms,
- Prepare a thorough Basis of Estimate document,

- Prepare a comprehensive Basis of Schedule document,
- Use estimate and schedule templates to promote consistency across groups preparing estimates and schedules,
- When developing estimates and schedules, provide supporting back-up and more detailed explanation outlining the structure and relationship between the physical scope of work and resources to complete the work,
- When developing estimates for projects that include new, unproven technology or construction methods, the contingency amounts should be increased, and
- Conduct periodic contract compliance reviews during execution of major projects to ensure the contractor is meeting its obligations.

22.0 Compliance with Board Directives

Manitoba Hydro recognizes that there is a backlog and history of not following Board directives, and that more can be and must be done by the Utility. As discussed above, directives related to depreciation, O&A benchmarking, asset condition assessment reports, and matters for further study in the Cost of Service Study have not been completed in a timely fashion.

22.1 Manitoba Hydro's Position

Manitoba Hydro's President and Chief Executive Officer advises that Manitoba Hydro takes the Orders and direction from the Board seriously, but recognizing the history of directives not being complied with, the Utility has to do a better job. In closing argument, Manitoba Hydro confirmed that, barring appeals, there will be compliance with Board directives. Manitoba Hydro states there can be no dispute that the objective of implementing a directive is to provide value to the regulatory process. Manitoba Hydro recommends that the Board contemplate follow-up or feedback mechanisms when directives are issued so that the work can proceed in a meaningful way and provide value to all parties that desire it.

22.2 Board Findings

The Board finds that the Utility has not complied with all or part of a number of past directives. If Manitoba Hydro disputes a directive issued by the Board, the Utility may choose to file a request for variance or seek leave to appeal from the Manitoba Court of Appeal. The Board has jurisdiction to impose financial penalties and stay any future applications in the event that the Utility does not comply with all or part of a Board Order.

The Board directs Manitoba Hydro to file with the Board on or before August 1, 2018 the status of compliance with all outstanding and ongoing directives. Manitoba Hydro is to provide with this filing the Utility's comments on a process for feedback and clarification on Board directives.

23.0 Recommendations to the Provincial Government

In this Order, the Board makes the following recommendations to the provincial Government:

1. The Board should have legislative authority to approve Manitoba Hydro's capital expenditures;
2. Efficiency Manitoba's mandate should be amended to include explicit consideration of bill affordability. This would include targeting of lower-income consumers with demand side management programs, as well as consideration of the impact of demand side management costs being paid by non-participants;
3. The provincial government should introduce a comprehensive bill affordability program run by a government department to address energy poverty issues faced by Manitobans throughout the province;
4. The provincial government should establish a stakeholder group to build on the research and analysis undertaken by the Working Group, as well as programs in other jurisdictions, such as the Ontario Energy Support Program;
5. The provincial government should use some of the revenues it receives from Keeyask to fund a comprehensive bill affordability program, consistent with the NFAT report recommendations;
6. The provincial government should transfer a portion of the carbon tax revenues to Manitoba Hydro to further strengthen Manitoba Hydro's financial health, which may allow for lower consumer rate increases; and
7. The provincial government should suspend payment of the annual Bipole III debt guarantee fee and capital taxes made by Manitoba Hydro to the Province of Manitoba, starting with the 2019 fiscal year and until the \$900 million burden of a

policy decision made by government is satisfied, which will occur in approximately 13 years.

24.0 Recommendations to Manitoba Hydro

In this Order, the Board recommends that Manitoba Hydro:

1. Defer \$160 million of Business Operations Capital spending to a future period beyond 2018/19;
2. Continue to find reductions in Business Operations Capital spending during the current period of record spending on major capital projects such as Keeyask and Bipole III;
3. Update the Manitoba-Minnesota Transmission Project schedule more frequently than every two months once construction begins;
4. Make efforts to find further areas to reduce O&A costs, both in terms of staff reductions and Supply Chain Management, after the Voluntary Departure Program transition concludes;
5. Review and revise its capital project planning, scoping, and engineering processes to provide for a more certain in-service cost before such capital projects are economically and financially analyzed and presented to Manitoba Hydro's Executive for approval and, where required, subsequently to the Province of Manitoba;
6. Consider the "stage gate" project approval process and engage an external consultant to assist in studying the use of this process;
7. Use the services of an external construction management expert, particularly for high value projects and those with cost reimbursable payment structures, beginning with the initial study and planning through to project execution;
8. Consider the recommendations made by MGF to improve Manitoba Hydro's execution of its existing projects and in the planning, estimating, and construction of future projects; and

9. Review demand side management programming for cost effectiveness and cease or modify spending on programs that are no longer cost effective, except for programs targeted at lower-income and First Nations on-reserve consumers.

25.0 IT IS THEREFORE ORDERED THAT:

1. The rate increase of 3.36% previously approved as interim effective August 1, 2016 **BE AND IS HEREBY APPROVED AS FINAL.**
2. The rate increase of 3.36% previously approved as interim effective August 1, 2017 **BE AND IS HEREBY APPROVED AS FINAL.**
3. Manitoba Hydro's Application for a 7.9% across-the-board rate increase effective April 1, 2018 **BE AND HEREBY IS DENIED** as filed.
4. A 3.6% average revenue increase to be recovered in Manitoba Hydro consumers' rates effective June 1, 2018 **BE AND IS HEREBY APPROVED.**
5. Manitoba Hydro implement differentiated rates to collect the approved revenue requirement for 2018/19 in order to begin to move the Revenue Cost Coverage ratios of the General Service Small Non-Demand, General Service Large 30-100kV, and General Service Large >100kV customer classes into the zone of reasonableness of 95% to 105%, using the alternative calculation methodology. Manitoba Hydro is to assume a 10-year timeframe to move all classes within the zone of reasonableness, using the alternative calculation methodology. The rate increase impact of doing so is to be shared across the Residential, General Service Small Demand, General Service Medium, General Service Large 0-30kV, and Area & Roadway Lighting classes.
6. Manitoba Hydro create a First Nations On-Reserve Residential customer class. This customer class is to receive a 0% rate increase for the 2018/19 Test Year, such that the rate for this class will be maintained at the August 1, 2017

approved Residential rate. A 0% rate increase is to also apply to First Nations Residential customers in the diesel zone communities.

7. Manitoba Hydro credit net-metered customers' excess energy put on the grid at the rate of 8.196¢/kWh for 2018/19. Manitoba Hydro must apply to the Board for approval of any future net-metered rate or changes to the 8.196¢/kWh rate.
8. Manitoba Hydro recalculate and file, for Board approval, a schedule of rates reflecting the overall rate increase and differentiated rates effective June 1, 2018 for all customer classes, together with all supporting schedules including proof of revenue, customer impacts, and revenue requirement, by May 15, 2018.
9. Manitoba Hydro participate in a technical conference hosted by Board Staff or an external consultant appointed by the Board for the consideration of the establishment of a minimum retained earnings or similar test to provide guidance in the setting of consumer rates for use in rule-based regulation.
10. Manitoba Hydro provide information about the Other Cash Payments included in the Cash Flow Statement in the next GRA filing.
11. Manitoba Hydro consider the areas recommended by the Independent Expert Consultants for improvement and enhancement of the load forecasting methodology and provide details of the implementation of these recommendations, or reasons for not implementing them, at the next GRA.
12. Manitoba Hydro file with the next GRA the details of its Operating & Administrative expenditures with an explanation as to how Manitoba Hydro is carrying on its operations with reduced staffing levels, including the details of the operational plan developed to continue running operations with a workforce that

has been reduced by 15%, and any advice or recommendations received from external consultants retained to assist with the restructuring and transition.

13. Manitoba Hydro file with the next GRA details of its actual Operating & Administrative expenditures dating back 10 years through to the date of the filing, along with forecast Operative & Administrative expenditures by cost element and business unit, including the details of the Utility's pension liability related to the reduced staffing levels. The actual Operating & Administrative expenditures are to include the compound annual growth both before and after accounting changes.
14. Manitoba Hydro retain an independent consultant to assess Manitoba Hydro's development of its asset management program and its progress in addressing the recommendations made by UMS, as well as the progress of the development of the Corporate Value Framework. Manitoba Hydro is to file with the Board by June 29, 2018 the Terms of Reference for the consultant for the Board's review and comment. Manitoba Hydro is directed to report back to the Board on its progress and the result of the consultant's assessment at the next GRA.
15. Manitoba Hydro consider implementing the recommendations made by the Independent Expert Consultants with respect to Keeyask, Manitoba-Minnesota Transmission Project, and Great Northern Transmission Line, including implementing the recommendations to improve productivity to meet the control budget and schedule for Keeyask. Manitoba Hydro is to report to the Board at the next GRA whether and the extent to which it has implemented these recommendations and the projected cost savings and schedule impacts.

16. Manitoba Hydro file detailed quarterly reports for all Major New Generation and Transmission projects currently under development. These reports are to outline the proposed budget and schedule (at time of contract), budget and schedule changes and reasons for such changes, and the current forecast at completion costs and schedule based on weekly or monthly reports made by or to Manitoba Hydro. Where actual or forecast capital costs have materially increased, Manitoba Hydro is to explain how such increases will impact domestic revenue requirements and projected impacts on Manitoba Hydro's financial forecasts and targets. Specific contract costs are to be detailed for any contracts in excess of \$50 million. These reports are to be provided to the Board no later than 45 days following the last day of each quarter. This Directive replaces Order 73/15 Directive 13.
17. Manitoba Hydro continue to use its existing Average Service Life methodology for calculating depreciation rates for rate-setting purposes, without reversion to Equal Life Group in the financial forecast. Manitoba Hydro shall not amortize the difference between Average Service Life and Equal Life Group for rate setting.
18. Manitoba Hydro's request to hold an alternate process for discussion of the depreciation directives as set out in Order 43/13 **BE AND IS HEREBY DENIED.**
19. Manitoba Hydro's proposed treatment of the Conawapa costs **BE AND IS HEREBY APPROVED.**
20. Manitoba Hydro's request to cease the deferral of ineligible overhead in 2023/24 and amortize the regulatory account balance over 20 years **BE AND IS HEREBY DENIED.**

21. Manitoba Hydro continue the annual deferral of \$20 million in ineligible overhead.
The regulatory account balance is to be amortized over 34 years.
22. Manitoba Hydro's request to begin recognizing the Bipole III Deferral Account in domestic revenues following the in-service date of Bipole III, amortized over a five-year period **BE AND IS HEREBY APPROVED.**
23. Manitoba Hydro discontinue the accounting practice of recognizing a Demand Side Management Deferral Account.
24. Manitoba Hydro exclude non-tariffable transmission costs from the allocation of export revenues in its future Prospective Cost of Service Studies.
25. Manitoba Hydro allocate the activities of building moves & safety watches, contact centre-outages, line locates, and marketing research & development costs to all customer classes other than General Service Large 30-100kV and General Service Large >100kV in future Prospective Cost of Service Studies.
26. Manitoba Hydro complete the study of the Service Drops Allocator and the Common Costs study in time for its next Prospective Cost of Service Study.
27. Manitoba Hydro calculate Revenue to Cost Coverage ratios using the alternative methodology of treating export revenues as a reduction to class costs in future Prospective Cost of Service Studies filed with the Board.
28. Manitoba Hydro provide in its next GRA filing the rationale for the declining block rate design for the General Service customer classes and an evaluation of the block thresholds and charges.

29. Manitoba Hydro file with the next GRA a time-of-use rate design proposal, including the results of consultation undertaken with General Service Large customers prior to filing the proposal with the Board.
30. Manitoba Hydro provide with the next GRA additional details on the Solar Energy Program and other net metering installations in Manitoba.
31. Manitoba Hydro's request for final approval of the Light Emitting Diode rates for the Area and Roadway Lighting class (Outdoor Lighting) approved on an interim basis in Order 79/14 **BE AND HEREBY IS APPROVED.**
32. Manitoba Hydro's requests for approval of new Light Emitting Diode rates for the Area and Roadway Lighting class (Sentinel Lighting) and for approval of the removal of the Area and Roadway Lighting (Festoon Lighting) and the Area & Roadway Lighting (Christmas Lighting) from Manitoba Hydro's rate schedule **BE AND HEREBY ARE APPROVED.**
33. Manitoba Hydro's request for endorsement of the Terms and Conditions of Option 1 of the Surplus Energy Program that were accepted on an interim basis in Order 43/13 **BE AND HEREBY IS APPROVED.**
34. Manitoba Hydro's request for final approval of all interim *ex parte* Surplus Energy Program rate Orders as set out in Tab 10 of Manitoba Hydro's Application, as well as in Appendix 17.1 of Manitoba Hydro's Written Final Argument, and issued subsequent to Manitoba Hydro's Written Final Argument and prior to the issuance of this Order **BE AND HEREBY IS APPROVED.**
35. Manitoba Hydro's request for final approval of Curtailable Rate Program *ex parte* Order 54/16 as well as any additional *ex parte* Orders in respect of the

Curtailable Rate Program issued prior to this Order **BE AND HEREBY IS APPROVED.**

36. Manitoba Hydro provide confirmation to the Board that the executed diesel zone Settlement Agreement documents have been received by the Utility and that the documents are in proper form. With this confirmation, Manitoba Hydro is to advise the Board of its intention regarding finalization of the interim diesel zone rates.
37. Manitoba Hydro file with the Board on or before August 1, 2018 the status of compliance with all outstanding and ongoing directives, along with the Utility's comments on a process for feedback and clarification on Board directives.

Board decisions may be appealed in accordance with the provisions of Section 58 of *The Public Utilities Board Act*, or reviewed in accordance with Section 36 of the Board's Rules of Practice and Procedure. The Board's Rules may be viewed on the Board's website at www.pubmanitoba.ca

THE PUBLIC UTILITIES BOARD
FOR THE MAJORITY ON ALL ISSUES:

"Darren Christle"

Secretary

"Robert Gabor, Q.C."

Chair

Certified a true copy of Order No. 59/18 issued by The Public Utilities Board



Secretary

FOR THE DISSENT ON THE ISSUE OF THE RATE INCREASE TO THE FIRST NATIONS ON-RESERVE RESIDENTIAL CUSTOMER CLASS:

"Larry Ring, Q.C."

Member

Appendix A: Glossary of Terms and Acronyms

Acronyms

Acronym	Definition	Description
C10, C13, C23	N/A	The name given to a specific Prospective Cost of Service Study allocation table related to the customer cost classification. Each table will have a unique numeric code (e.g.: C10) that is then used as reference in the PCOSS calculations made by Manitoba Hydro. C10, C13, and C23 relate to general customer services costs.
CRP	Curtailable Rate Program	A program offered to Manitoba Hydro's industrial customers that gives credits on the customer bills in exchange for commitments to curtail their load during times of system emergencies.
DSM	Demand Side Management	A common utility strategy for reducing consumer demand (frequently through energy efficiency measures) for energy in order to defer the need for new generation assets. Manitoba Hydro's Demand Side Management Plan, marketed under the Power Smart brand, involves various education and incentive programs aimed to reduce domestic consumption of both electrical and natural gas.
GCC	General Civil Contract	The single largest contract with respect to the construction of the Keeyask generating station. The GCC encompasses work related to river management, earthworks to build dams and dykes, concrete structures, and electrical and mechanical work within the powerhouse and spillway structures.
GNTL	Great Northern Transmission Line	The American portion of a new 500 kV alternating current interconnection under construction between Dorsey converter station northwest of Winnipeg and a new station near Grand Rapids, Minnesota.

Acronym	Definition	Description
GRA	General Rate Application	PUB process to review Manitoba Hydro's proposed changes to electrical or gas rates and their impacts on various customer groups.
GWh	Gigawatt-Hour	An amount of electrical energy equivalent to 1,000,000 kilowatt hours (kWh), or 1,000 megawatt hours (MWh). As an example, a typical non-electrically heated home uses 10,000 kWh per year. One GWh is enough to power 100 homes for one year.
HVDC	High-Voltage Direct Current	An electric power transmission system that uses direct current for the bulk transmission of electrical power, in contrast with the more common alternating current (AC) systems. HVDC transmission is point-to-point, as opposed to the interlaced networks that are possible with AC systems. For long-distance transmission, HVDC systems may be less expensive and suffer lower electrical losses.
IFF	Integrated Financial Forecast	Provides projections of Manitoba Hydro's financial results and position over a multi-year forecast period, typically 20 years. The Integrated Financial Forecast serves as the primary forecast to determine the need for rate increases that are necessary for Manitoba Hydro to maintain a reasonable financial position and progress towards attaining and maintaining its financial targets. The most current forecast is MH16 Update with Interim.
IFRS	International Financial Reporting Standards	Accounting standards adopted by Manitoba Hydro in April 2015 which replace Canadian Generally Accepted Accounting Principles.

Acronym	Definition	Description
kV	Kilovolt	An amount of electromotive force equivalent to 1,000 volts. A volt is unit of measure for the electromotive force, and representative of the difference of potential that would drive one ampere of current against one ohm of resistance. It is roughly analogous to pressure in a water pipe.
kW	Kilowatt	An amount of electrical power equivalent to 1,000 watts. A watt is unit of measure for electrical power, corresponding to the power in an electric circuit in which the potential difference is one volt and the current is one ampere.
kWh	Kilowatt-Hour	The basic unit of electric energy equal to one kilowatt of power supplied to, or taken from, an electric circuit steadily for one hour (e.g.: ten 100 W lightbulbs left on for 1 hour would use 1 kWh, or 1000 W for one hour). A typical home without electric heat uses about 10,000 kWh each year.
LICO	Low-Income Cut-Off	A poverty measure used by Statistics Canada that represents an income threshold below which a family is likely to devote a larger share of its income on food, shelter and clothing than the average family. LICO is calculated based on total pre-tax household income, as well as family and community sizes.
LICO-125	125% of Low-Income Cut-Off	The eligibility threshold used by Manitoba Hydro for its Affordable Energy program. LICO-125 is based on 125% of Statistics Canada's Low Income Cut-Off (LICO) threshold for the large urban centre (i.e., a community with 500,000 or more inhabitants).
MH16	Manitoba Hydro Integrated Financial Forecast 2016	The original integrated financial forecast presented by Manitoba Hydro in support of its 2017/18 & 2018/19 General Rate Application.

Acronym	Definition	Description
MH16 Update	Manitoba Hydro Integrated Financial Forecast 2016	An update to Manitoba Hydro's integrated financial forecast reflecting more current forecasts of export prices, water flow conditions, domestic loads, and economic and financial indicators.
MH16 Update with Interim	Manitoba Hydro Integrated Financial Forecast 2016	An update to Manitoba Hydro's integrated financial forecast reflecting the MH16 Update forecasts of export prices and domestic loads as well as the impact of the Public Utilities Board's interim approval of rates effective August 1, 2017.
MMTP	Manitoba- Minnesota Transmission Project	The Canadian portion of a new 500 kV alternating current interconnection under construction between Dorsey converter station northwest of Winnipeg and a new station near Grand Rapids, Minnesota.
MW	Megawatt	An amount of electrical power equivalent to 1,000,000 watts, or 1,000 kilowatts (kW). Manitoba Hydro's peak generating capability from its hydroelectric generating stations is approximately 5,200 MW.
NEB	National Energy Board	Canadian federal regulator for international electricity exports and imports.
NFAT	Needs For and Alternatives To	Extensive review of Manitoba Hydro's Preferred Development Plan by the PUB with final recommendations made to the Province of Manitoba as to which development option should proceed. Last undertaken in 2014 to review Manitoba Hydro's Keeyask, Conawapa, US Intertie, and expanded DSM project investments.

Acronym	Definition	Description
P50, P90	Probability 50%, Probability 90%	A value at which the expected outcomes have a 50% probability of being higher than the value and 50% chance of being lower than the value. A P90 value is a value for which the expected outcomes have a 90% probability of being lower and a 10% probability of being higher.
PCOSS	Prospective Cost of Service Study	An embedded cost of service study in that it is based on forecast financial costs for a single test year period from the Integrated Financial Forecast. PCOSS18 refers to the PCOSS with a test year of 2017/18, which is based on IFF16 and the methodology changes directed in Order 164/16
PV	Photovoltaic	Equipment used to generate direct current electricity from solar radiation (i.e. sunlight).

Terms

Term	Description
Arrear	An amount owing, generally from unpaid bills or a portion thereof. Arrears can lead to service disconnection.
Bipole	An electrical power transmission line, within a high voltage direct current system, having two direct current conductors in opposite polarity. Manitoba Hydro implemented a high voltage direct current system in order to economically and efficiently transmit power generated by hydroelectric stations on the Lower Nelson River to southern Manitoba.
Business Operations Capital	A category within the Capital Expenditure Forecast. Capital projects in this category relate to expenditures to renew existing assets and facilities (also referred to as "sustainment") replacements, to expand the electrical system to new customers, and to address load growth and requirements for additional capacity.
Capital Expenditure Forecast	A projection of the capital expenditures needed annually for new and replacement equipment and facilities to meet the electricity requirements in Manitoba and firm export sale commitments outside the province.
Conawapa	A potential hydroelectric generating station on the Nelson River, most recently proposed by Manitoba Hydro as part of its Preferred Development Plan in 2013 and reviewed at the NFAT in 2014. The Board recommended that Manitoba Hydro cease its development and this recommendation was accepted by the provincial government.
Conservation Rates	See Inverted Block Rates.
Control Budget	A formal budget for a capital project developed by the project team and approved by management.

Term	Description
Converter Station	A high voltage direct current (HVDC) converter station is a specialized type of substation which forms the terminal equipment for a HVDC transmission line. Converter station equipment converts alternating current to direct current, or the reverse. Manitoba Hydro currently operates, or has in construction, three northern converter stations (Henday, Radisson, and Keewatinohk) to convert from alternating current (AC) collected from nearby generating stations to direct current (DC) power for transmission. As well, Manitoba Hydro operates, or has in construction, two southern converter stations (Dorsey and Riel) to convert DC to AC for downstream customer transmission and distribution.
Corporate Value Framework	A systematic means of understanding the value of all investments in an organization. The Manitoba Hydro value framework consists of 28 value measures that span five categories: financial (including the cost of the investment), reliability, environmental, safety, and corporate citizenship. Each investment's value is assessed using these measures and the net present value is then used to determine both its independent merit and its standing among other investments competing for resources in a constrained optimization process. The value framework helps identify the optimal set of investments that deliver the greatest value to the organization while respecting funding, resource, and timing constraints.
Cost-of-Service	A process undertaken to determine the responsibilities that each customer class has for Manitoba Hydro's total revenue requirement and to assist in determining whether domestic rates are fair and reasonable.
Cost-of-Service Study	A method of allocating a utility's costs to the various classes of customers that it serves. Its purpose is to determine a fair sharing of the utility's revenue requirement among the customer classes.
Curtailable Rate Program	A program offered to Manitoba Hydro's industrial customers that gives credits on the customer bills in exchange for commitments to curtail their load during times of system emergencies.

Term	Description
Customer Class	A category of similarly situated customers. Customers are categorized into customer classes according to the characteristics of the equipment and assets that serve them as well as the characteristics of how they consume power.
“Customer” Cost Classification	A classification within the cost of service study. Utility costs that tend to vary with the number of customers. These include asset costs related to meters and service drops, as well as billing, meter reading, and customer service costs.
Customer Service	In the Cost of Service Study, customer service costs are associated with service provided to the customer after delivery of energy.
“Demand” Cost Classification	A classification within the cost of service study. Utility costs associated with consumption of electricity at peak periods and the maximum size (capacity) of facilities to serve those demands. These would generally include assets such as transmission lines and substations.
Demand Side Management	A common utility strategy for reducing consumer demand (frequently through energy efficiency measures) for energy in order to defer the need for new generation assets. Manitoba Hydro's Demand Side Management Plan, marketed under the Power Smart brand, involves various education and incentive programs aimed to reduce domestic consumption of both electrical and natural gas.
Dependable Energy	Energy that can be produced by Manitoba Hydro even during drought conditions. It is based on water levels and flows experienced in the lowest flow year on record. This includes the minimum expected generation from the hydroelectric generating stations plus continuous operation of the Selkirk and Brandon thermal generating stations, plus the minimum expected wind generation from St. Leon and St. Joseph, plus contracted imports.
Dependable Sales	Export sales made from dependable energy resources. These are also referred to as firm sales.

Term	Description
Distribution	Utility assets used to distribute lower voltage electricity to individual customers. These assets include distribution lines operating at less than 30 kV along with associated low voltage portions of substations, as well as low voltage transformers and metering.
Energy Burden	The percentage of household income that goes toward energy costs (e.g., electricity and gas).
“Energy” Cost Classification	A classification within the cost of service study. Utility costs that vary with the consumption of electricity are classified as “energy”.
Energy Poverty	As defined by the Bill Affordability Working Group, energy poverty refers to circumstances in which a household is, or would be, required to make sacrifices or trade-offs that would be considered unacceptable by most Manitobans in order to procure sufficient energy from Manitoba Hydro.” For the purposes of the Working Group Report, the Working Group considered a household to be energy poor if it spends more than 6% or 10% of pre-tax income on energy and also has a level of income lower than the current Low Income Cut-Off 125 (“LICO-125”), which is 25% above the Statistics Canada lower-income measurement.
Firm Sales	Export sales made from dependable energy resources.
Functionalization	The first of three main steps in a cost of service study (the others being classification and allocation) where the annual costs of a utility’s assets and operations are separated according to the function performed by each asset or operation. Manitoba Hydro’s cost of service study has five main functions: Generation, Transmission, Sub-Transmission, Distribution, and Customer Service.

Term	Description
Gas Available Area	Regions of Manitoba where Centra Gas Manitoba Inc. (a subsidiary of Manitoba Hydro) holds a franchise agreement with the local municipality to distribute natural gas, which is generally consumed for space and water heating. Gas available areas are generally found in the southern areas of Manitoba (mostly adjacent to the TransCanada Mainline pipeline).
General Service Large	Customer class containing predominantly industrial customers. These customers make use of customer-owned voltage transformation assets. This customer class is divided into three sub-categories, 0-30kV, 30-100kV, and >100kV, to reflect the voltage supplied to the customer by Manitoba Hydro.
General Service Medium	Customer class containing predominantly large commercial customers. These customers use Manitoba Hydro-owned transformation assets and have loads exceeding 200 kW.
General Service Small	Customer class containing predominantly small commercial customers with loads less than or equal to 200 kW. This customer class is divided into two sub-categories, Demand and Non-Demand. Demand customers pay a Demand rate based on the peak demand each month, in addition to a basic monthly charge and an energy (per kWh) charge.
Generation	Utility assets used to generate electricity. Manitoba Hydro considers all generating facilities, northern collector transmission lines, and HVDC facilities (such as Bipoles and converter stations) as generation in its cost of service studies.
Generation Outlet Transmission	Electrical conductors, and related switching and control equipment, linking electrical generators to transmission substations or converter stations.

Term	Description
Independent System Operator	An independent organization, formed at the direction or recommendation of the Federal Energy Regulatory Commission in the United States or other Canadian provincial regulator, that operates a region's electricity grid, administers the region's wholesale electricity markets, and provides reliability planning for the region's bulk electricity system.
Integrated Financial Forecast	Provides projections of Manitoba Hydro's financial results and position over a multi-year forecast period, typically 20 years. The Integrated Financial Forecast serves as the primary forecast to determine the need for rate increases that are necessary for Manitoba Hydro to maintain a reasonable financial position and progress towards attaining and maintaining its financial targets. The most current forecast is MH16 Update with Interim.
Interconnection	The physical linking of a utility's electrical network with equipment or facilities not belonging to that network. The term may refer to a connection between a utility's facilities and the equipment belonging to its customer, or to a connection between two (or more) utilities.
Inverted Block Rate	A rate design that uses a tiered pricing structure in which higher-usage customers pay an increasing marginal rate for the commodity that is consumed. The increasing pricing structure is intended to provide a price signal to customers to encourage energy efficiency. Inverted block rates are also sometimes called inverted rates or conservation rates.
Keeyask	Manitoba Hydro's newest and fourth largest hydroelectric generating station under construction on the Nelson River. It is projected to enter service in August 2021.

Term	Description
Line Loss	While transmitting from generating stations to the end users, electricity passes through a complex transmission and distribution network, consisting of transformers, switches, and conductors. As it passes through the system, some of the energy is consumed by various system components or is dissipated due to the physical properties of the equipment. As a result, the total amount of electric energy measured at customer meters is always less than the total amount of electric energy measured at generation stations. The difference between the two is known as line loss.
Major New Generation & Transmission	Refers to capital projects that are utilized to both generate electricity and transmit this electricity to remote load centres (i.e. populated areas). Major New Generation & Transmission is a category within the Capital Expenditure Forecast that includes projects that provide significant new generation and transmission capacity and are of a substantial cost.
Marginal Value	The marginal value is the value to the Manitoba Hydro's system of deferring an increment of load growth (i.e. 1 kWh) to Manitoba Hydro's integrated system. Marginal value is determined based on each of the components of serving residential load: generation supply, bulk transmission capacity, and distribution capability.
Midcontinent Independent System Operator	A regional electricity transmission organization that assures unbiased regional grid management and open access to the transmission facilities. The Midcontinent Independent System Operator serves as a link in the safe, reliable, and cost-effective delivery of electric power across all or parts of 15 U.S. states and the Canadian province of Manitoba. It is the principal market that Manitoba Hydro exports power to.
National Energy Board	Canadian federal regulator for international electricity exports and imports.
Network Transmission	A system of interconnected electrical transmission lines that minimizes the probability of grid instability and failure. Network transmission also facilitates the exchange of electrical power amongst utilities.

Term	Description
Non-Tariffable Transmission	A sub-function in Manitoba Hydro's cost of service study that captures costs of transmission lines and substations that are not eligible to be included in the Open Access Transmission Tariff. Non-tariffable transmission includes radial transmission lines.
Off-Peak	Off-peak refers to periods when lower electricity prices are generally expected, coinciding with periods of low electricity usage. Manitoba Hydro's off-peak periods are defined as all night time hours from 11pm to 7am.
On-Peak	On-peak refers to periods when higher electricity prices are generally expected, coinciding with periods of high electricity usage. Manitoba Hydro's on-peak periods are defined as Monday to Friday (excluding Statutory Holidays) 12pm-8pm (May-October), as well 7am-11am and 4pm-8pm (November-April).
Opportunity Sales	Export sales made from surplus generation, typically hydraulic generation that is available in most water flow conditions except drought conditions.
Peak Demand	The instantaneous maximum amount of electricity required by a customer or group of customers.
Radial Transmission	Radial transmission refers to transmission lines feeding high voltage power to regions of the province using a single path without a redundant transmission line, as opposed to network transmission which provides multiple redundant paths. For example, a radial transmission line feeds the Town of Churchill.
Rate Design	The process of determining the rates charged to each customer class in order to recover the utility's revenue requirement. The cost of service study is an input to the rate design. Rates for each customer class can have basic monthly charges, demand charges, and energy rates, or a subset of these three charges.
Revenue to Cost Coverage	The ratio of class revenues and costs. Generally, the objective is to obtain a ratio close to 1 (or 100%) for each customer class.

Term	Description
Surplus Energy Program	The Surplus Energy Program is a Manitoba Hydro rate program that enables a qualifying customer to purchase surplus energy at export market prices that are determined on a weekly basis for peak, shoulder, and off-peak periods, if Manitoba Hydro has surplus energy to sell.
Test Year	The year which is the subject of the Public Utilities Board's review and approval of a rate increase. For this GRA and this Order, the Test Year is Manitoba Hydro's fiscal year beginning April 1, 2018 and concluding March 31, 2019.
Time of Use Rates	A rate design concept that varies the cost of electricity based on when it is used. The aim is to promote energy conservation and load smoothing in order to reduce overall system peak loads, thus deferring the need for new generation assets and to maximize the value of electricity exports during on-peak periods.
Transmission	Utility assets used to transmit electricity between load centres. In the cost of service study, Manitoba Hydro considers all transmission lines and high voltage portions of substations operating in excess of 100 kV as transmission. With respect to capital expenditures, transmission refers to assets operating in excess of 33 kV.
Uniform Rates	In 2001, legislation mandated uniform rates in Manitoba (also known as "postage stamp rates"). Previously, residential customers in Northern Manitoba and in rural areas paid higher rates than those in Winnipeg. Under the uniform rates legislation, the previous geographic rate zones were eliminated and the costs to serve urban customers were pooled with the costs to serve rural customers.
Water Rentals	Fees paid by Manitoba Hydro to the Provincial Government based on the amount of electricity produced from hydraulic generation.

Term	Description
Working Group	The Bill Affordability Working Group, established in response to the Board's directive in Order 73/15. The Working Group was comprised of a variety of stakeholders who represent, work with, or provide services to lower-income Manitoba Hydro customers.
Zone Of Reasonableness	An established tolerance zone around the COSS RCC target of 100% for each class. Manitoba Hydro's RCC Zone of Reasonableness currently has a range of 95 to 105 percent. A RCC ratio outside of the ZOR is one factor to be considered in the possible differentiation of rate increases.

Appendix B: Order in Council 92/17



MANITOBA ORDER IN COUNCIL

Finance

DATE: **April 05, 2017**

ORDER IN COUNCIL NO.: **00092 / 2017**

RECOMMENDED BY: **Minister of Finance**

ORDER

1. The Public Utilities Board (the “PUB”) is assigned the duty of considering capital expenditures by The Manitoba Hydro-Electric Board (“Manitoba Hydro”) as a factor in reaching a decision regarding rates for services under Part IV of *The Crown Corporations Public Review and Accountability Act* to support setting rates for services in a manner that balances the interests of ratepayers and the financial health of Manitoba Hydro.
2. For the purpose of the PUB’s consideration of capital expenditures as a factor in the next review of Manitoba Hydro rates for services, Manitoba Hydro shall provide to the PUB the following information:
 - (a) Capital Expenditure: existing records related to planned capital expenditures, such as details on new, current committed, and proposed, planned or forecast major

capital expenditures and base/sustaining capital expenditures, including copies of contracts, current and previous cost estimates, cost overrun justifications, schedule change justifications, current and future scheduled capital expenditure commitments and forecasts;

(b) Explanatory: existing records related to project justification, such as capital project justification forms, cost-benefit analyses, business case and other supporting information related to Manitoba Hydro capital expenditures identified by the PUB, including Asset Condition Assessments for previous, current and proposed major capital expenditures and base/sustaining capital expenditures;

(c) Revenue and other: existing records related to revenues and income, such as any correspondence, agreements, term sheets, export contracts, externally commissioned or internally created reports, studies or analyses, including forecasts (capital, capital structure, financial, export, import, load and power resource).

3. Manitoba Hydro may request that information it deems to be commercially sensitive be held in confidence by PUB. The PUB shall conduct the rate review in accordance with its Rules of Practice and Procedure, including determining the access of any person to information received in confidence.
4. This Order comes into effect immediately.

AUTHORITY

The Public Utilities Board Act, C.C.S.M. c. P280, states:

Power of board to perform assigned duties

107 The board may perform duties assigned to it

...

(b) by order of the Lieutenant Governor in Council; or

and Part I, in so far as it is applicable, applies to the carrying out of duties so assigned.

BACKGROUND

1. No change in rates for services shall be made and no new rates for services shall be introduced without the approval of the PUB under Part IV of *The Crown Corporations Public Review and Accountability Act*.
2. Manitoba Hydro intends to submit a general rate application to the PUB in 2017.

Appendix C: Summary of Presenter Evidence

In the GRA hearing, the Board heard evidentiary public presentations. As with other witnesses before the Board, those giving public presentations were sworn and subject to questioning by all parties and the Board. Written public presentations were provided by members of the public who registered with the Board to give an oral presentation but who were not available for the times scheduled for oral presentations during the hearing. The written public presentations were certified by the authors.

The summary of presenter evidence below is provided in the order in which presenters appeared in front of the Board.

Consumers Coalition Ratepayer Panel

Mr. Dan Mazier

Mr. Mazier resides in the rural municipality of Elton, Manitoba, on a farm property with a primary residence as well as a farm operation of 1,000 acres and a rental home. While Mr. Mazier's electricity costs for his primary residence are essentially zero due to his investments in renewable energy, he is concerned about the effect electric rate increases will have on his farm operation and on their renters in the rental home. Mr. Mazier indicated that Manitoba Hydro's projected rate plan could make Manitoba businesses uncompetitive globally. His preference is, rather than having higher rate increases in the short-term followed by lower rate increases, to have lower rate increases over a longer period of time as this is more predictable and realistic. He also stated that ratepayers do not know where the money Manitoba Hydro receives from ratepayers goes, and expressed concern that there is a lack of transparency.

Ms. Rebecca Trudeau

Ms. Trudeau is a resident of Winnipeg. Ms. Trudeau would prefer lower rate increases for a longer period of time, because this is consistent and reliable, which allows her to have an expectation of her monthly bill charges. As she lives paycheque-to-paycheque, Manitoba Hydro's proposed rate increases would affect her ability to save a portion of her income, potentially cause her to find employment that is less fulfilling but pays more, and would give rise to anxiety and stress. Her view is that Manitobans should not spend more than 5% – 6% of their annual income on energy bills, with 10% being the upper limit. She is supportive of a program to assist lower-income Manitobans in paying their electricity bills and is willing to pay a few dollars extra each month for such a program. Ms. Trudeau also noted that she finds many of Manitoba Hydro's energy efficiency programs to not be accessible for renters.

Mr. Gordon Barton

Mr. Barton is from Anola, Manitoba. He does not agree with Manitoba Hydro's proposed rate increases and feels that forecast rate decreases in 10 years cannot be relied on as Manitoba Hydro is unable to control its money today. Mr. Barton does not believe Manitoba Hydro needs the rate increases it is seeking. As well, if Manitoba Hydro receives all of the proposed rate increases, it would be a disaster for his spending and budget and he may have to consider changing where he lives. Mr. Barton's view is that rates should be increased slowly, over a longer period of time, and at a steady pace over time. Mr. Barton believes that Manitobans should not have to spend more than 3% of their income on energy bills.

Ms. Lyndie Bright

Ms. Bright lives in Winnipeg, Manitoba. She explained that she has cut back on her energy bills by lowering the heat in her apartment to 65 degrees Fahrenheit. When rates are increased, and because she is on a fixed income, Ms. Bright has to look at what in her budget she can cut back on or ways she can reduce consumption at home. This adds more stress for her. Ms. Bright advised that, if there are rate increases, she would also like there to be transparency on Manitoba Hydro's part to show what they are doing to keep rates down as much as possible. Ms. Bright's preference is for lower rate increases over a longer period of time. She would also like to see more energy efficiency programs for renters.

Ms. Emily Mayham

Ms. Mayham resides in Winnipeg, Manitoba with her four children. She finds paying her utility bills challenging at current rates. She gave evidence that, if Manitoba Hydro receives its proposed rate increases, she will have to cut her food budget by decreasing the amount of groceries she purchases and buying cheaper and generally less healthy food. She will also have to reduce the extent of her social activities with her children. In addition, Ms. Mayham explained that she would not be able to save money or have an emergency fund. Her preference is for lower rate increases over a longer period of time because it is predictable, allowing her to adjust and adapt as needed. Her view is that there should be a sliding scale based on income for utility rates. Ms. Mayham would like to see more energy efficient programs targeted to renters. Ms. Mayham also indicated that she would like to see more accountability and transparency from Manitoba Hydro as she feels consumers are being held responsible for financial irresponsibility or mismanagement by the Utility.

Oral Public Presentations

Mr. Jonathan Alward, Canadian Federation of Independent Business

Based on feedback received from its Manitoba members, the Canadian Federation of Independent Business expressed concern that the proposed 7.9% rate increases would severely affect the global competitiveness and provincial economic contributions of business and their employees, as energy costs are already among the top three cost pressures faced by Manitoba small business owners. Business owners surveyed said that the rate increases may significantly increase their electricity costs, increase prices of their products or services, delay investments in their business, or may even result in future hiring plans being put on hold and reductions in staff or staff hours. The Canadian Federation of Independent Business would like Manitoba Hydro to further its efforts to curb operating spending first instead of pursuing significant rate increases.

Mr. Tim Sale

Mr. Sale identified concerns with inaccurate forecasts and cost estimates on the part of Manitoba Hydro, the difficult market for the Utility with the economics and improved technologies of wind and solar energy, and low export prices for Manitoba's hydroelectric power. He recommends that the Utility stop pursuing firm export contracts, start measures to increase electrical energy consumption in Manitoba, work with Manitoba businesses and property owners to use renewable technologies, and work with Saskatchewan to provide that province with "green" energy.

Ms. Bonnie Sheppard

Ms. Sheppard expressed her belief that Manitoba Hydro has been mismanaged for over a decade and is now asking consumers to bail out the Utility through rate increases. She suggested that Manitoba Hydro correct failures within its organization before rates are increased in order to bring an end to bad decisions, poor management, and fiscal irresponsibility, which she believes will eventually result in privatization of the Crown Corporation.

Mr. Haimana Romana

Mr. Romana spoke in opposition to a rate increase, but stated that, if an increase is approved, it should be only half of the requested amount. He questioned the need for a rate increase and suggested that ratepayers should not have to pay for the blunders of the Utility, including capital project cost overruns and increased debt, at a time when other organizations are having their budgets and funding cut. Mr. Romana expressed concern about accountability on the part of Manitoba Hydro, and questioned whether privatization is the ultimate goal.

Mayor Chris Goertzen, Association of Manitoba Municipalities

Mayor Goertzen spoke on behalf of the Association of Manitoba Municipalities to voice concerns of municipalities regarding the proposed rate increase. In particular, Mayor Goertzen raised concerns about the negative impact on the operations of public recreation facilities and municipal operating budgets due to limited means to raise funds to offset rising costs, including in the context of the provincial government's freeze on municipal operating funds. He stated that the result will be increased user fees and reduced services.

Dr. Garland Laliberte, Bipole III Coalition

Dr. Laliberte gave evidence that, in his view, the current Manitoba Hydro load forecast artificially and significantly inflates projections of future domestic revenue by approximately \$2.3 billion over a future 20-year period. Dr. Laliberte recommended that the Board direct Manitoba Hydro to revise its load forecast downward to reflect recent historic experience, price elasticity impacts, and insights from other North American jurisdictions.

Dr. Laliberte estimated that the additional impact on domestic revenue as a result of the legislated demand side management target for Efficiency Manitoba is approximately \$5.1 billion over a 20-year future period. In addition, Manitoba Hydro will also have to cover additional program delivery costs. Dr. Laliberte therefore concluded that the combined cumulative impact of load forecast choices and the more aggressive demand side management plan mandated by *The Efficiency Manitoba Act* is \$7.4 billion over the next 20 years. Dr. Laliberte recommended that the Board direct Manitoba Hydro to conduct an analysis of the impact on its balance sheet of the Government's legislated plan for electric demand side management and report its findings at the next GRA.

Dr. Laliberte submitted that Manitoba Hydro should devote more effort to making use of its post-Keeyask energy glut, such as through advancing electric transportation and promoting a Western Canadian transmission grid.

Mr. John Greenaway

Mr. Greenaway voiced his concern with Manitoba Hydro rate increases over the years as the increases are above the cost of living and likely also above average employment wage increases. He suggested that, rather than over a three-year period, Manitoba Hydro be given a 21% rate increase over a seven-year period.

Mr. Chris Mravinec, Canadian Union Of Public Employees Local 998

Mr. Mravinec appeared on behalf of the Canadian Union of Public Employees (“CUPE”), Local 998, which represents Manitoba Hydro employees. Mr. Mravinec stated that the members of CUPE Local 998 have experienced unrealistic workloads and increased stress due to staff reductions at Manitoba Hydro. He stated that arbitrary targets for staff reductions are not feasible to operations and have a negative effect on employee well-being, safety, and customer service levels. At the same time, Manitobans are facing futures of wage increases at levels lower than inflation and rate increases at the level of 7.9% will negatively affect consumers. Mr. Mravinec recommended a balancing of interests and suggested that, rather than granting the full rate increase sought, the Board recommend that Government pursue new market opportunities within Manitoba through increased electrification, as well as in other provinces.

Mr. Allan Ciekiewicz

Mr. Ciekiewicz presented his view that ratepayers are burdened with Manitoba Hydro's capital development for the purpose of supporting Manitoba Hydro's export business. He indicated that this burden is heightened given the risk and possible repercussions of a drought. Mr. Ciekiewicz suggested that the construction of Keeyask and Bipole III should have been halted, with the savings used to finance the construction of efficient

gas turbines in order to ensure a secure supply of energy for Manitobans. He also stated that rate increases above the rate of inflation are unacceptable.

Mr. Dennis Woodford, Bipole III Coalition

Mr. Woodford expressed his view that Manitoba Hydro has to be more responsive to unexpected external conditions that have and continue to occur. Mr. Woodford stated that Manitoba Hydro had ample opportunity to reassess the need for Keeyask and to stop construction, especially in light of the aggressive Demand Side Management program that it was proposing in 2016 and a soft U.S. export market. Additionally, Mr. Woodford identified that the disruptive technology of solar power may lower the domestic demand for energy produced by Keeyask. Manitoba Hydro also failed to act on opportunities to limit the project costs for Bipole III, which was not approved by the Board at the NFAT, and has also made decisions that have increased the costs.

By contrast, Mr. Woodford observed that there is a potential for a significant increase in the use of electric vehicles, which would increase domestic usage of Manitoba Hydro's surplus electricity and generate higher revenues for Manitoba Hydro than lower priced exports.

As a result, Mr. Woodford recommended that the Manitoba Hydro grid should be changed to "open access" allowing competitive marketing of electricity between consumers and producers of electricity to provide needed competition and address Manitoba Hydro's inability to adjust quickly to changing times. Furthermore, the Manitoba Hydro debt for generation and transmission should be assumed by the provincial government and not the ratepayers.

Mr. Murray Taylor, Business Council of Manitoba

Mr. Taylor, appearing on behalf of the Business Council of Manitoba, expressed his concerns regarding the current and future financial condition of Manitoba Hydro, including growing debt and the need to incur additional borrowing costs as rates are insufficient to pay for ongoing operating costs. Mr. Taylor observed that Manitoba Hydro's rates are among the lowest relative to other locations in Canada and the U.S. and questioned why rates in Manitoba are held below the costs of running the Utility. Mr. Taylor identified risks in what he sees as optimistic forecasts of Manitoba Hydro's forecast net income levels, as well as in the likelihood that interest rates will increase from the current record-low levels.

Mr. Taylor also advanced that, since the 2008 financial crisis, credit agencies have become more rigorous and continue to tighten their analysis of each entity that they examine. As a result, Mr. Taylor stated that showing leadership to increase rates substantially for the next two years will be important.

Mr. Taylor appealed to the Board to consider a path to ensuring financial stability and the lowest costs over future years collectively, and not be so focused on near-term rates at the expense of overall future costs for Manitobans. In the view of the Business Council of Manitoba, such considerations are well represented by the proposal made by Manitoba Hydro.

Ms. Andrea McLandress, Mining Association of Manitoba

Ms. McLandress presented evidence on behalf of the Mining Association of Manitoba. She testified that members of the Mining Association of Manitoba are typically the largest private employers and economic drivers in their regions. Together, Manitoba's mining operators have over 3,100 employees, largely located in the North and in rural communities, and make over \$130 million in total annual purchases from Manitoba suppliers. Moreover, Manitoba's mining operators make annual electricity purchases in excess of \$82 million, which for the large northern operators, represents approximately 10% to 15% of annual cash requirements.

Mining companies compete in an intense global market and are heavily affected by the cost of labour, transportation, regulations, and energy. With the exception of low electricity rates, these mining operating costs are generally higher in Manitoba than in other jurisdictions. Therefore, eroding Manitoba's only competitive advantage in mining (i.e., low electricity rates) could be disastrous for the entire mining sector of Manitoba's economy.

According to Ms. McLandress, the importance of the mining industry to the economy of Northern Manitoba makes it a vital public interest consideration when reviewing Manitoba Hydro's electric rate increase proposal. Ms. McLandress therefore advocated for a 0% rate increase as the only electric rate increase that would be acceptable to Manitoba's mining operators.

Mr. Michael Velie, International Brotherhood of Electrical Workers, Local 2034

Mr. Velie testified on behalf of the International Brotherhood of Electrical Workers, Local 2034. He gave evidence that, largely as a result of the Voluntary Departure Program and workforce reductions done numerically without planning for future operational needs, Manitoba Hydro's employees are feeling pressured to accomplish more and more work with fewer resources, resulting in shortcuts that are dangerous to both Manitoba Hydro's employees and customers. Additionally, Mr. Velie stated that Manitoba Hydro's restricted ability to employ sufficient internal resources will directly affect the reliability of the electrical service provided to Manitobans. Mr. Velie also maintained that Manitoba Hydro continues to increase its use of external contractors, which he identified as being two to three times more expensive than Utility employees.

Mr. Velie expressed support for Manitoba Hydro's 7.9% rate increase request for a period of one year to help Manitoba Hydro overcome its manpower shortage and to reduce safety risks to persons and property. However, Mr. Velie urged the Board to give Manitoba Hydro the direction it needs to curtail any further reductions in staffing levels and explore creative options for reducing the exorbitant costs of engaging contractors.

Mr. Chris Hornby, Interlake Recreation Practitioners

Mr. Hornby gave evidence that there are approximately 100 recreation facilities across the Interlake and that utility costs represent about 25% to 30% of total expenses. Given the magnitude of Manitoba Hydro's planned rate increases for the next five years, the Interlake Recreation Practitioners Association is strongly against the proposed rate increase. Together with recent provincial funding cuts to community recreation and services programs, Manitoba Hydro's proposed rate increase plan will make sustaining

recreation programs very difficult. Moreover, Mr. Hornby estimated that between 20 and 50 recreation facilities in the region could be expected to close as a result of Manitoba Hydro's proposed five-year rate increase plan.

Mr. Hornby also noted that Manitoba Hydro recently cut long-standing advertising at rural arenas and curling clubs. While Manitoba Hydro is still funding many local festivals, events, and non-profits, Manitoba Hydro now advertises with large private organizations such as the Winnipeg Jets.

Manitoba Industrial Power Users Group Panel Presentation

Mr. Dale Bossons, Chair of the Manitoba Industrial Power Users Group

The Manitoba Industrial Power Users Group is an association of 12 major industrial companies that belong to the three Manitoba Hydro General Service Large customer classes. On behalf of the members of the Manitoba Industrial Power Users Group, Mr. Bossons gave evidence that the difference between Manitoba Hydro's proposed 7.9% rate increase plan, compared to the previous 3.95% baseline scenario, is almost \$850 million higher for the General Service Large customer classes over the next 10 years. These additional costs will affect decision-making regarding future operational investments and, for some, threaten their very future.

While the members of the Manitoba Industrial Power Users Group are not opposed to rate increases, Mr. Bossons clarified that it is important for Manitoba Hydro's revenue requirement to be based on true costs, that rates are fairly distributed across customer classes, and that options to manage electricity bills

are offered and expanded. Furthermore, member companies are seeking stable and predictable energy rates that will allow them to manage their businesses and plan for their futures.

Mr. Bossons also stated that despite other operational challenges associated with Manitoba, low energy costs was the reason why member companies initially invested in this province. Additionally, there is little opportunity to pass along Manitoba Hydro's rate increases as member companies produce globally-traded commodities.

Mr. Michael St. Pierre, Chemtrade Logistics

Mr. St. Pierre explained that Chemtrade Logistics' ("Chemtrade") facility in Brandon has operated for 50 years and is the largest sodium chlorate plant in the world. For the Brandon plant, electrical power accounts for 70% of Chemtrade's variable plant manufacturing costs. Chemtrade's Brandon facility consumes approximately 5% of the province's electrical load and provides Manitoba Hydro with over \$70 million in annual revenues. As a result, Chemtrade estimates that, for the coming year, Manitoba Hydro's proposed 7.9% rate increase would correspond with a \$5.6 million increase in costs.

Chemtrade's decisions to further invest and grow the Brandon facility are now being re-evaluated, including due to announcements in other competing jurisdictions which will have either no or modest electric rate increases for 2018. While Chemtrade has publicly announced an additional \$50 million investment in its Brandon facility, the company is finding it difficult to proceed in light of Manitoba Hydro's planned rate increases.

Mr. St. Pierre testified that Manitoba Hydro's significant and multiple rate increases will drive industry out of the province, thus decreasing baseload electricity demand and placing even more burden on those who live and work in Manitoba. Mr. St. Pierre insisted that electricity rates must be kept as low as possible to ensure a relative cost advantage for industry and to offset geographic disadvantages.

Mr. Darren MacDonald, Gerdau Long Steel North America

Mr. MacDonald gave evidence on behalf of Gerdau Long Steel North America ("Gerdau"), which currently operates 20 facilities in North America and 60 steel mills worldwide. Gerdau's facility in Selkirk makes products from recycled steel. Gerdau employs 436 people in Selkirk, with an additional 300 employees at downstream locations. Gerdau's Selkirk operations also use over 721 Manitoba vendors.

Mr. MacDonald testified that the Selkirk facility has annual electricity costs of \$8 million. Gerdau has no ability to pass through incremental costs to customers as its products are traded globally. As a result of increasing electricity costs and the potential carbon tax impact, Gerdau is concerned about the Selkirk facility's competitiveness and cost structure relative to its other North American facilities. The impact of Manitoba Hydro's rate increases may cause Gerdau to limit investments made into its Selkirk facility and to shift production to other facilities. In 2007, for example, Gerdau shut down a steel mill in New Jersey, mainly as a result of high electricity cost forecasts.

Mr. MacDonald expressed support for reduced rate increases (e.g., 3.46%), reduced payments to Government, and maintaining a 20-year plan for Manitoba

Hydro to reach a 25% equity level. Manitoba Hydro should develop additional programs or rate options that would allow customers to further manage their electricity costs.

Mr. Gerald Samuel, Koch Fertilizer Canada

As Mr. Samuel explained in his presentation, the Koch Fertilizer Canada (“Koch”) facility in Brandon produces anhydrous ammonia, urea, and other fertilizer products. Koch’s Brandon facility provides employment for over 215 people and over 1,000 contractors, and is part of a network of five Koch fertilizer plants in North America. As electricity and natural gas are used as process feedstock, Koch has minimal opportunities to reduce its electric load. Mr. Samuel stated that Manitoba Hydro’s proposed rate increase plan will cost Koch over \$20 million in the next 10 years.

Mr. Samuel testified that the Brandon facility needs to remain competitive relative to the internal rate of return of Koch’s other facilities. Together with the implementation of a carbon tax and federal air pollution regulations, Manitoba Hydro’s proposed electric rate increases will directly affect Koch’s competitiveness and will have an adverse impact on the long-term viability of the Koch Brandon plant.

Mr. Morgan Curran-Blaney, Maple Leaf Foods

Mr. Curran-Blaney testified that Maple Leaf Foods’ (“Maple Leaf”) operations in Manitoba employ approximately 4,000 people and represent approximately \$753 million in direct economic benefits to Manitoba (\$1.25 billion in indirect benefits). Its Brandon facility produces chilled pork products for the Japanese market,

which is labour and energy intensive. Maple Leaf's electricity costs for the Brandon facility are approximately \$4.6 million annually (or roughly 7% of its total budget overhead costs).

Mr. Curran-Blaney gave evidence that one of the few advantages of being located in Manitoba is low electricity rates. Manitoba Hydro's proposed rate increase plan will have a \$4 million impact to Maple Leaf's operations in Manitoba over the next five years - a \$2 million increase for the Brandon facility alone. Since Maple Leaf operates in a commodity based market, cost increases cannot be passed on to customers. Consequently, Maple Leaf estimates that in the short term, Manitoba Hydro's electric rate increases will likely lead to reductions in discretionary spending, employee headcount, capital spending, and community donations. In the long term, Maple Leaf may scale down the work done in Brandon or look at alternate sources of power generation in order to reduce grid electricity costs.

Mr. Benoit Lentz, Roquette

Mr. Lentz presented evidence that Roquette, a France-based family-owned company that produces specialty foods around the world, decided in 2017 to invest in a new \$400 million pea processing facility in Portage la Prairie. As part of its investment decision, Roquette assessed its possible options using criteria that included a reliable, sustainable, and competitive electricity source. This is because, after raw input materials, electricity is, by far, Roquette's highest production cost. As a result, Manitoba's low and stable electricity costs represented an opportunity to compete against competitors located in jurisdictions with a higher carbon energy mix. In making their final investment decision, Roquette considered Manitoba Hydro's previous 3.95%

electric rate increase plan on the understanding that future rate increases would likely be between 0% and 3.95%.

Mr. Lentz stated that Manitoba Hydro's proposed 7.9% rate increase plan will significantly affect the operation and profitability of Roquette's Portage la Prairie facility. The rate increases would also undermine the Manitoba advantage of reliable and competitive electricity supply. In addition, Manitoba Hydro's rate increase plan would cause Roquette to be less likely to make further investments in Manitoba.

Dr. John Gray

Dr. Gray stated that Manitoba Hydro's proposed rate increases would have a disproportionate impact on electric heating customers. In Dr. Gray's view, Manitoba Hydro's illustrative residential electric heat rate is insufficient as it only provides minimal rate relief and pits one set of customers against another. Dr. Gray also expressed concern that Manitoba Hydro's proposed 7.9% rate increase plan will have a significant impact on the budgets of Manitobans, which are already stretched. As well, Manitoba Hydro's five-year rate plan will affect the economy in terms of job losses, reductions in consumer spending, and increased inflation.

In the short term, Dr. Gray suggested that there will be little opportunity for customers to reduce their electricity consumption but that in the long term, Manitoba Hydro's electricity sales will be significantly affected. In Dr. Gray's opinion, Manitoba Hydro under-estimates the revenue impacts of its rate increase plan.

To address Manitoba Hydro's financial situation, Dr. Gray stated that Manitoba Hydro has a huge opportunity to support electric cars, which would help increase domestic revenues, and could divest some its non-core assets such as Centra Gas.

Certified Written Public Presentations

Manitoba School Boards Association

The Manitoba School Boards Association represents Manitoba's 38 public school boards. For the 2016/17 school year, the total annual electricity costs of all 38 member school boards were \$28.4 million. Manitoba Hydro's proposed rate increases over the next six years would result in additional costs of \$16.4 million.

School boards are publicly funded and any additional school operation costs need to be paid by local taxpayers. As many taxpayers are also Manitoba Hydro ratepayers, Manitoba Hydro's proposed rate plan will result in a far greater personal investment from the average ratepayer. These increases would be in addition to the direct increases in the personal or business electric bills of Manitoba Hydro's ratepayers.

Given the anticipated level of impact of Manitoba Hydro's rate increase plan on school boards, and since school boards are restricted from incurring deficits or overruns, the Manitoba School Boards Association has limited options available to absorb significant increases in energy costs. As a result, reductions to the level of programs, supports, and services provided are likely.

David Sattler, Portage Regional Recreation Authority

The Portage Regional Recreation Authority is a non-profit corporation responsible for the provision of recreation and leisure facilities as well as programs for the benefit of citizens in the Portage la Prairie region. The Portage Regional Recreation Authority believes that Manitoba Hydro needs to look at other options to repair its financial position that do not involve levying a 70% increase on electricity costs over the next seven years.

Manitoba Hydro's potential annual electricity rate increases of 7.9% until 2024 are of concern to the Portage Regional Recreation Authority. There are significant electricity costs associated with the operation of recreation facilities. Manitoba Hydro's 7.9% rate increase plan will increase the Portage Regional Recreation Authority's annual electricity costs from \$265,900 in 2017 to \$452,760 by 2024.

To absorb Manitoba Hydro's rate increases, ignoring any other inflationary pressures or cost increases, the Portage Regional Recreation Authority would be required to increase rental fees for ice, pool, and meeting rooms. As the facility user fee increases would ultimately be combined with increases in the facility users' home utility bills, Manitoba Hydro's proposed rate plan will result in fewer individuals being financially able to participate in recreation activities that Manitobans have come to enjoy.

Josh Brandon, Social Planning Council of Winnipeg

If Manitoba Hydro's 2018/19 rate increase proposal is approved, it would mark the largest rate increase in a generation and would mean that many low-income Manitobans would be forced to choose between keeping their power on and paying for other basic necessities. Furthermore, the Manitoba Hydro Board has indicated that the 2018/19 proposed rate increase will be the first in a series of large rate increases that would raise the price of electricity by 60% by 2024. This would risk the affordable energy advantage that Manitobans have enjoyed for many years.

The Board should consider what impacts these proposed rate increases will have on the economy, on Manitoba households, and especially on low-income Manitobans. The Manitoba Government should also consider its role in protecting residents from unaffordable price increases, which would intensify energy poverty and act as a drain on the Manitoba economy. Alternative options are available that would preserve

Manitoba's affordable energy advantage and benefit all Manitobans. These options would include reducing the need for new large-scale generation, distributing the rate increases differently among the different customer classes, and the implementation of a low-income electric rate affordability program. The Social Planning Council of Winnipeg also recommends that the rate burden of any energy poverty reduction measure should be shared among all customer classes since all customers benefit from Manitoba's shared energy resources and all must therefore pay the costs required to ensure that these remain affordable for everyone.

Appendix D: Appearances

PARTY

The Public Utilities Board

Manitoba Hydro

Independent Expert Consultants

Assembly of Manitoba Chiefs

Business Council of Manitoba

Consumers Coalition

Representatives of the General Service
Small & General Service Medium
Customer Classes and Keystone
Agricultural Producers

Green Action Centre

Manitoba Industrial Power Users Group

Manitoba Keewatinowi Okimakanak Inc.

Winnipeg (City of)

LEGAL COUNSEL

Bob Peters, Dayna Steinfeld

Patricia Ramage, Odette Fernandes,
Helga Van Iderstine, Janet Mayor, Doug
Bedford, Marla Boyd, Matthew Ghikas,
Brent Czarnecki

William Haight, William Gardner,
Kimberley Gilson

Senwung Luk, Corey Shefman

Kevin Williams, Douglas Finkbeiner, Carrie
Ho

Byron Williams, Katrine Dilay

Christian Monnin

Bill Gange, David Cordingley
Dr. Peter Miller, Coordinating Member

Antoine Hacault

George Orle Q.C.
Kelvin Lynxleg, Executive Director

Daryl Ferguson

Appendix E: Parties of Record and Hearing Witnesses

PARTY	WITNESSES
Manitoba Hydro	<u>Policy Panel</u> Kelvin Shepherd, President and Chief Executive Officer, Manitoba Hydro;
	Jamie McCallum, Vice-President, Finance & Strategy, Manitoba Hydro;
	<u>Revenue Requirement Panel</u> Jamie McCallum, Vice-President, Finance & Strategy, Manitoba Hydro;
	Sandy Bauerlein, Corporate Controller, Corporate Controller Division, Finance & Strategy, Manitoba Hydro;
	Liz Carriere, Manager, Strategic & Financial Planning Department, Manitoba Hydro;
	David Cormie, Director, Wholesale Power and Operations Division, Manitoba Hydro;
	Terry Miles, Director, Power Planning, Manitoba Hydro;
	Lois Morrison, Director, Marketing and Sales, Marketing and Customer Service, Manitoba Hydro;
	Gerald Neufeld, Director, Transmission Planning and Design Division, Manitoba Hydro;
	Chuck Steele, Director, Engineering & Construction, Manitoba Hydro;

Susan Stephen, Treasurer, Manitoba Hydro;

David Swatek, Manager, System Planning Development, Manitoba Hydro;

Hal Turner, Director, Generation Asset Management, Manitoba Hydro;

Joel Wortley, Director, Strategic Business Integration, Finance & Strategy, Manitoba Hydro;

Greg Barnlund, Director, Rates & Regulatory Affairs, Manitoba Hydro;

Cost of Service, Rate Design, and Bill Affordability Panel

Greg Barnlund, Director, Rates & Regulatory Affairs, Manitoba Hydro;

Lois Morrison, Director, Marketing and Sales, Marketing and Customer Service, Manitoba Hydro;

Paul Chard, Director, Customer Care, Manitoba Hydro;

Colleen Galbraith, Manager, Bill Affordability Department, Manitoba Hydro;

Dr. Gregory Mason, Senior Consultant, Prairie Research Associates;

Major Capital Projects Panel

Lorne Midford, Vice-President, Generation & Wholesale, Manitoba Hydro;

David Cormie, Director, Wholesale Power and Operations Division, Manitoba Hydro;

Glenn Penner, Director, Transmission Construction and Line Maintenance, Manitoba Hydro;

Dave Bowen, Project Director, Keeyask Project, Generation & Wholesale, Manitoba Hydro;

Jeff Strongman, Business Manager, Keeyask Project Division, Manitoba Hydro;

Alastair Fogg, Manager, Converter Stations Commercial & Controls Department, Manitoba Hydro;

Assembly of Manitoba Chiefs

Philip Raphals, Executive Director, Helios Centre;

Business Council of Manitoba

Murray Taylor, Chair of Fiscal Issues Committee, Business Council of Manitoba;

Consumers Coalition

Pelino Colaiacovo, Managing Director, MPA Morrison Park Advisors Inc.;

Dr. Wayne Simpson, Professor, Department of Economics, University of Manitoba;

Dr. Janice Compton, Assistant Professor, Department of Economics, University of Manitoba;

William O. Harper, President, Econalysis Consulting Services;

Thor Hjartarson, Managing Partner and Chief Executive Officer, METSCO Energy Solutions Inc.;

Alexander Bakulev, Vice-President, Strategy and Assets, METSCO Energy Solutions Inc.;

Dmitry Balashow, Director, Utilities Strategy and Economic Regulation, METSCO Energy Solutions Inc.;

Dan Mazier;

Rebecca Trudeau;

Gordon Barton;

Lyndie Bright;

Emily Mayham;

Representatives of the General Service Small & General Service Medium Customer Classes and Keystone Agricultural Producers

A.J. Goulding President, London Economics International; LLC.;

Jerome Leslie, Consultant, London Economics International; LLC.;

Green Action Centre

Paul Chernick, President, Resource Insight, Inc.;

Manitoba Industrial Power Users Group	Pelino Colaiacovo, Managing Director, MPA Morrison Park Advisors Inc.;
	Patrick Bowman, Principal, InterGroup Consultants Ltd.;
	Cameron F. Osler, Chair/Principal/Senior Consultant, InterGroup Consultants Ltd.;
	Gerry Forrest, Management Consultant, Forkast Municipal and Regulatory Consulting;
Manitoba Keewatinowi Okimakanak Inc.	(No Witnesses)
Winnipeg (City of)	Tyler Markowsky, Economist, City of Winnipeg;
Independent Expert Consultants	Dr. Adonis Yatchew, Professor, Department of Economics, University of Toronto;
	Kathleen A. Kelly, Vice President and Principal Consultant, Daymark Energy Advisors;
	Dr. Suman Gautam, Economist and Senior Consultant, Daymark Energy Advisors;
	Daniel E. Peaco, Principal Consultant, Chairman, and Past President, Daymark Energy Advisors;
	Douglas A. Smith, Managing Consultant and Treasurer, Daymark Energy Advisors;
	Kieran Flanagan, Managing Director, MGF Project Services;

Campbell Adams, Chartered Quantity Surveyor, MGF Project Services;

Ryan Devereux, Professional Quantity Surveyor, MGF Project Services;

Valerie Musfelt, Lead Scheduler, MGF Project Services;

Les Brand, Director and Principal Consultant, Amplitude Consultants;

Jim Potter, Transmission Group Manager/Senior Engineer, Stanley Consultants;

Duane Phillips, Constructability Lead, Stanley Consultants;

Dan Campbell, Manager Hydro Projects, Principal, Klohn Crippen Berger.