

MANITOBA HYDRO
2017/18 & 2018/19 GENERAL RATE APPLICATION

KEY MESSAGES & COMPELLING REASONS FOR A RATE INCREASE

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KEY MESSAGES & COMPELLING REASONS FOR A RATE INCREASE

2.0 OVERVIEW

The purpose of Tab 2 is to provide an overview of Manitoba Hydro's 2017/18 & 2018/19 General Rate Application (GRA) and summary of the reasons for the Application.

Manitoba Hydro is seeking confirmation of the 3.36% rate increase previously approved on an interim basis in Orders 59/16 and 68/16, approval of a 7.9% across-the-board interim rate increase to be effective August 1, 2017 as well as an additional 7.9% across-the-board rate increase proposed for April 1, 2018.

The August 1, 2017 rate increase, if approved, would result in a \$6.88 increase in the monthly bill of a residential customer without electric space heat using 1,000 kilowatt-hours ("kWh") per month, and a \$13.14 increase in the monthly bill for a residential customer with electric space heat using 2,000 kWh per month.

The April 1, 2018 rate increase, if approved, would result in an additional \$7.43 increase to the monthly bill of a residential customer using 1,000 kWh per month and an additional \$14.19 increase to the monthly bill for a residential customer using 2,000 kWh per month.

The key reasons for the Application are:

- Manitoba Hydro's current and projected financial situation, absent the proposed rate increases, represents an untenable risk to both the financial sustainability of the corporation and the overall economic health of the Province of Manitoba.
- Previous financial plans did not adequately prepare Manitoba Hydro to absorb the significant increase in operating and borrowing costs that result from the completion of major capital projects currently underway while still ensuring the continued financial strength of the corporation.

- 1 • In addition, since the last GRA, the financial outlook of Manitoba Hydro has
2 deteriorated significantly driven by a reduced outlook for domestic load growth,
3 continued delay in the recovery of opportunity export prices and substantially
4 increased carrying costs associated with increased capital costs associated with
5 several major projects.
- 6 • The Bipole III Reliability and Keeyask Generating Station projects are too far
7 advanced to halt or delay: completing the projects has the least negative
8 consequences for domestic ratepayers.
- 9 • Prolonged above average water flows and declining interest rates have helped
10 mitigate some of Manitoba Hydro's financial deterioration but such conditions
11 cannot be assumed to repeat as the Corporation continues through a period of high
12 vulnerability with debt set to increase a further \$7 billion by 2021.
- 13 • Inclusive of cash interest on reliability and sustainability capital projects, Manitoba
14 Hydro has been and, without substantial rate increases, will continue to be
15 significantly cash flow negative on its core operations, which is unsustainable.
- 16 • In order to manage the significant risks it faces, Manitoba Hydro must be permitted
17 rate increases that, when coupled with significant cost enhancement measures,
18 allow it a prospective level of income and cash flow that would begin restoring its
19 financial strength while also being capable of enduring drought or material negative
20 deviations from forecast (export prices, interest rates) without requiring emergency
21 relief from ratepayers.
- 22 • Establishing the time frame for the achievement of its minimum equity target at 10
23 years strikes an appropriate balance between what is reasonable for customers and
24 what is necessary to ensure the long-term financial health of Manitoba Hydro.
- 25 • Even with the proposed rate increases, Manitoba Hydro will continue to have
26 competitive rates compared to other jurisdictions and will continue to provide a
27 valuable essential service to its customers.

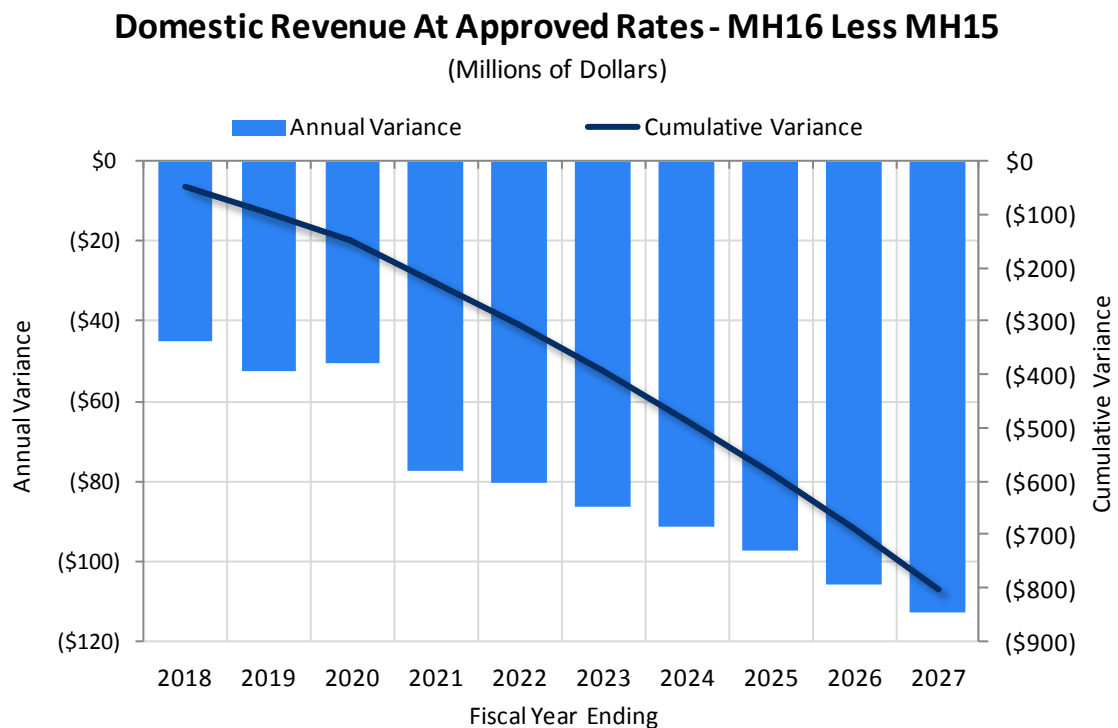
2.1 MANITOBA HYDRO'S FINANCIAL FORECAST FOR ELECTRIC OPERATIONS NECESSITATES HIGHER NEAR-TERM RATE INCREASES THAN PREVIOUS FORECASTS

In support of the current GRA, Manitoba Hydro is providing its current financial forecast (MH16) reflective of the Corporation's best estimate of future outlook for all the variables impacting its financial results and therefore revenue requirement. A summary of the changes in assumptions included in Manitoba Hydro's current financial plan (MH16) and its previous financial forecast (MH15) is provided below.

2.1.1 Domestic Revenues (MH16 vs. MH15)

Manitoba Hydro's current outlook in MH16 reflects a marked deterioration in expectations for domestic load growth and future export prices. As shown in **Figure 2.1** below, and discussed in Tab 3, the Corporation's domestic revenue forecast is 5% or \$800 million lower over the 10-year period from 2017/18 to 2026/27 at current approved rates.

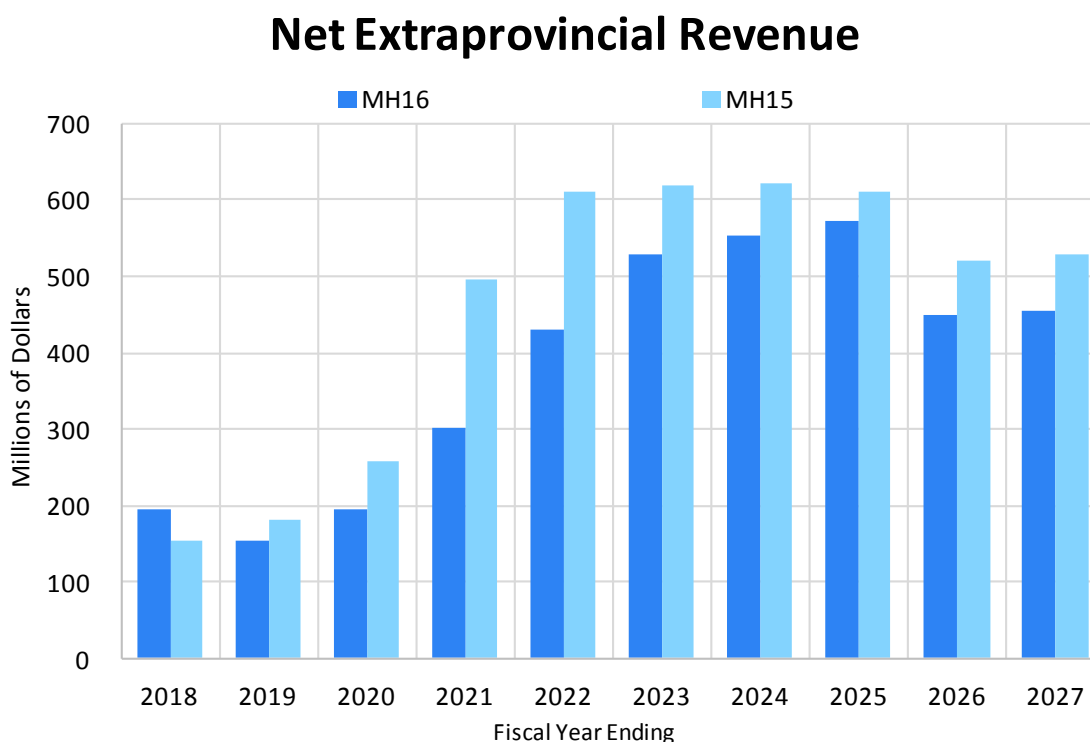
Figure 2.1 Domestic Revenue at Approved Rates



2.1.2 Extraprovincial Revenues (MH16 vs. MH15)

As shown in Figure 2.2 below, the Corporation's extraprovincial revenue forecast (net of water rentals and fuel and power purchased) has declined by 17% or \$800 million over the 10-year period 2017/18 to 2026/27 driven in part by a 21 month delay in In-Service Date (ISD) of the Keeyask Generating Station project, an approximate 20% reduction in forecast average export prices, offset partly by higher sales volumes associated with favourable water flow conditions in 2016/17 and 2017/18 and higher surplus energy available for exports resulting from lower forecast Manitoba demand.

Figure 2.2 Extraprovincial Revenue (net of water rentals and fuel and power purchased)

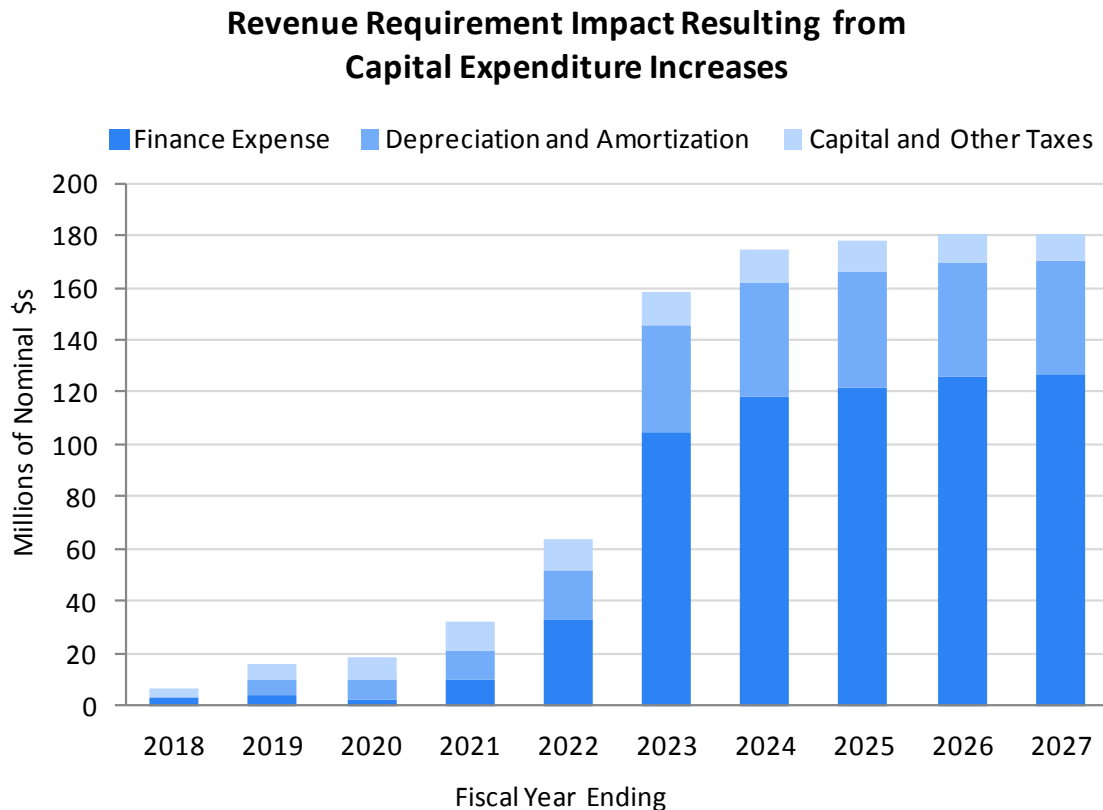


2.1.3 Capital Budgets (MH16 vs MH15)

Manitoba Hydro's capital and deferred expenditure forecast is \$2.9 billion higher as compared to MH15 over the 10-year period 2017/18 to 2026/27, which has increased the projected carrying costs of these investments (principally gross interest expense at MH16 forecast interest rates and depreciation) as they come into service. The illustrative impact of the increases to capital budgets on the annual revenue

requirement as compared to MH15 is shown in **Figure 2.3** below and aggregates to \$1.0 billion over 10 years.

Figure 2.3 Annual Revenue Requirement Impact from Capital Expenditure Increases

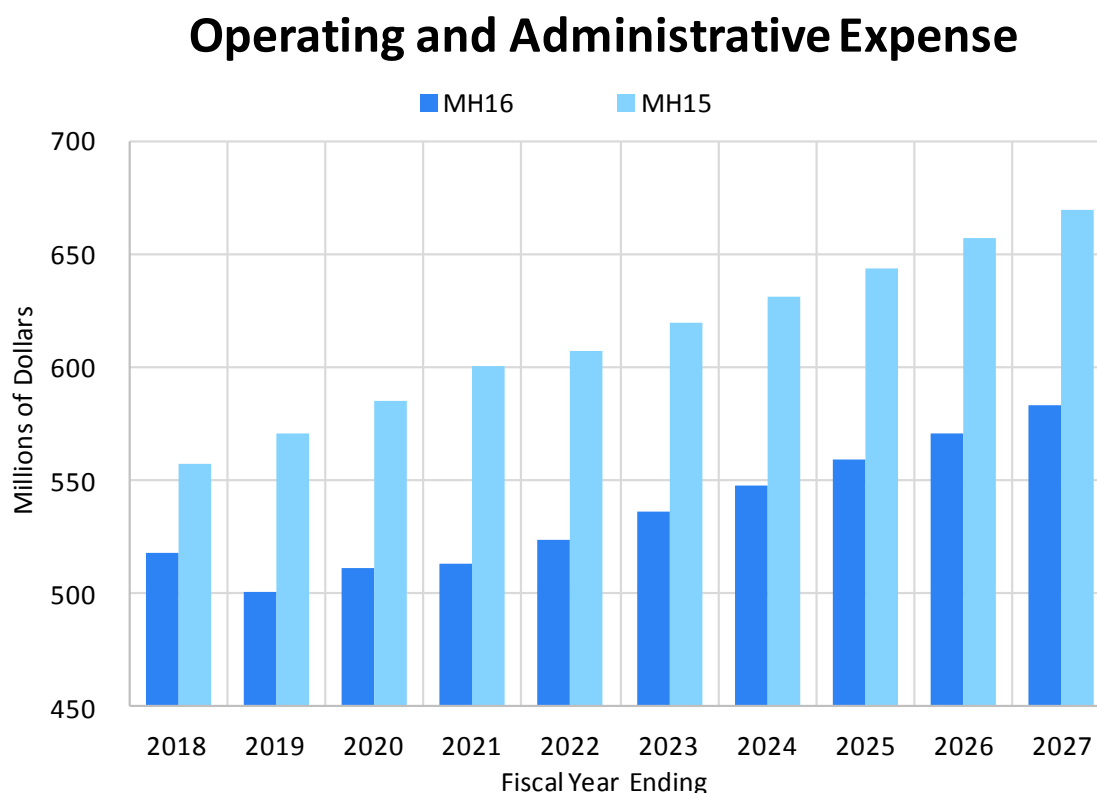


2.1.4 Operating and Administrative Costs (MH16 vs MH15)

Manitoba Hydro has already undertaken an accelerated cost reduction program in an effort to mitigate impacts of the above changes on revenue requirement. Previously, Manitoba Hydro's financial forecast projected increases to Operating and Administrative (O&A) costs of approximately 1% per year principally driven by attrition management offsetting general inflationary pressures. MH16 includes the impacts of initiatives to reduce headcount by 15% (900 Full-Time Equivalent Employees) along with other enhanced cost reduction efforts including wage freezes, slower escalation and procurement savings obtained through the Supply Chain Management initiative, which represents an \$800 million reduction over the 10-year forecast as compared to MH15.

Figure 2.4 below compares the annual O&A expenditure forecast over the next 10 years in MH16 vs. MH15.

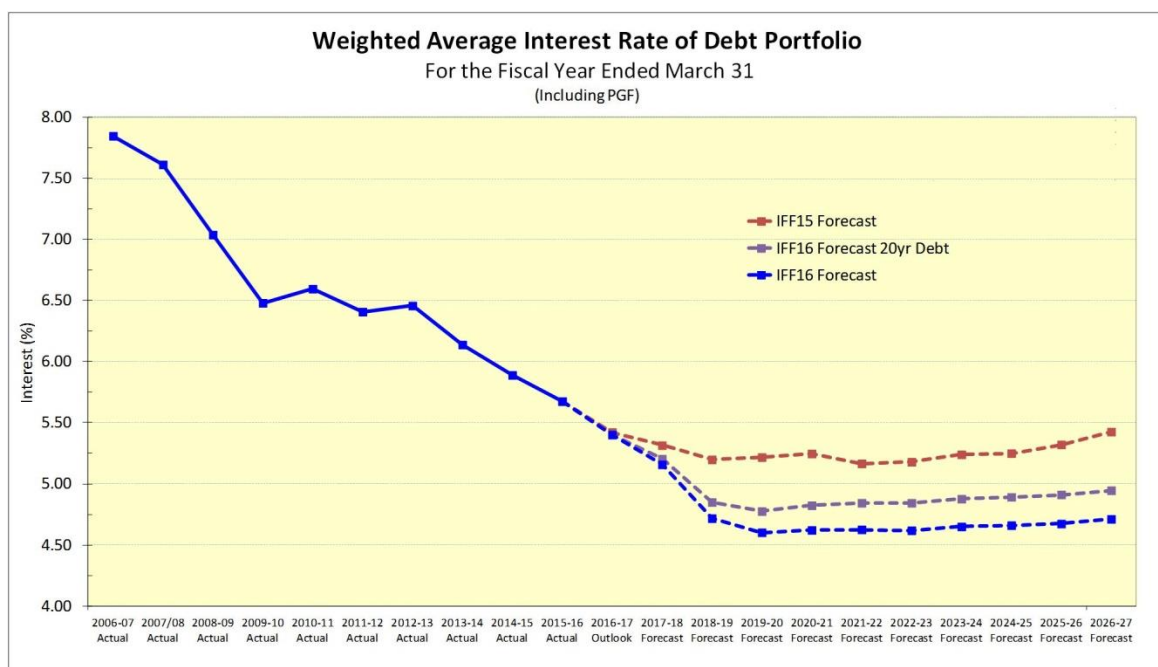
Figure 2.4 Operating & Administrative Expense MH16 vs. MH15



2.1.5 Interest Rates & Finance Expense (MH16 vs. MH15)

Manitoba Hydro's debt management strategy opts to shorten the weighted average term to maturity of new debt issuance to 12 years from 20 years. Assuming the rate increases forecast in MH16, the opportunity exists for Manitoba Hydro to use the increase in forecasted cash flows to permanently retire debt in the early 2020s when cash flow from operations is projected to exceed cash required for investing activities. The new debt term to maturity is forecast to reduce new borrowing costs by 50 basis points per year saving the Corporation approximately \$500 million over the 10-year forecast. As shown in **Figure 2.5**, this would reduce the entire debt portfolio's weighted average interest rate by approximately 20 basis points.

Figure 2.5 Weighted Average Interest Rate of Debt Portfolio 2006/07 – 2026/27



Overall, the shortening of the Corporation's average debt maturity on new debt issuance and a decline of forecast interest rates as compared to MH15 are together generating savings of approximately \$1.0 billion over the 10-year forecast and beneficially lowering the weighted average interest rate of the debt portfolio.

As noted above, Manitoba Hydro will require its proposed and indicative rate increases to provide increased cash flow (compared to MH15) which will enable the retirement of short-term debt as it matures. To the extent that rates do not increase as forecasted, operating and capital costs are higher than anticipated, or export prices do not materialize as forecasted, Manitoba Hydro would not generate the necessary levels of cash flow. In that event, the Corporation may have to reconsider this strategy which will have the consequence of reverting back to the issuance of longer-term debt maturities at expected higher cost.

2.1.6 Proposed Rate Increases (MH16 vs. MH15)

Over the term of MH16, the cost savings anticipated from measures such as workforce reductions and changes to debt management strategy are insufficient to offset the

1 deterioration in the outlook for domestic and extraprovincial revenues along with the
2 higher carrying costs related to increased capital expenditures.

3
4 It is the Corporation's view that the past projections of rate increases of 3.95% per year
5 until 2028/29 are no longer adequate as they do not fully address the revenue
6 requirement impact of the diminished outlook for the Company's revenues, the
7 anticipated higher carrying costs of increased capital investments, and the necessity of
8 restoring Manitoba Hydro's financial strength in a reasonable period of time.

9
10 As discussed later in this Tab, higher prospective rate increases are needed to:

- 11 i) better insulate Manitoba Hydro and its customers from risk, by way of increased
12 levels of forecast net income;
13 ii) prepare for the revenue requirement pressure from placing into service of major
14 new assets as the Corporation completes an unprecedented period of capital
15 investment; and,
16 iii) enhance the effort to rebuild the Corporation's financial strength in a reasonable
17 period of time.

18 Slower domestic load growth and reduced export prices, when taken in combination
19 with the significant incremental finance and depreciation charges associated with the
20 Keeyask project and Bipole III Reliability project entering into service, would result in a
21 significant reduction to Manitoba Hydro's net income absent the proposed and
22 indicative rate increases.

23
24 The rate increases proposed herein and reflected in MH16 represent a cumulative
25 increase over the 12 year period of 68% compared with a cumulative increase of 59%,
26 based on a 3.95% rate increase per year for 12 years as proposed in MH15. This plan
27 represents an acceleration of rate increases rather than fundamentally higher rates in
28 the longer term (compared to MH15) which is aligned with the urgency underlying
29 Manitoba Hydro's aggressive cost management program. These measures will allow
30 future rate increases to return to stable, inflationary levels after five years instead of 12
31 years, and will establish Manitoba Hydro on a much firmer financial footing that is more
32 capable of absorbing operating and event risks.

33

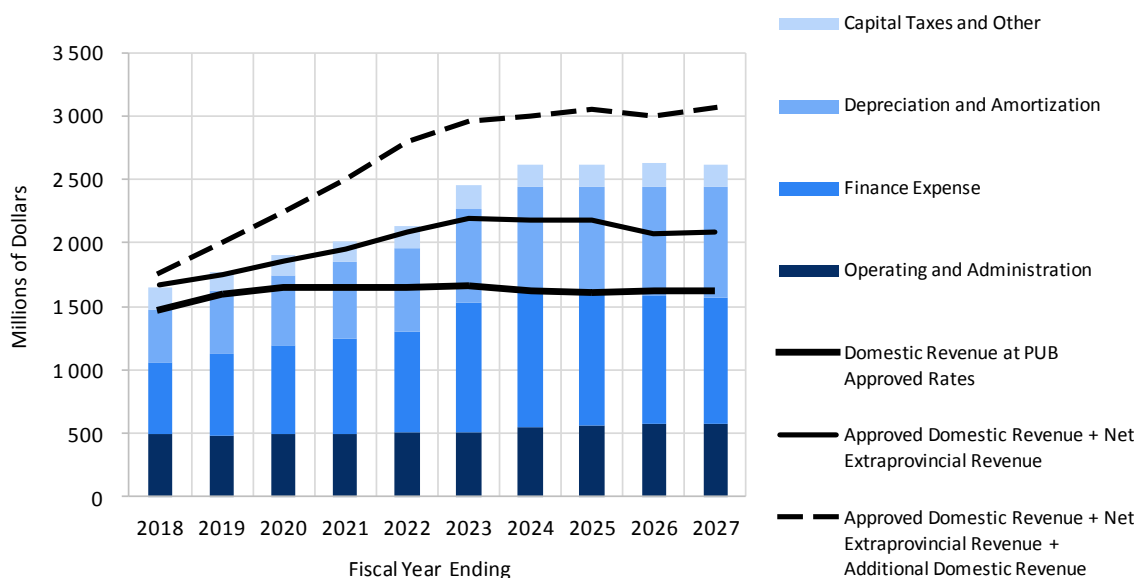
2.17 Net Income Must Significantly Increase in Step with Significant Increases
in Plant in Service and Debt Load

Manitoba Hydro's previous financial forecasts have reflected an implicit assumption that underlying domestic growth, appreciating export prices and sustained low interest rates will enable Manitoba Hydro to moderate the level of rate increases required to come to terms with its financial situation. However, the current domestic load forecast net of Demand Side Management ("DSM") investments (and before any additional cost and load impacts of Efficiency Manitoba) does not enable Manitoba Hydro to rely on growth to cure its currently weak financial state.

Export prices and interest rates have a dominant impact on the Corporation's results. MH16 assumes that, due to the incremental energy provided by Keeyask, extraprovincial revenue is expected to grow to over 35% of revenues from 22% today. Due to the significant levels of debt financing that will be required, interest expense will grow to almost 70% of 2016/17 Domestic Revenue. Total Debt is set to grow from 65% of GCR in 2012/13 to almost 1500% of GCR (i.e. 15 times) at current approved rates. Manitoba Hydro is on its way to more than doubling its leverage (i.e. debt) relative to its operations, leaving the Corporation highly susceptible to even minute changes in interest rates (inclusive of credit spreads). In the event that the actual future export prices and interest rates materialize adversely to the assumptions included in MH16, there will be a material negative impact on the financial condition of Manitoba Hydro as compared to the current financial plan. Given the natural risk of forecast volatility, Manitoba Hydro should earn sufficient net income, as shown in **Figure 2.6**, to protect against adverse variances that may be experienced in the future.

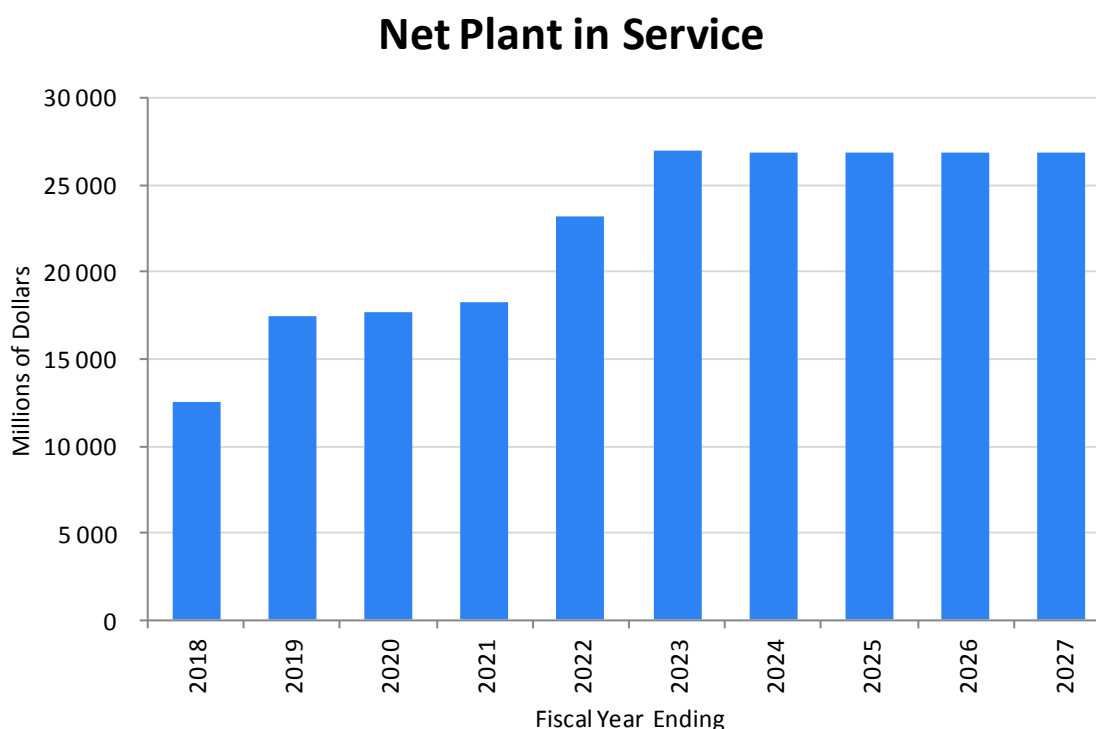
Figure 2.6 MH16 Electric Expenses Compared to Revenues

MH16 Electric Expenses Compared to Revenues



While **Figure 2.6** shows the forecast growth in domestic and export revenues against expenses, it must be recognized that Manitoba Hydro's net plant in service increases 115% from approximately \$12 billion today to almost \$27 billion in 2022/23, as shown in **Figure 2.7**.

Figure 2.7 MH16 Net Plant in Service



Even with cost reductions and the proposed rate increases, debt will peak at \$23 billion in 2021/22. The forecast level of net income and positive cash flow Manitoba Hydro should generate should reflect the growing size of its balance sheet and the risks associated with the significant levels of debt required to fund this investment.

Levels of net income and cash flow appropriate for a Corporation with \$12 billion of assets in service must be scaled up significantly to reasonably address the risks associated with operating \$27 billion worth of assets by 2027. Increased levels of net income will consequently result in improvements to the levels of retained earnings in the 10 years of the forecast.

2.1.8 Sensitivity of Manitoba Hydro's Current Financial Forecast (MH16)

As shown in **Figures 2.8 and 2.9** below, even with the proposed and indicative rate increases, Manitoba Hydro's net income would decline by approximately 40% and would only modestly improve its equity capitalization over the 10-year period, should interest rates rise by 100 basis points in 2017/18 and export prices remain low.

Figure 2.8 Retained Earnings

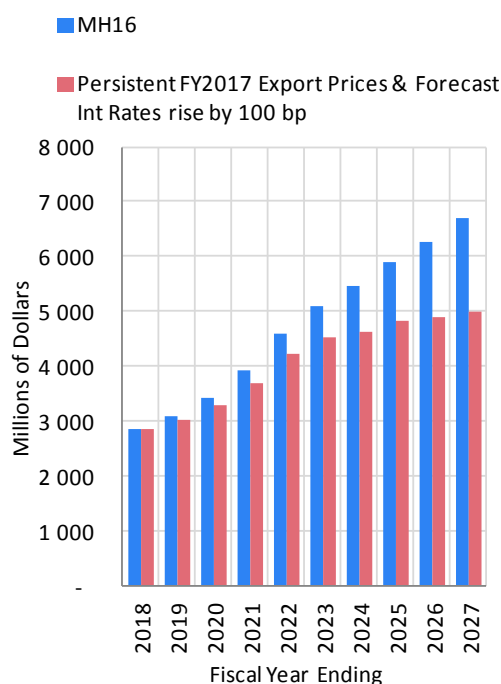
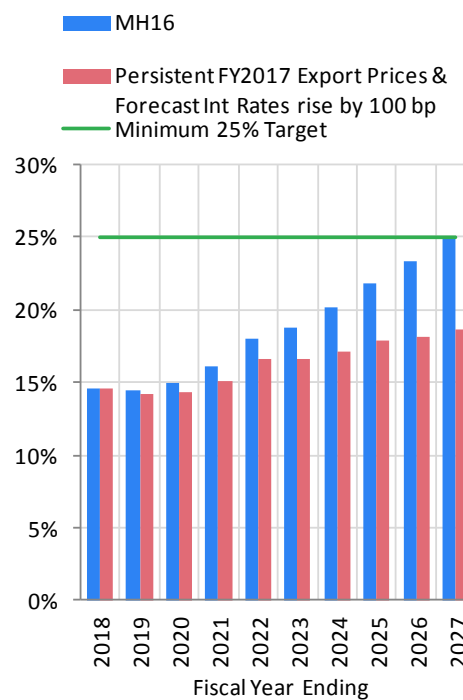


Figure 2.9 Equity Ratio

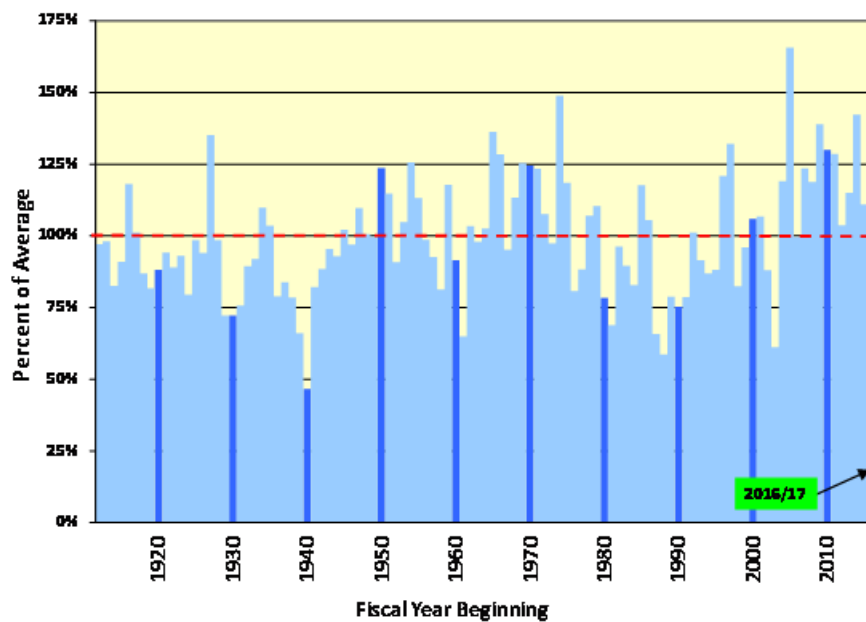


Interest rate risk has become increasingly critical as Manitoba Hydro's electric segment debt is forecast to grow from 7 times domestic revenue in 2013 to 15 times domestic revenue by 2022 at approved rates.

The uncertainty of volume of water supply available for hydro generation is also one of the key risks Manitoba Hydro faces. Annual inflows for 2016/17 were above upper decile of historic flows since 1912 marking the thirteenth consecutive year of average or above average inflows, and the longest wet cycle on record. The previous record was five years. This unexpectedly strong water flow had enabled the Corporation to maintain positive net income in 2015/16 and 2016/17 notwithstanding realized export opportunity prices being significantly below MH14 and MH15 forecasts.

As indicated in **Figure 2.10**, the hydrologic record shows a history of long periods of above average conditions followed by similarly long periods of below average conditions. Although it is not possible to predict when there will be a transition to below average conditions, it is clear from the record that the transition can be relatively abrupt (for example 1997/98 to 1998/99) and that multi-year wet periods are typically followed by multi-year dry periods.

Figure 2.10 Historical Water Supply

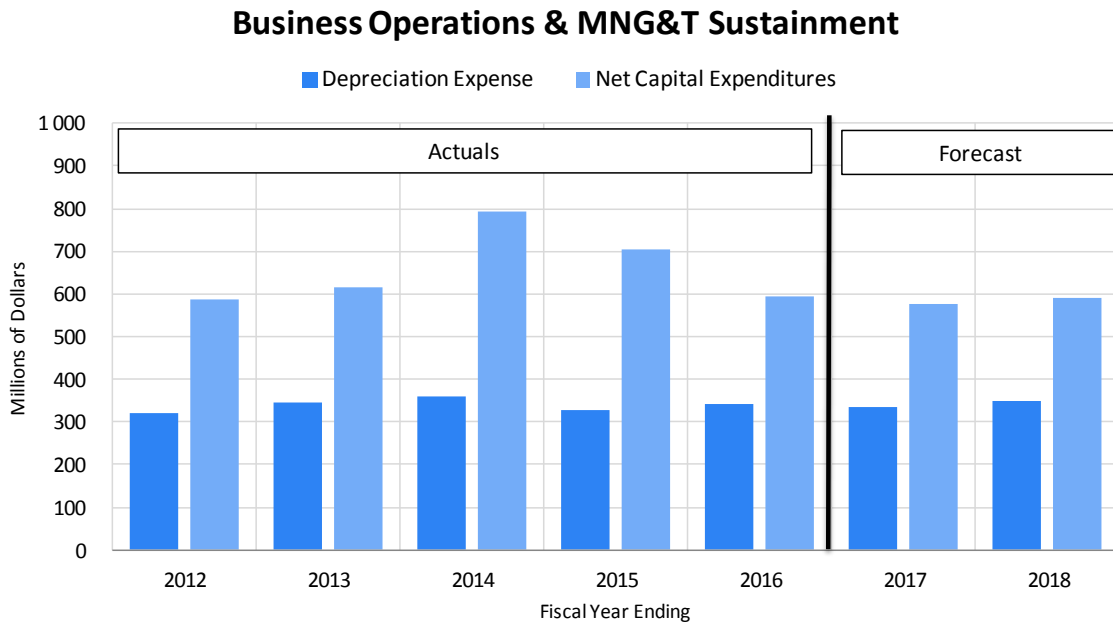


2.2 WITHOUT THE PROPOSED RATE INCREASES, MANITOBA HYDRO'S CASH FLOW FROM OPERATIONS IS INSUFFICIENT TO FUND ITS ONGOING BUSINESS REQUIREMENTS

Revenues at approved rates plus extraprovincial revenues are materially less than the current and forecast cash requirements of Manitoba Hydro, even after excluding the cash requirements for construction of the major capital projects.

As shown in **Figure 2.11** below, capital requirements to maintain normal operation and growth of the system (excluding major projects such as Keeyask and Bipole III) are well in excess of what is presently being recovered from ratepayers through the recovery in rates of depreciation expense. Depreciation expense is reflective of historical costs which, given the age and long life of the underlying assets, is not indicative of the actual ongoing costs of maintaining and replacing the system.

Figure 2.11 Business Operations and Major New Generation & Transmission Capital Sustainment Requirements



Compounding the above, actual sustainment capital needs of the operations have historically been understated in debt service and capital coverage metrics by ascribing “Major New Generation and Transmission” status to certain projects due to their individual size. However, most of these projects are essentially for system renewal or reliability in that they are replacing failing or at-capacity infrastructure or supporting

ongoing operations and are not, once finished, contributing to any material increase in revenue.

Figure 2.12 below lists those projects that are classified as Major New Generation & Transmission but are related to system renewal or reliability and therefore should be considered in the calculation of debt service and capital coverage metrics.

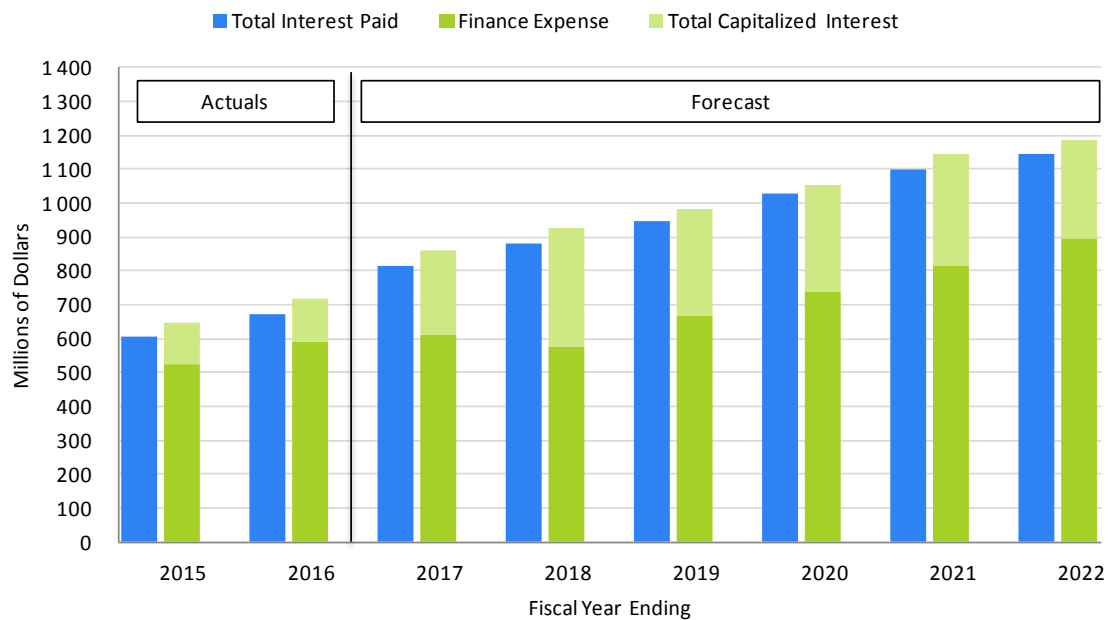
Figure 2.12 Major New Generation & Transmission Projects Related to Sustainment

	Actuals					Forecast	
	2012	2013	2014	2015	2016	2017	2018
	Millions						
Business Operations Capital	463	429	470	525	521	529	526
Business Operations Capital							
Pointe du Bois Spillway Replacement	25	90	237	119	34	7	5
Riel 230/500kV Station	53	84	74	29	1	1	0
Gillam Redevelopment & Expansion Program	(0)	0	0	12	13	15	37
Kettle Improvements & Upgrades	22	3	2	6	20	19	13
Pointe du Bois - Transmission	16	10	11	12	4	4	0
Grand Rapids Fish Hatchery Upgrade & Expansion	0	0	1	0	0	3	12
Herblet Lake- The Pas 230 kV Transmission	8	0	0	0	0	0	0
MNG&T Sustainment/Capital Projects Total	124	188	325	178	74	49	66
Business Operations Capital Total	586	617	794	703	595	577	592

Manitoba Hydro notes that the capitalization of interest effectively delays the recognition of increased carrying costs associated with new plant. Capitalized interest on funds borrowed to finance reliability and sustainment projects like Bipole III is deferred and effectively excluded from the determination of revenue requirement and the calculation of net income. However, the cash needed to finance interest costs (along with additional operating and maintenance expenditures on the associated asset) is immediate and perpetual.

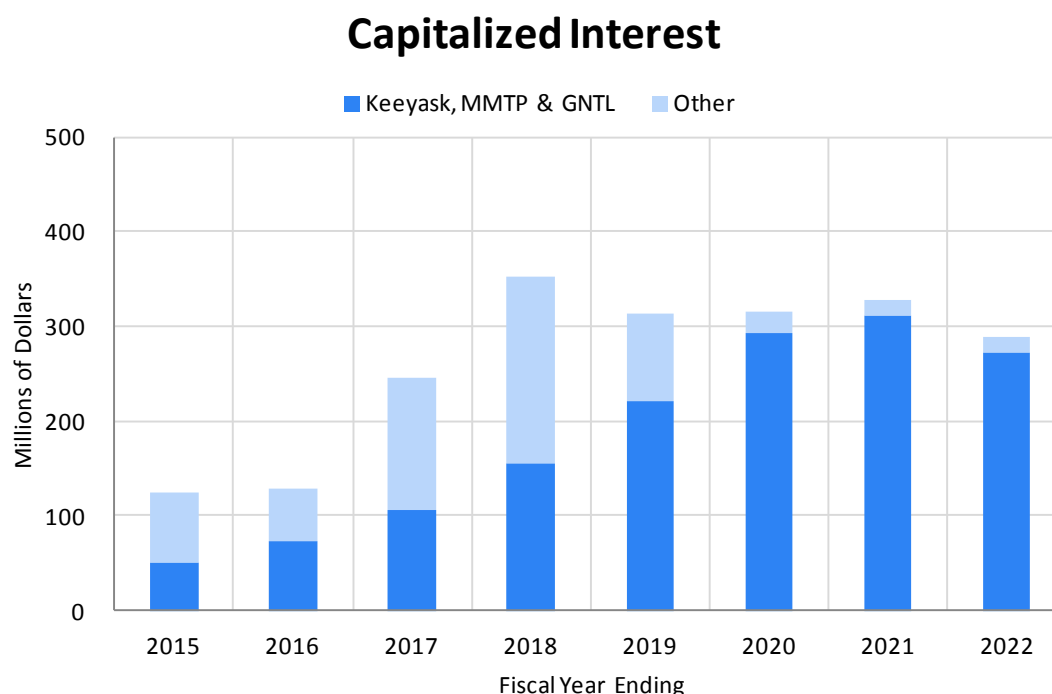
The blue bars shown in **Figure 2.13** below represent the interest to be paid by Manitoba Hydro and the dark green bars represent Finance Expense that is included in the determination of Revenue Requirement and recoverable through rates. The difference between the interest paid (which is an immediate cash outlay by the Corporation) and Finance Expense (which is recoverable through rates) directly reduces the cash available for Manitoba Hydro to fund its core operations.

Figure 2.13 Interest Paid Compared to Finance Expense



The following **Figure 2.14** provides a breakdown of capitalized interest related to revenue generating projects such as Keeyask, Manitoba-Minnesota Transmission Project (“MMTP”) and the Great Northern Transmission Line (“GNTL”) compared to projects undertaken for system renewal or reliability purposes (“Other” projects as shown in the chart below). Between 2016/17 and 2018/19, the majority of interest capitalized is related to “other” projects such as Bipole III that have essentially no expectation of revenue increase or cost efficiency to mitigate these costs.

Figure 2.14 Capitalized Interest for Revenue Generating Projects



Manitoba Hydro capitalizes interest on borrowed funds used for capital investments during their construction phase at the weighted average rate of the Corporation's entire debt portfolio. The actual cost of the new borrowings to finance capital investments is considerably lower as a result of the decline in interest rates. As a result, Manitoba Hydro is capitalizing more interest than it is actually paying on the incremental borrowing thereby improving net income in the short term.

As the Corporation continues through a phase of unprecedented investment, this has resulted in a large and growing difference between actual gross interest costs paid in cash and the Finance Expense recognized on the income statement.

For example, **Figure 2.15** illustrates the difference between interest incurred and interest capitalized on Bipole III, which is effectively contributing to net income but without generating incremental cash flow.

Figure 2.15 Interest Incurred and Interest Capitalized - Bipole III

Bipole III Interest Incurred & Interest Capitalized	Actuals	Forecast	
	2016	2017	2018
	millions		
Cost of Incremental Borrowing at New Borrowing Costs	36	66	121
Amounts Capitalized at Weighted-Average Rates	52	98	174
Contribution to Loss/(Income)	(15)	(32)	(54)

Manitoba Hydro's rates need to reflect its ongoing and growing need to meet the cash interest obligations on debt borrowed to fund major non-expansory projects such as Bipole III before those assets come into service to ensure the Corporation is not adding to the deficit funding of its continuing operation. This will allow rates to escalate in a stable and predictable fashion such that rates rise to the level that will be required to support operations after this period of significant investment. The PUB recognized this issue in part when it directed that Manitoba Hydro place revenues attributed to certain rate increases into a Bipole III deferral account. Manitoba Hydro notes that the quantum of such deferrals is substantially less than the anticipated incremental revenue requirement impact of this asset when it comes into service. For example, in 2017/18 Manitoba Hydro estimates it will collect \$119 million that will be allocated to the Bipole III deferral account. However, in the first half of 2018/19, Bipole III will enter service thus adding approximately \$337 million (i.e. almost triple) to operating expenses (interest expense, depreciation and incremental O&A).

Figure 2.16 illustrates the significant difference between net income under International Financial Reporting Standards (IFRS) and a perspective on the actual cash deficit of the Corporation's ongoing operations taking into account the factors noted above for MH16.

Figure 2.16 Cash Flow Deficiency (0% Rate Increases)

Cash Flow from Operations to CapEx

<i>For the year ended March 31</i>	Actuals	Forecast					
	2016	2017	2018	2019	2020	2021	2022
Net Income Attributable to MH	37	34	29	(15)	(74)	(99)	(117)
Cash Receipts from Customers *	1 856	2 007	2 043	2 013	2 028	2 150	2 268
Cash Paid to Suppliers and Employees *	(736)	(876)	(917)	(881)	(880)	(903)	(908)
Gross Interest *	(542)	(569)	(529)	(634)	(712)	(772)	(856)
Add: Total Capitalized Interest	(129)	(245)	(353)	(313)	(315)	(329)	(289)
Less: Capitalized Interest related to Keeyask, MMTP & GNTL	73	107	156	221	293	310	273
Interest Received *	23	7	5	12	21	17	15
Adjusted Cash Flow from Operations **	545	431	404	417	435	473	503
CEF16 Expenditures ***	712	664	668	685	669	654	632
Cash Flow Deficiency	(167)	(232)	(264)	(268)	(234)	(181)	(128)

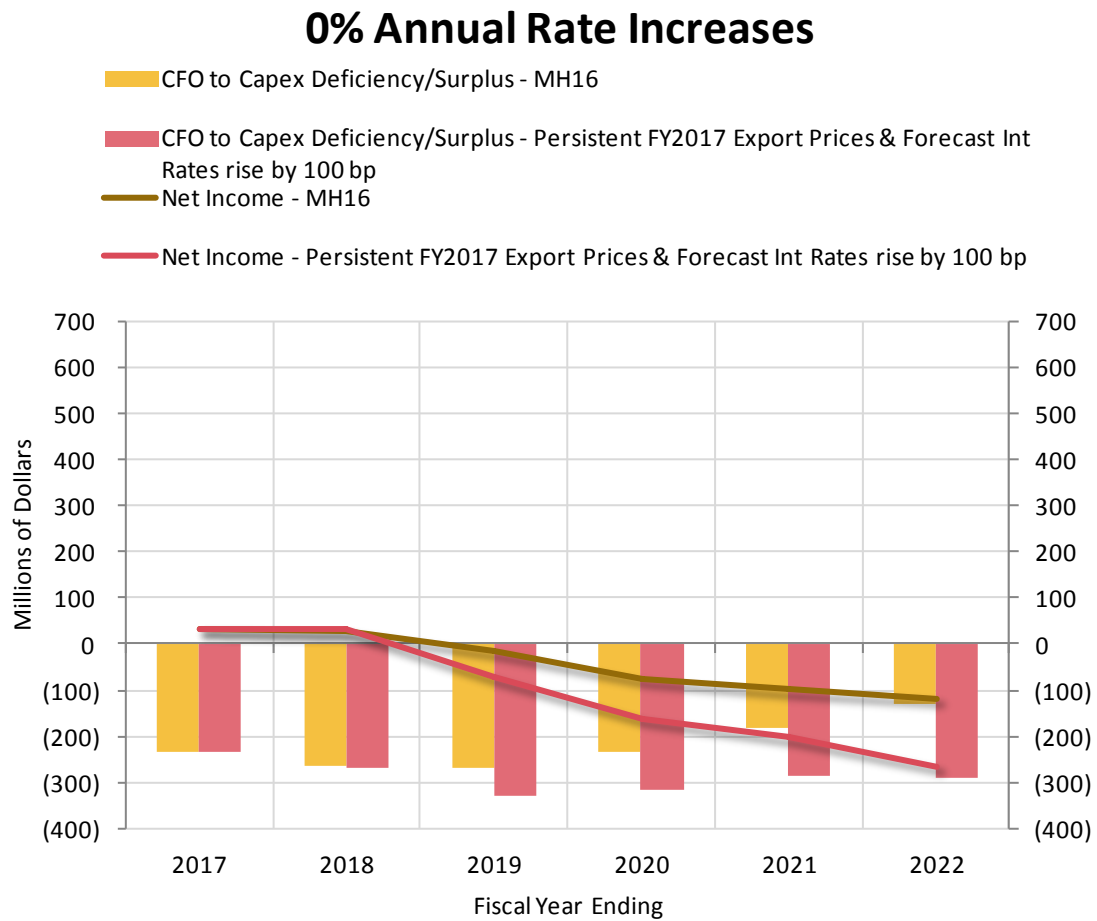
* Found on Cash Flow Statement

** CFO - Internally generated funds less portion of capitalized interest related to (Keeyask, MMTP & GNTL)

*** Total gross capital and deferred expenditures excluding Keeyask, Bipole III, MMTP & GNTL

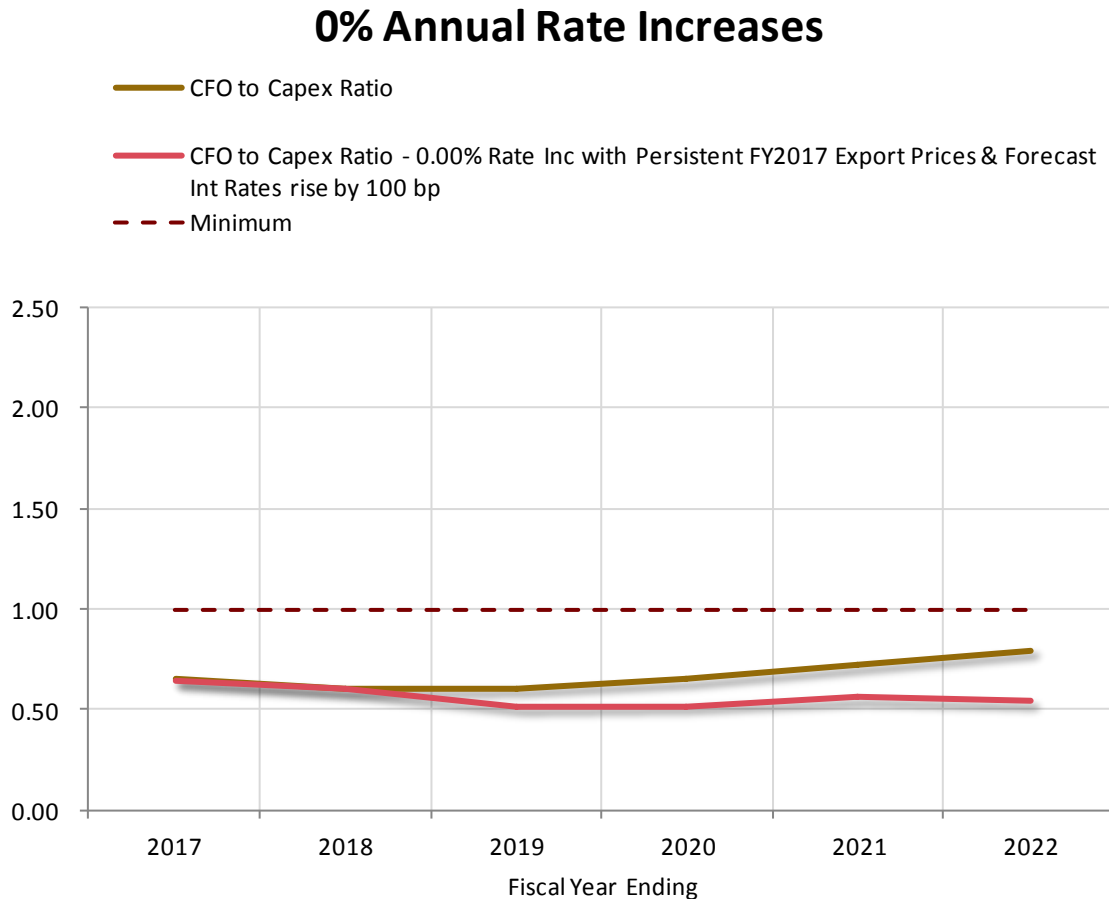
As shown in **Figure 2.17** below, without the proposed and indicative rate increases, Manitoba Hydro is \$1.1 billion cash flow negative on its core operations for the next five years (denoted by the yellow bars), even after considering the significant cost reductions currently underway, and ignoring the cash flow impacts (including interest) associated with \$5.8 billion of expenditures on Keeyask, MMTP and GNTL over this period and \$3.0 billion (excluding interest) to complete Bipole III. Should interest rates rise by 100 basis points in 2017/18 and export prices remain consistent with levels seen since the financial crisis through to 2016/17, the pink bars show that cash flows would be further negative by an additional \$400 million to 2021/22. **Figure 2.17** also contrasts the difference between annual net income and cash flow to fund core operations in the early years of the forecast. This difference is due to the capitalized interest on funds borrowed to finance reliability and sustainment projects and highlights the need for the proposed rate increases in the test years.

1 **Figure 2.17 Cash Flow from Operations without Additional Rate Increases**



2
3 The CFO to CapEx ratio in **Figure 2.18** shows that without the proposed rate increases,
4 cash flows are projected to cover only one half to two-thirds of the capital expenditure
5 requirements through to 2021/22.
6

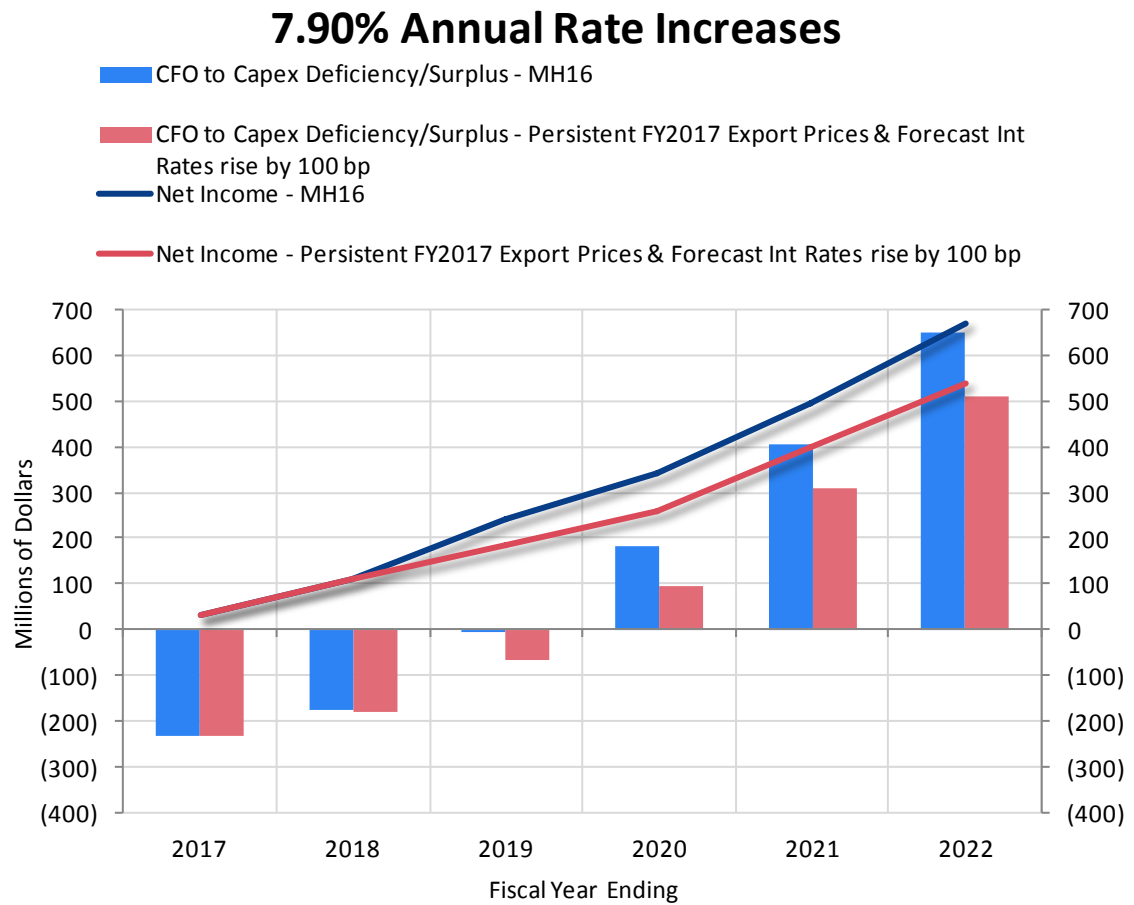
Figure 2.18 Cash Flow from Operations to CapEx Ratio without Additional Rate Increases



As shown in **Figures 2.19 and 2.20** below, the proposed rate increases do not fully obviate the Corporation's deficit funding of its ongoing operations in 2017/18 and 2018/19, however, over three years (2017/18-2019/20) the Corporation is cumulatively cash breakeven. Manitoba Hydro believes this represents a reasonable balance between necessary but reasonable rate increases and the inherent risks in deficit funding the ongoing business during a period of vulnerability caused by significant, debt-funded capital programs underway.

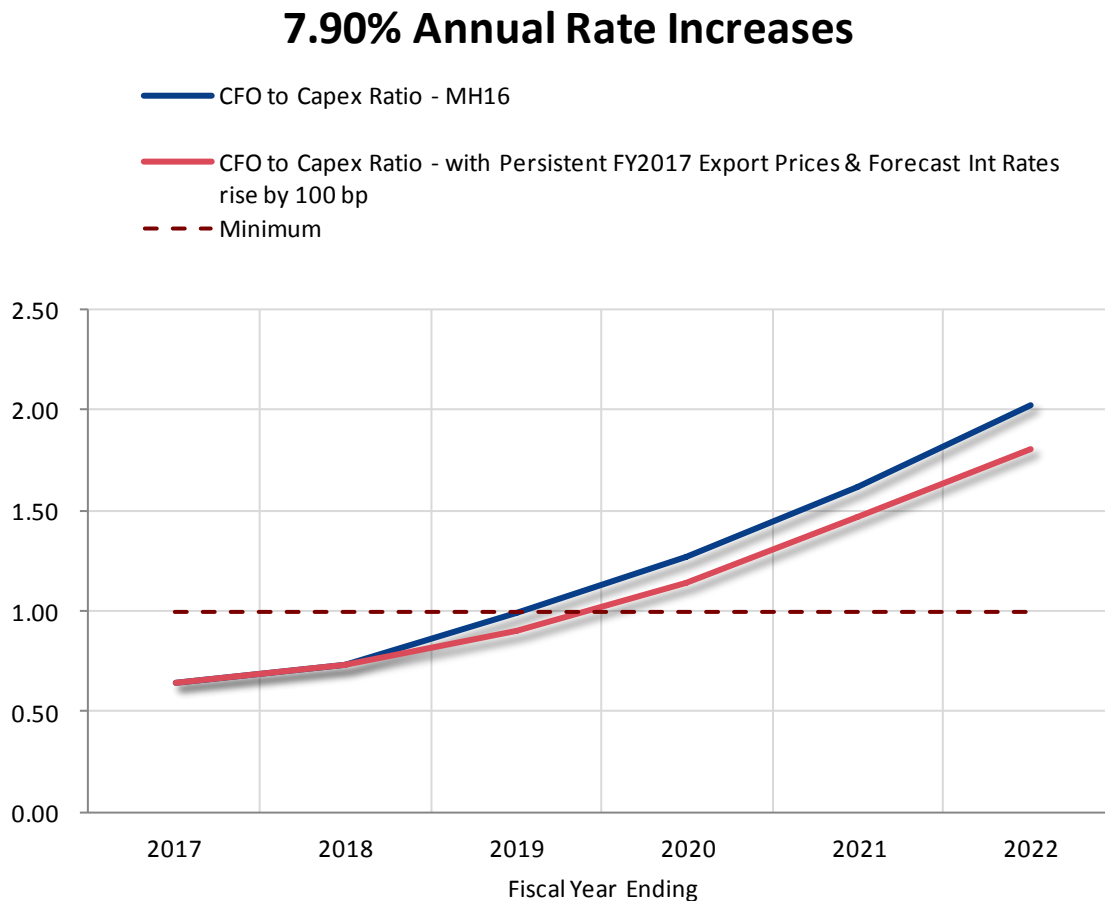
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Figure 2.19 Cash Flow from Operations with 7.90% Annual Rate Increases



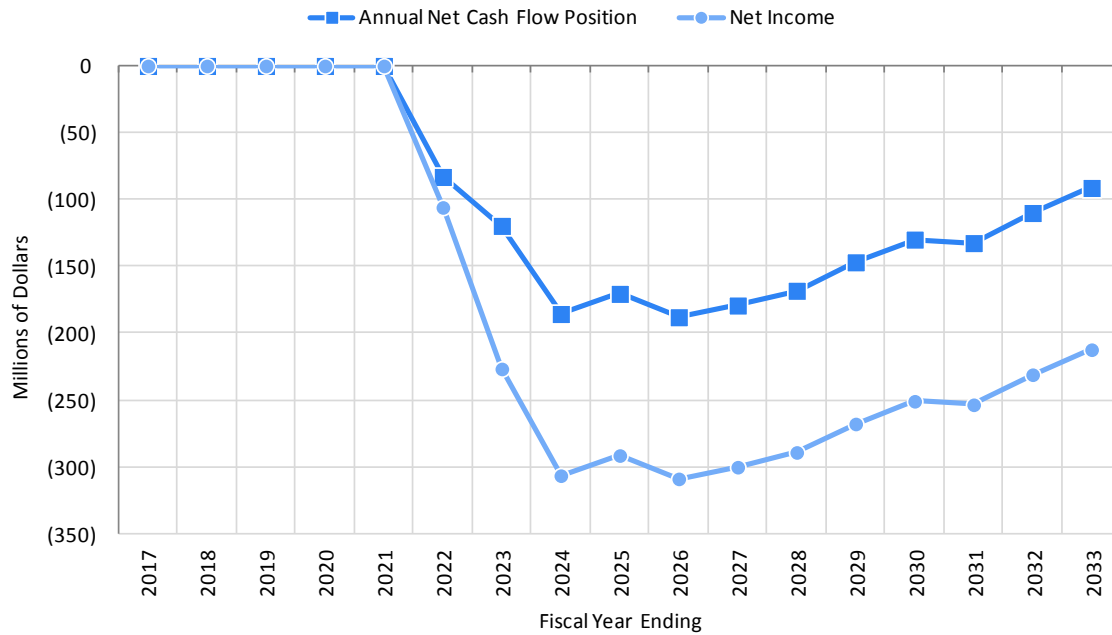
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Figure 2.20 Cash Flow from Operations to CapEx Ratio with 7.90% Annual Rate Increases



In addition, 2021/22-2023/24 will see the first unit in-service and final commissioning of the Keeyask Generating Station. As shown in **Figure 2.21** below, Keeyask is anticipated to be cash flow negative and contribute a net loss to Manitoba Hydro until at least the mid to late 2030s when the bulk of its capacity shifts to satisfying domestic needs.

Figure 2.21 Keeyask Net Cash Flow and Net Income



Therefore, at the end of the 5-year forecast period, electricity rates need to have increased to a position where the Keeyask impact can be absorbed while returning rate increases to inflationary levels and still providing for anticipated sustainment capital needs that will only increase as major elements of the system continues to age. In the shorter term, rates also need to increase to fund the cash interest obligations and in anticipation of higher carrying costs (depreciation and incremental O&A) as Bipole III finishes construction and commissioning in the next 18 months.

2.3 **MANITOBA HYDRO MUST BE SELF-SUPPORTING AS EVIDENCED BY TARGETING A MINIMUM EQUITY RATIO OF 25% IN A REASONABLE PERIOD OF TIME**

It is generally accepted that Manitoba Hydro's domestic ratepayers ultimately bear the cost of operating, maintaining and renewing the system. Given the credit support provided to Manitoba Hydro by the Province of Manitoba, it is also fundamental that Manitoba Hydro be self-supporting in the eyes of credit rating agencies and lenders.

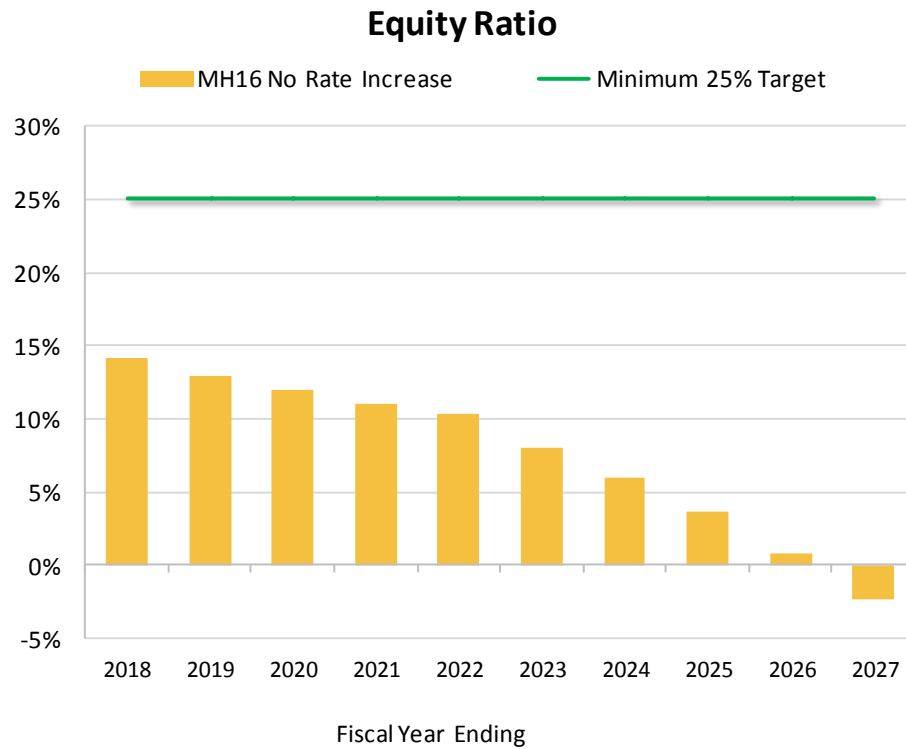
Absent this, the taxpayers of Manitoba, who guarantee Manitoba Hydro's debt, are faced with an unacceptable risk of having the Province's cost of borrowing impaired and implicitly or explicitly having to subsidize the continued financial viability of the electricity system. As is, Manitoba Hydro enjoys a cost of financing that is significantly lower than what it could obtain without the Provincial Guarantee, while the quantum of borrowing required would likely be unattainable given the Corporation's current credit profile.

The equity ratio along with an EBITDA coverage ratio and a Capital Coverage ratio are conventional measures of financial health and credit-worthiness. Positive cash flow from operations inclusive of servicing debt is also relevant to a determination of self-supporting status.

The EBITDA and Capital Coverage ratios have some potential limitations. As noted in **Figure 2.11**, depreciation has historically been significantly below capital re-investment needs and therefore, an EBITDA Coverage ratio can overstate the margin the corporation has to meet its sustainment expenditures. Further, the Capital Coverage ratio omits capitalized interest which, as discussed in Section 2.2, can create a misleading impression of financial health.

As shown in the **Figures** below, the Corporation's financial metrics are below Manitoba Hydro's targets and, without rate increases, will deteriorate even further. As noted in Section 2.1 above, MH16 reflects an outlook for lower domestic load growth, lower export prices and higher capital costs than previous forecasts, and without the proposed rate increases, Manitoba Hydro's financial condition is precarious.

1 **Figure 2.22 Equity Ratio at Approved Rates**



2
3 **Figure 2.23 EBITDA Interest Coverage at Approved Rates**

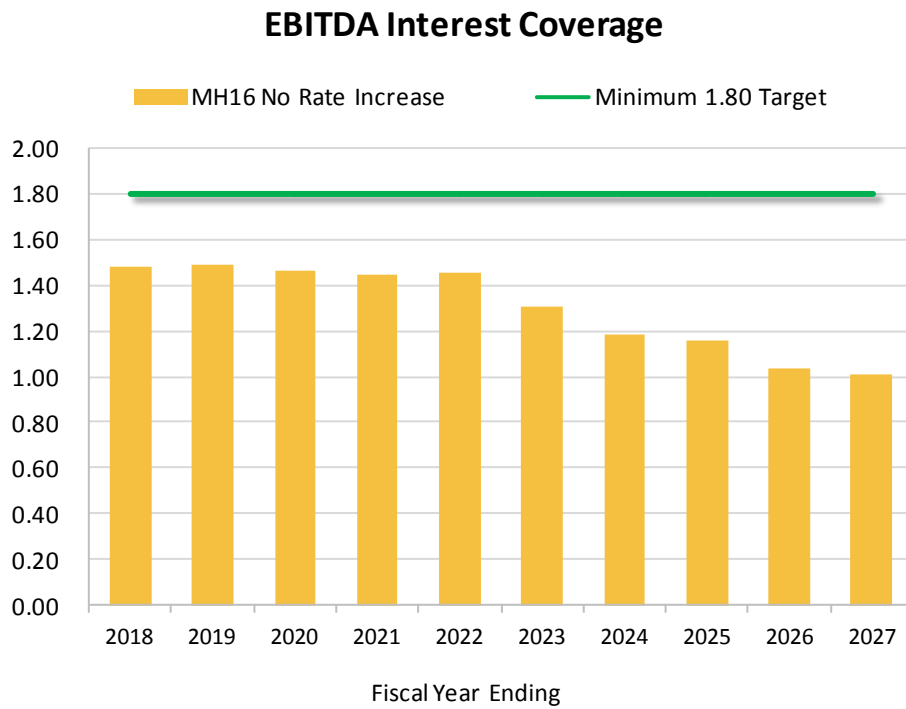
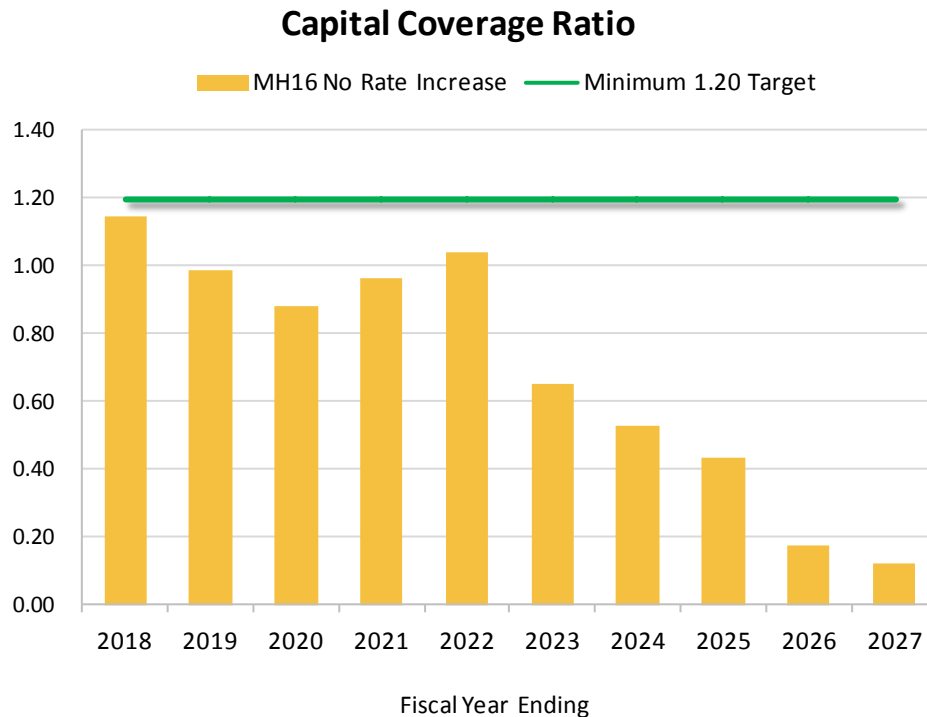


Figure 2.24 Capital Coverage Ratio at Approved Rates

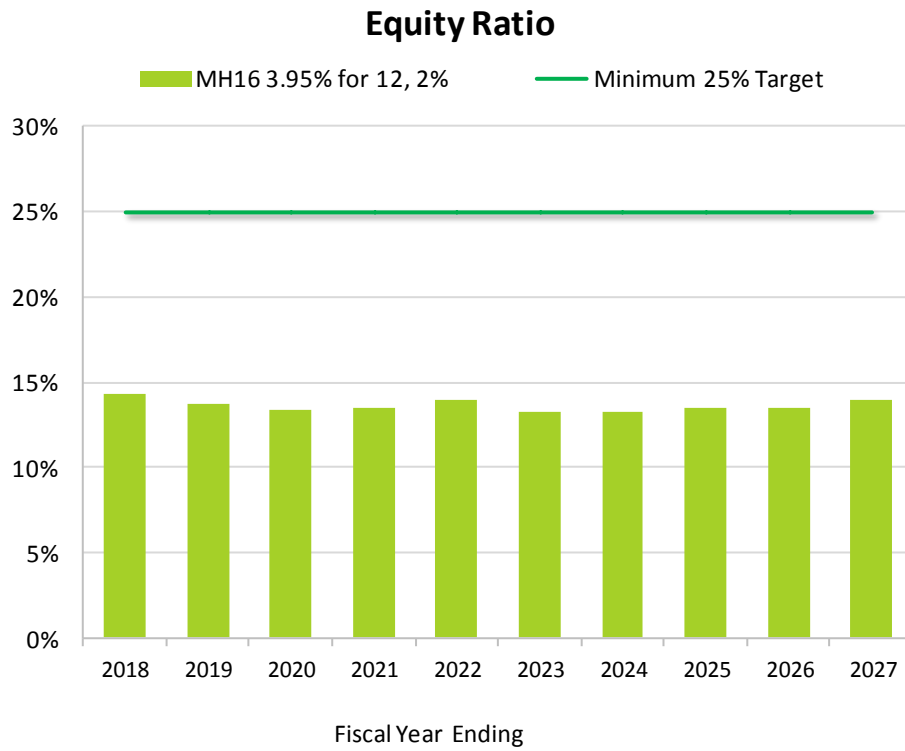


If Manitoba Hydro were to include the previously forecast rate trajectory of 3.95% increases until 2028/29 in its current forecast, the Corporation's equity ratio under MH16 (including substantially more aggressive cost reductions and interest rates than under past forecasts) does not return to the minimum target of 25% until 2035/36 which compares to 2031/32 under MH15, notwithstanding a substantial decrease in borrowing costs and operating expenses. In Manitoba Hydro's view, a financial plan that returns the Corporation to a 25% equity level over almost 20 years is not credible as a commitment to being a self-supporting entity.

Further, as noted in Section 2.2 above, a practical view of Manitoba Hydro's recent and forecast cash flows shows that without rate increases, the Corporation is borrowing to fund its core operations including interest charges. This, as a practice, is unsustainable and also a direct challenge to the argument Manitoba Hydro is self-supporting.

1

Figure 2.25 Equity Ratio under MH16 assuming 3.95% Even Annual Rate Increases



2

3

Figure 2.26 EBITDA Interest Coverage under MH16 assuming 3.95% Even Annual Rate Increases

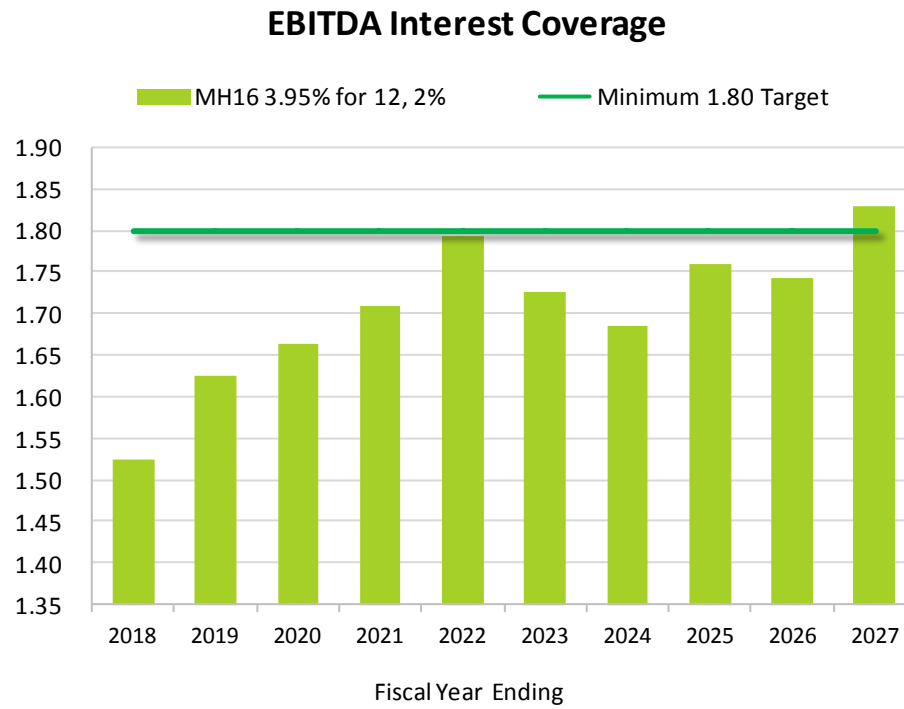
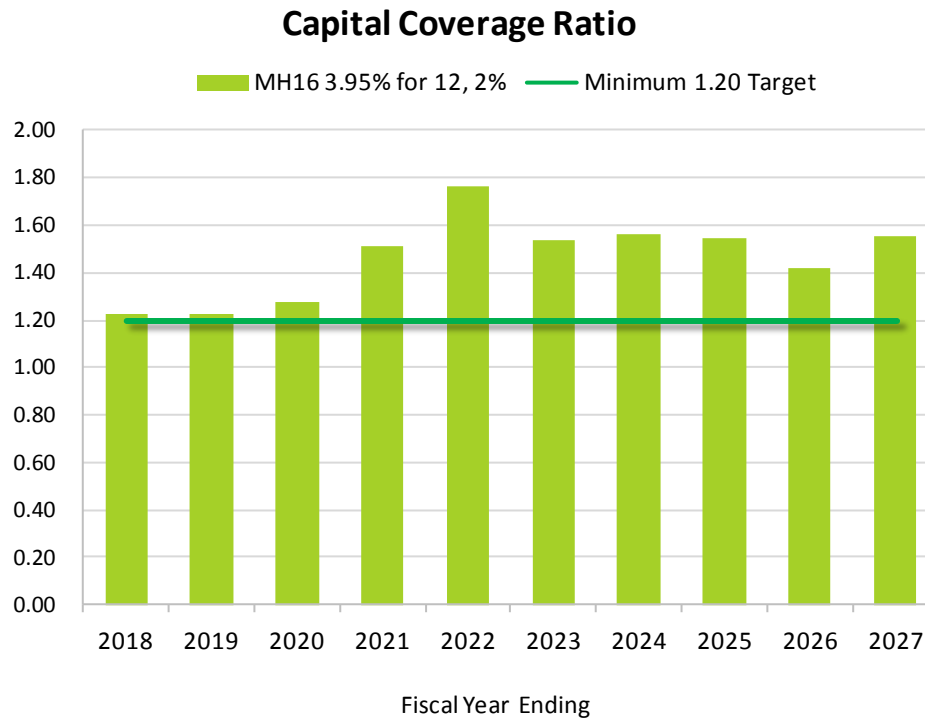


Figure 2.27 Capital Coverage Ratio under MH16 assuming 3.95% Even Annual Rate Increases



An adequate equity position is important to Manitoba Hydro and is of value to its ratepayers. Equity is the means by which Manitoba Hydro is able to absorb the occurrence of concurrent, multi-year and/or extraordinary events or material negative deviations from forecast without having to look to ratepayers for emergency relief.

Manitoba Hydro specifically needs a rate structure that supports a strong base of projected annual earnings, and equity growth as it faces a unique set of large and asymmetrical risks including:

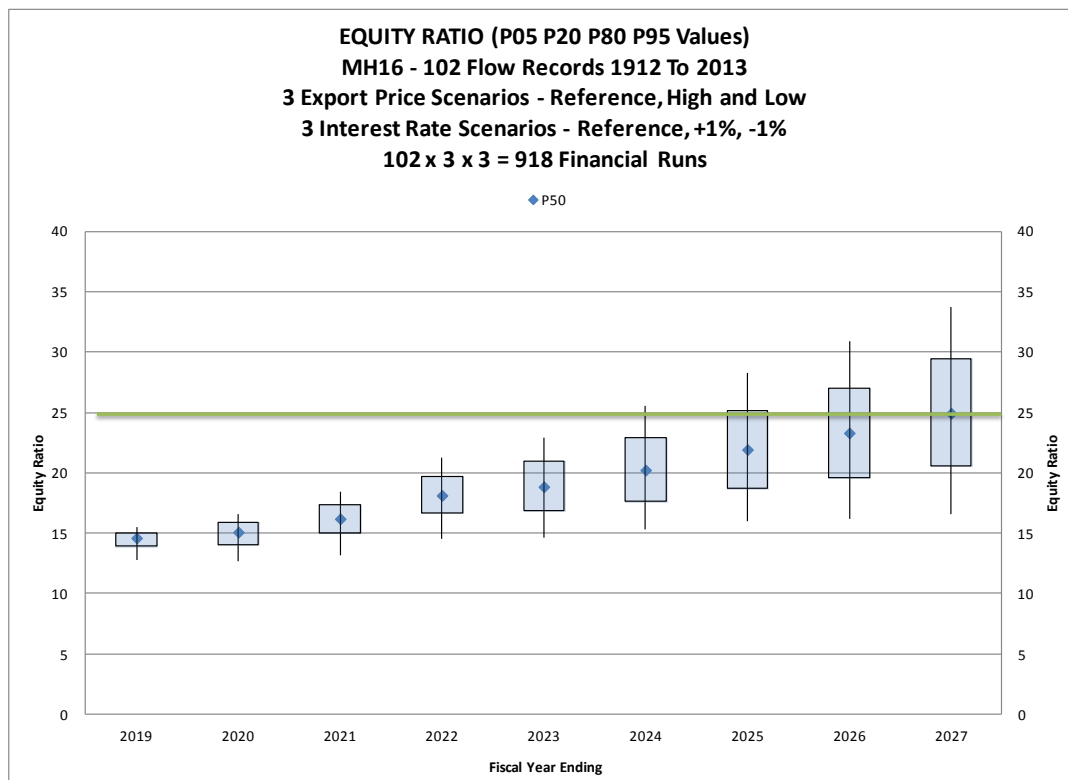
- i) Hydrology risk. No predominantly hydro-electric utility in North America bears the same potential variance in peak-to-trough water flows which leaves Manitoba Hydro especially susceptible to drought risk. A five year drought such as that experienced in 1988 through 1993 would have an approximately \$300 million per year impact on the Corporation.
- ii) Export price risk. No Canadian utility relies on the export market to the extent Manitoba Hydro does to offset domestic revenue requirement. Therefore, the Corporation is unduly exposed to income erosion from a continued delay in export price recovery as has been endured since the financial crisis of 2008. The continuation of opportunity export pricing at 2016/17 levels would have an approximately \$150 million impact on near term earnings (cumulative net income impact 2018/19 – 2021/22) growing to approximately \$160 million annually by 2025/26 with Keeyask in-service.
- iii) Interest rate risk. With a comparatively weak balance sheet and almost unequalled capital program underway, Manitoba Hydro is extremely sensitive to increases in its cost of debt. A 1% increase in Manitoba Hydro's borrowing cost could impact near term earnings by \$200 million (cumulative net income impact 2018/19 – 2021/22) growing to \$140 million annually in 2023/24.
- iv) Limited financial flexibility. Manitoba Hydro does not have dividends or capital expenditures it can defer or suspend during periods of financial distress.

As shown in **Figure 2.28** below, a combination of the risks noted above (export prices, interest rate trajectories and 102 different water flow cases) and assuming 7.9% rate increases each year for 5 years, there is only a 50% chance that Manitoba Hydro will achieve its minimum equity target of 25% by 2026/27.

The box plot is a convenient way of showing groups of numerical data through their 20th and 80th percentiles. In other words, the box represents 60% of possible outcomes in a fiscal year. Box plots also have lines extending vertically from the boxes (whiskers)

indicating variability outside the 80th up to the 95% percentile and 20th down to the 5th percentile.

Figure 2.28 Uncertainty Analysis - Equity Ratio Results



Canadian and international credit rating agencies have increasingly acknowledged the contagion risk Manitoba Hydro is presenting to the credit rating of the Province of Manitoba.

For example, since the last GRA, the following observations have been made:

1 S&P Global Ratings dated July 29, 2016 on the Province of Manitoba:

2 *"We expect Manitoba's projected fiscal shortfalls to propel further*
3 *growth in what is already a very high debt burden, which is the province's*
4 *principal rating constraint. By our estimates, Manitoba's tax-supported*
5 *debt (including on-lent debt to MHEB) could approach 320% of*
6 *consolidated operating revenues by fiscal 2018, compared with 274% in*
7 *fiscal 2016. This growth is substantially higher than what we foresaw last*
8 *year, primarily reflecting the province's larger-than-expected fiscal*
9 *deficits and capital financing requirements. Our assessment of the*
10 *province's debt burden fully incorporates the debt on-lent to MHEB*
11 *(nearly 40% of total tax-supported debt), whereas previously we had*
12 *considered MHEB's status as a self-supporting entity to be a mitigating*
13 *factor." P.1*

14
15 DBRS dated November 25, 2016 on the MHEB:

16 *"...the Utility has begun reviewing initiatives to help alleviate pressure on*
17 *its key financial ratios, such as improving operational efficiencies,*
18 *requesting annual rate increases higher than the previously planned*
19 *3.95%, as well as a potential equity injection from the Province. DBRS sees*
20 *these initiatives, if actualized, as positive to Manitoba Hydro's financial*
21 *profile, as they will provide some financial flexibility for the Utility,*
22 *especially in the event of adverse drought conditions or further cost*
23 *overruns on the projects."P.1*

24
25 *"DBRS could consider reclassifying a portion of the Utility's debt to be tax-*
26 *supported should the financial health of the Utility deteriorate to the*
27 *point where its expenses cannot be recovered through rates. If this were*
28 *to occur, it could potentially put downward pressure on the Province's*
29 *credit rating."P.2*

30
31 Moody's Investor Service dated August 3, 2016 on the Province of Manitoba:

32 *"The anticipated increase in debt continues to pressure the province's*
33 *rating since it raises the contingent liability of the province." P.4*
34

1 *"Manitoba Hydro has flexibility to increase utility rates to ensure that its*
2 *own revenues will continue to support its operations and debt payments.*
3 *Political willingness to approve rate increases when Manitoba Hydro's*
4 *credit metrics will reach their low point will be critical to recover expected*
5 *capital expenditures and restore credit metrics." P.4*
6

7 Manitoba Hydro adopted a minimum target debt to equity ratio of 75:25 (i.e. 25%
8 equity capitalization) in September 1995. The PUB itself has acknowledged the
9 importance of Manitoba Hydro having a sound plan to return to financial strength and
10 the relationship of same with the broader Provincial interest.

11
12 For example, the PUB provided the following comments on Manitoba's Hydro's debt to
13 equity financial target at page 31 of its Order 101/04, dated July 28, 2004:

14 *Achieving a debt:equity ratio of 75:25 would provide increased rate*
15 *stability benefits, and hold down financial charges. The 75:25 benchmark*
16 *represents a modest target, one comparable with the current debt:equity*
17 *ratios of similar Crown hydroelectric utilities in other Canadian provinces*
18 *(BC Hydro and Hydro-Quebec). In summary, meeting this target within a*
19 *reasonable period of time would reduce long-term pressure on domestic*
20 *electricity rates, better assure bondholders and thus constrain financial*
21 *charges and provide a hedge against a future drought.*
22

23 The PUB has also commented on the importance of Manitoba Hydro's financial strength
24 at page 130 of Order 116/08, dated July 29, 2008:

25 *It is the Board's [PUB] understanding that rating agencies look*
26 *prominently at MH's financial strength in assessing the credit rating of*
27 *the Province. A weakening of the financial strength of MH would not be*
28 *viewed favourably by those credit agencies and may have implications*
29 *impacting the credit rating of the Province, making provincial borrowing*
30 *more expensive. Such a development would not be in the public interest.*
31

32 The PUB reiterated the importance of Manitoba Hydro's Financial Strength at page 23 of
33 Order 43/13, dated April 26, 2013:

1 *The Board is concerned that, by moving towards a 90:10 debt-to-equity*
2 *ratio by the end of the decade, there will be an insufficient retained*
3 *earnings reserve to deal with droughts and other risks such as*
4 *infrastructure failure or rising interest rates.*

5 -----

6 *The Board notes that Manitoba Hydro shares the benefit of the flow-*
7 *through credit rating of the Province, which affords it preferential interest*
8 *rates on its debt and access to funds to meet its major capital spending*
9 *program. However, as its debt grows, there is a potential for Manitoba*
10 *Hydro's financial condition to affect the credit rating of the Province. It is*
11 *important that Manitoba Hydro remains a financially strong and viable*
12 *organization.*

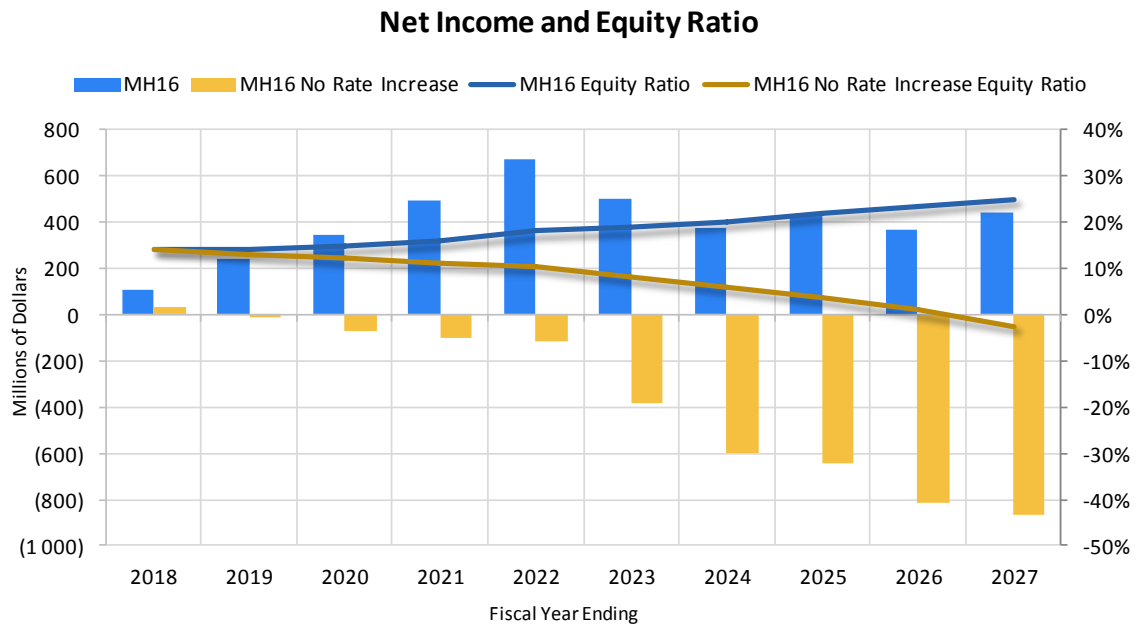
13
14 Manitoba Hydro and its ratepayers also have a vested interest in the credit rating of the
15 Province of Manitoba. Any further downgrade in rating, caused by Manitoba Hydro or
16 otherwise, could materially impact the cost of borrowing for Manitoba Hydro as it
17 completes a \$13 billion borrowing program over the next five years (inclusive of re-
18 financing).

19
20 The only practical means for Manitoba Hydro to reduce debt and build equity is through
21 a sustained period of adequate net income and cash flow. The proposed and indicative
22 rates in MH16 return Manitoba Hydro to a 25% equity capitalization in 10 years.
23 Manitoba Hydro believes that this is the appropriate balance between addressing the
24 financial risks of the Corporation and managing the impact of rate increases on
25 customers. Any greater acceleration to achieving the minimum target of 25% would
26 necessitate either sustained double-digit rate increases or prolonged compounding of
27 rate increases well above inflation, and present too much burden to low-income,
28 electric heat and major industrial customers. For example, a 5-year plan to restore
29 Manitoba Hydro's balance sheet to the minimum target of 25% equity would have
30 required 14% rate increases for each of the next 5 years. A 10-year plan is consistent
31 with that undertaken in other jurisdictions such as British Columbia and New Brunswick.

32
33 **Figures 2.29** below illustrates the net income and equity ratio progression of Manitoba
34 Hydro with and without the proposed rate increases. Manitoba Hydro believes this

level of net income allows the Corporation to adequately absorb the risks noted above coming to fruition either independently or in combination while still allowing the Corporation to make modest progress on restoring its equity capitalization.

Figure 2.29 Net Income and Equity Ratio with and without Rate Increases



Manitoba Hydro acknowledges past applications and testimony that indicate a willingness to tolerate a relaxation to below 15% equity during the current phase of debt funded capital investment. In past applications, Manitoba Hydro has also proposed a financial plan that would have seen a 15 year time frame for restoring a 25% equity capitalization. The conditions and outlook for Manitoba Hydro has changed significantly since the last GRA as has the Corporation's governance, namely:

- i) Since the last GRA, a new Board of Directors (MHEB) has been appointed along with a new President & CEO and a new Chief Finance & Strategy Officer. Together, the MHEB and senior management team have charted a new course for Manitoba Hydro inclusive of a strategic imperative to restore financial sustainability. The MHEB tolerance for risk has changed considerably and therefore a path back to 25% equity of longer than 10 years is, in the view of Manitoba Hydro, too risky;

- 1 ii) The control budgets for Keeyask and Bipole III have increased by \$2.2 billion and
2 \$0.4 billion respectively necessitating further increases in gross borrowing thus
3 exacerbating the strain on the financial plan;
- 4 iii) The domestic load growth forecast has significantly deteriorated delaying the
5 need for Keeyask to well into the 2030's and lessening the opportunity for
6 Manitoba Hydro to look to growth to cure its financial challenges;
- 7 iv) Export price growth expectations again have been tempered from past forecasts
8 as the outlook for sustained low fossil fuel costs perpetuates; and,
- 9 v) Since the Corporation's last GRA, the fiscal year-end debt of the Province of
10 Manitoba has increased by 33.8% from \$17.3 billion (March 31, 2014) to \$23.1
11 billion (March 31, 2017 estimated) pushing debt to GDP to 34.4%. The credit
12 rating of the Province has been downgraded by both major international rating
13 agencies. Inclusive of the Corporation's debt at forecast peak, Manitoba's debt
14 to GDP will reach 65 to 70% of GDP which would put the Province amongst the
15 highest ratios in Canada. The Province has diminished capacity to absorb
16 inclusion of Manitoba Hydro's debt in its consolidated credit profile without
17 risking further erosion of its credit standing.

18 Manitoba Hydro is taking stronger action to reduce internal costs and improve financial
19 performance to protect the Corporation and the interests of its customers. These cost
20 reductions on their own will not be enough to restore Manitoba Hydro's financial
21 position. Accelerating the magnitude of rate increases over the next five years is thus
22 required; however, this will allow future rate increases to return to levels at or near
23 inflation earlier than previously forecast.

24
25

2.4 **BIPOLE III RELIABILITY PROJECT**

The Bipole III Reliability Project consists of a 1,388 kilometer, 500 kV high voltage direct current (HVDC) transmission line originating at the new Keewatinohk Converter Station in northern Manitoba northeast of Gillam and terminating at the new Riel Converter Station situated east of Winnipeg. The project also includes five new 230 kV collector lines and two ground electrodes at each of the new converter stations.

Bipole III adds 2,000 megawatts to Manitoba Hydro's HVDC transmission system and will strengthen the reliability of Manitoba's electricity supply by reducing dependency on existing HVDC transmission lines and the Dorsey Converter Station. The Riel Converter Station will establish a second converter station in southern Manitoba, to provide another major point of power injection into the transmission and distribution system.

Approximately 70% of the electrical energy produced by Manitoba Hydro is transmitted from generation facilities located in northern Manitoba to customers in southern Manitoba. Currently, this electricity is delivered by means of two HVDC transmission lines, Bipole I and Bipole II, to be converted at the Dorsey Converter Station where it is injected into Manitoba Hydro's transmission system.

Given that such a significant proportion of the province's electrical load is supplied from the north over lines situated in a single right-of-way to a single DC to AC converter station, Manitoba Hydro's electricity system is vulnerable to extensive power outages and catastrophic power failures from severe weather occurrences (such as major ice storms, extreme wind events or tornado), fires or other events that might damage either the transmission lines or the Dorsey Converter Station. A third 500kV HVDC transmission line with converter stations will provide for increased reliability to the Manitoba Hydro system.

2.4.1 Bipole III Reliability Project Review

On May 3, 2016, the Government of Manitoba issued a mandate letter to the Minister responsible for Manitoba Hydro which included a commitment by the Minister to work with the MHEB to review the Bipole III Reliability Project. The review included a mandate to assess the current financial situation of Manitoba Hydro and determine

1 whether the Bipole III Reliability Project should proceed as planned or if the
2 Corporation's current fiscal situation warrants the immediate delay, rerouting or
3 cancellation of the project. The MHEB established a process to undertake a review of
4 the Bipole III Reliability Project, which also included a review of the Keeyask Generating
5 Station Project and the MMTP and GNTL (together "the U.S. Tie-Line Project").
6

7 To assist with this review, the MHEB retained the services of the Boston Consulting
8 Group (BCG), an internationally recognized consulting firm and in September, 2016 the
9 MHEB announced the results of its review of these major projects.
10

11 2.4.2 Results of the MHEB Review

12 The importance of the HVDC system to the province is profound. In the event of a
13 complete outage to Bipoles I & II or the Dorsey Converter Station, Manitoba Hydro will
14 be unable to meet its customer's winter demand requirements. Even assuming
15 maximum energy imports and the operation of all available thermal plants, Manitoba
16 Hydro would experience a shortfall of 1500 MW under peak demand conditions.
17

18 The societal impact of a prolonged outage of the HVDC system is significant. Damage
19 due to fire, severe wind, tornado or freezing rain conditions may result in outages
20 ranging from several days to several months in duration, depending upon the situation.
21 Such an outage could require customer curtailment or the initiation of rolling blackouts
22 across Manitoba Hydro's service territory to ration the available capacity. The costs
23 associated with such an incident were estimated by BCG to be as much as \$4 billion with
24 a loss of Bipoles I & II for a one month period (January) and \$20 billion with the loss of
25 the Dorsey converter station for a one year period.
26

27 BCG examined the relative risks and benefits of completing Bipole III in its current
28 configuration or terminating that option and replacing it with natural gas fired
29 generation located in southern Manitoba or a combination of increased import
30 capability through a new import line with natural gas fired back up generation. BCG
31 recognized that to abandon Bipole III without an alternative means of addressing power
32 deliverability risks to southern Manitoba was unacceptable. In its analysis, BCG
33 concluded that the completion of Bipole III is essential and that in its current
34 configuration and pathway represented the least cost of all available options.

1
2 Upon completion of the BCG analysis and its review of the project, the MHEB concluded
3 that the system redundancy, increased reliability and risk mitigation benefits of the
4 Bipole III (West) option provided sufficient benefit to Manitoba Hydro's customers that
5 work should continue to complete the project.
6

7 The Bipole III Control Budget has since been increased from \$4.653 billion to a value of
8 \$5.042 billion to reflect cost increases experienced on the project and to provide
9 increased budget certainty in addressing the remaining risks/uncertainties of the work.
10 The in-service date (ISD) will be maintained at July, 2018.
11

12 2.4.3 Future Revenue Requirement Impacts of Bipole III

13 The Bipole III Reliability Project is a reliability project that is essential to provide
14 Manitobans with redundancy in HVDC transmission and converter station system
15 capability. While there are reductions to electricity losses with an increase in HVDC
16 capacity, Bipole III is not a revenue generating asset and can be thought of as a
17 sustaining capital project of significant size and cost.
18

19 There is an annual cost of providing such reliability and redundancy. Once put into
20 service, the finance expense, depreciation and operating expense associated with this
21 \$5 billion investment will be reflected on Manitoba Hydro's income statement and
22 revenue requirement. The incremental finance expense of approximately \$215 million
23 and operating expenses of approximately \$15 million will place additional pressure on
24 the Corporation's cash flow requirements. There will also be an annual incremental
25 depreciation change of approximately \$107 million. As this asset does not generate
26 incremental export revenues, additional revenues must be obtained from domestic
27 customers through higher rate increases to reflect the higher cost of service.

2.5 KEEYASK GENERATING STATION AND THE U.S. TIE-LINE PROJECT

The Keeyask Generating Station is a 7 unit 695-megawatt hydroelectric generating station situated at Gull Rapids on the lower Nelson River in northern Manitoba. Keeyask will be the fourth largest generating station in Manitoba and the sixth generating station located on the Nelson River. The Keeyask Project is owned by a partnership between Manitoba Hydro and four Manitoba First Nations, known as the Keeyask Hydropower Limited Partnership (KHLP).

Construction of the Keeyask Project consists of the construction of the generating station as well as construction of supporting infrastructure and the Keeyask Transmission Project which will transport the power produced at Keeyask onto the Manitoba Hydro system when the generating station enters into service.

Construction of the infrastructure required to support the construction of the generating station began in 2012 while construction of the generating station began in July, 2014. In May 2016, the MHEB committed to review the Bipole III Reliability Project and recognized that this review should be expanded to include the Keeyask Project and the project to construct U.S. system interconnections by means of the MMTP and GNTL.

To assist with this review, the MHEB retained the services of the Boston Consulting Group (BCG), an internationally recognized consulting firm and in September, 2016 the MHEB announced the results of its review of these major projects.

2.5.1 Results of the Review by the Boston Consulting Group

BCG examined the projects to determine answers to these three questions:

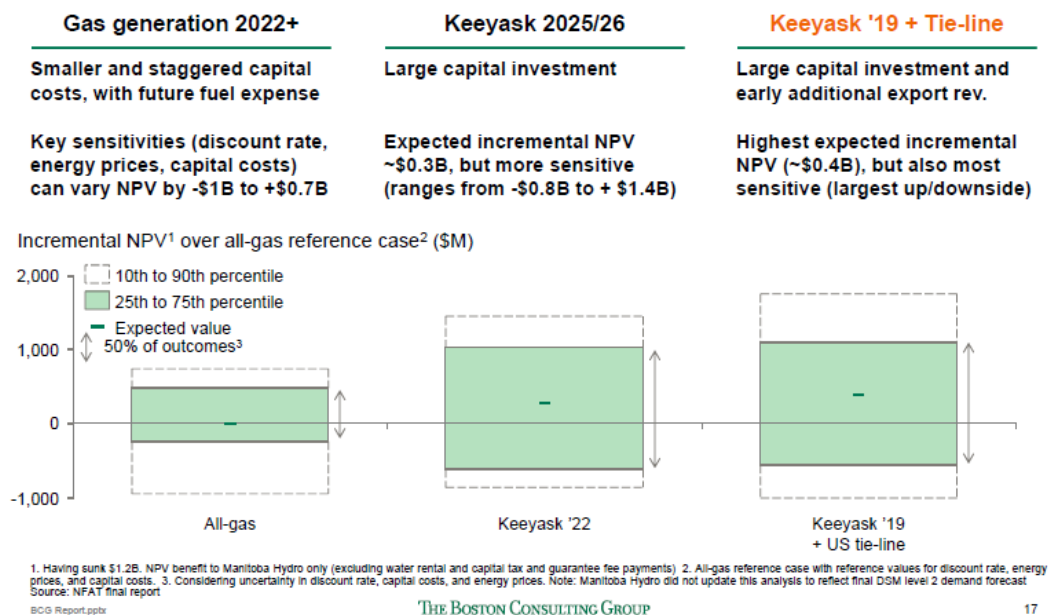
- Were the original decisions the right ones?
- Is there further downside risk?
- Can they be stopped or paused without undue cost or risk?

BCG concluded that the construction of Keeyask and the related U.S. Tie-Line import and export capability represented the most favorable Net Present Value (NPV) option compared to a delay of Keeyask or the construction of gas fired generation. It noted that while new generation capacity was not originally forecast to be needed for domestic demand until 2024 and beyond, the advancement of an ISD to 2019/20

enabled Manitoba Hydro to beneficially leverage the U.S. Tie-line import and export capability, and temporal conditions in the U.S. electricity markets.

In examining the original decision, BCG analyzed the NPV of Keeyask (2025/26 ISD) and Keeyask (2019/20 ISD plus U.S. Tie-Line Project) against a base case of gas fired generation (2022+ ISD) and concluded that the Keeyask 2019/20 ISD with U.S. Tie-Line Project provided the greatest benefits to both Manitoba Hydro and the Province. The advancement of the project to 2019/20 enabled it to provide a solution to Minnesota-based utilities that were legally mandated to reduce their reliance on fossil-fueled generation and utilize renewable energy including new hydraulic generation in their place. It went on to state that the U.S. Tie-Line Project was a key source of value for the Keeyask Project as it greatly improved the economics of the overall project and provided important access to 700 MW of import capacity to offset hydraulic risk. While the gas fired generation option carried less uncertainty and less capital intensity, the Keeyask Project with U.S. Tie-line presented a much higher NPV as shown in **Figure 2.30** below.

Figure 2.30 Incremental NPV Analysis



Source: Exhibit 16, Boston Consulting Group Bipole III, Keeyask and Tie-line Review, dated September 19, 2016.

Notwithstanding the expected advantages of the Keeyask Project, the construction of the project was encountering several serious challenges during the time of BCG's review

1 related to concrete and earthworks. The full impact of these challenges were only
2 realized at the end of the 2016 construction season. However, at the time of their
3 review, BCG estimated the impact of these challenges to be a delay of 21 to 32 months
4 for the ISD of the first generator unit, from November of 2019 to August of 2021, with a
5 corresponding increase in costs from \$6.5 billion to \$7.2 billion (P50 Control Budget¹) to
6 \$7.8 billion.

8 2.5.2 Examination of Completion or Cancellation of the Project

9 BCG examined the potential costs and implications of abandoning the Keeyask Project.
10 At the time of their review, \$2.5 billion had been spent, which represented 39% of the
11 \$6.5 billion control budget. Several project milestones had been completed such that
12 contract cancellation would trigger the payment of damages and compensation to the
13 contractors. It was estimated that the project cancellation costs may be approximately
14 \$1.3 billion.

15
16 Cancellation of the Keeyask Project would create other significant strategic issues for
17 Manitoba Hydro. Cancellation would bring significant harm to Manitoba Hydro's
18 relationships with First Nations communities and create impediments to developing
19 hydroelectric resources in the future. Manitoba Hydro would also experience negative
20 impacts with dependable export customers, which would harm its status as a reliable
21 energy supplier into the MISO market area. In addition, the cancellation of the projects
22 would have a negative GDP impact which would heavily impact First Nations
23 communities.

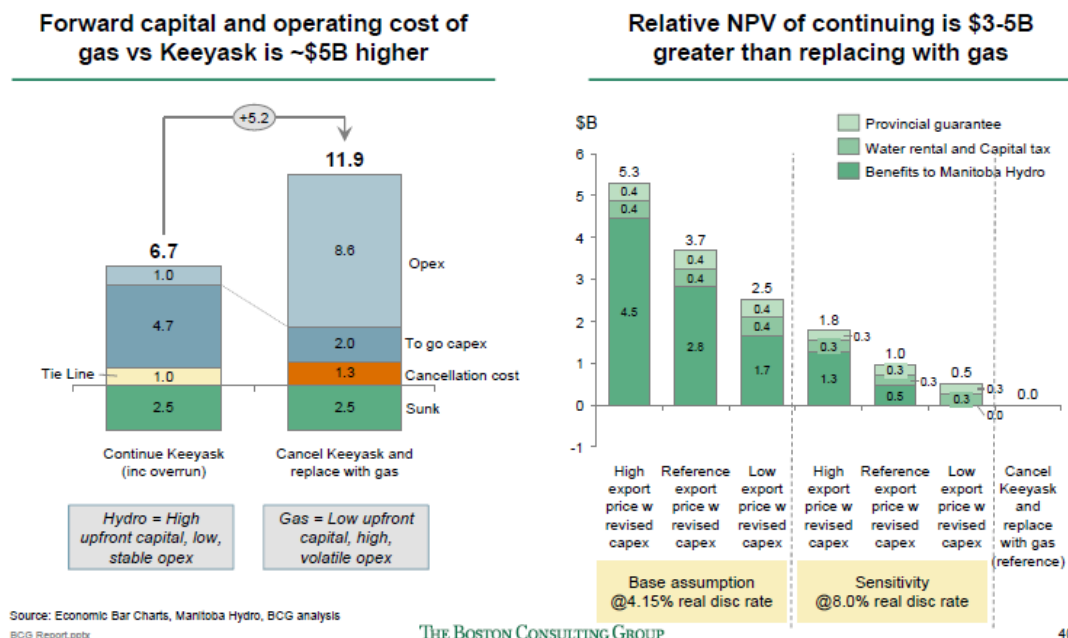
24
25 The basis of BCG's analysis was a NPV study of the incremental present value of
26 completing the project compared with abandoning the project and meeting future load
27 requirements through incremental natural gas fired generation, under both a 4.15% real
28 discount rate and an 8% real discount rate, with low, reference and high export prices.

29
30 BCG's analysis of completing the Keeyask Project which considered the higher
31 completion cost and delay to its ISD, concluded that completing the Keeyask Project is

¹ A P50 Control Budget is a probabilistic estimate of cost that represents a cost level where 50% of the outcomes are above, and 50% are below the stated level of cost.

approximately \$5 billion less than the cost of cancelling the Project and constructing gas fired generation to meet future load requirements, and the NPV of completing Keeyask instead of abandoning the Project and installing gas fired units was in a range of \$3 billion to \$5 billion, as shown in **Figure 2.31** below.

Figure 2.31 NPV of Completing Keeyask vs Installing Gas Fired Units



Source: Exhibit 39, Boston Consulting Group Bipole III, Keeyask and Tie-line Review, dated September 19, 2016.

2.5.3 Development of the Keeyask Recovery Plan

At the end of the 2016 construction season, concrete placement was only at approximately 40% of plan while earthworks were only at approximately 60% of plan. As a result, Manitoba Hydro engaged with its General Civil Contractor, BBE Hydro Constructors LP² in the fall and winter of 2016/17 to develop a plan to address the shortcomings of existing contractual arrangements, to revise the construction cost estimate and work plan and to determine the best possible ISD for the Keeyask Project.

² A consortium between the Bechtel Canada Co., Barnard Construction of Canada Ltd. and EllisDon Civil Ltd..

1 Manitoba Hydro and BBE assessed the underlying causes of the challenges experienced
2 to date with the Keeyask Project. The main contributing factors to the
3 underperformance included:

- 4
- 5 • BBE's bid was based upon labor productivity rates that proved to be unachievable in
6 the current market,
- 7 • Slower than planned progress in ramp-up on site, and
- 8 • Actual experience with geotechnical and geological conditions.
- 9

10 The Recovery Plan incorporates a number of key features required to address the
11 trajectory of the Project in order to achieve successful completion. Steps are being
12 taken to improve production and remove inefficiencies, including:

- 13
- 14 • Development and deployment of an issues management system,
- 15 • Development of refined processes, systems and tool based upon the findings of the
16 root cause analysis,
- 17 • Implementation of a change management program to enable a culture shift within
18 the project team, and,
- 19 • Development of key performance indicators to report on all deliverables.
- 20

21 The Recovery Plan also mitigates overall execution risk for the Keeyask Project by
22 incorporating the following:

- 23
- 24 • Amended contract aligns BBE and Manitoba Hydro interests and provides incentive
25 for BBE to improve performance,
- 26 • BBE implementing revisions to organization structure to increase supervision and
27 improve the management of work processes, and
- 28 • BBE implementing an improved cost and schedule control system.
- 29

30 2.5.4 Manitoba Hydro Update to Keeyask Project Review

31 In 2017, Manitoba Hydro reviewed the key assumptions and analysis done by BCG in
32 order to validate the decision to continue with construction of the Keeyask Project, and
33 to provide the MHEB with robust analysis in support of the revised Control Budget.

34

Manitoba Hydro updated several assumptions and prepared a series of NPV analyses to compare a Project Shut Down scenario (the base case) with the revised life-cycle economics for the Project. The analysis was prepared with a range of real discount rates (WACC) (4.4%, 5.4% and 7.5%) at both P50 and P90 levels to test for sensitivity. These discount rates infer a nominal cost of equity of 8.4%, 12% and 20%, respectively.

The updates to the analysis and forecasts reflected that:

- Capital Costs have increased and the ISD has been delayed for Keeyask;
- Capital Costs for MMTP/GNTL have increased;
- Export Prices are lower than previous forecasts;
- Natural Gas Prices have decreased from previous forecasts;
- Higher cancellation costs associated with projects as time progresses; and,
- Domestic load growth has reduced.

The following parameters were considered in the analysis:

- Generation Revenue - Market price projections were updated to reflect current market trends. Revenues were based on on/off peak export opportunities, non-flow related, non-committed firm export and existing firm exports. These are off-set by costs such as thermal burn, on/off peak import, water rentals, power purchases, and variable operating and maintenance.
- Avoided Gas Turbine Costs - This reflected differences in the need for gas turbines.
- Residual Capital Asset Value - This value represented those capital costs that were allocated to the asset life beyond the 35 year analysis period.
- Potential Cancellation Costs - The high level estimate assumed repayment of capital spent to date, and other potential related costs with the cancellation of Keeyask and Tie Line including site remediation.
- Keeyask Capital Cost - This included updated project cost estimate including schedule and contingency.
- US500kV Capital Cost - This included updated cost estimates developed in the Fall of 2016.
- Fixed Operating and Maintenance and Capital Tax - This reflected the operation and maintenance of gas turbines, generating stations and transmission components, and related capital costs.

1 The results of this NPV analysis indicated a deterioration of the NPV for the completion
2 of the Keeyask Project compared to the 2016 BCG analysis, but overall the project was
3 still considered to the most economic to complete, compared to halting and building
4 gas-fired generation. Evaluated at 4.4% real WACC, these Projects are positive at P50
5 (NPV \$2.0 billion) and P90 (NPV \$1.5 billion).
6

7 Manitoba Hydro also evaluated revenue requirement impacts on halting Keeyask and
8 building alternate (i.e. gas) capacity to meet Manitoba load growth. This analysis
9 concluded halting Keeyask would increase aggregate revenue requirement by \$2.3
10 billion for the 10 years to 2026/27 and \$3 billion for the period from 2017/18 to
11 2035/36.
12

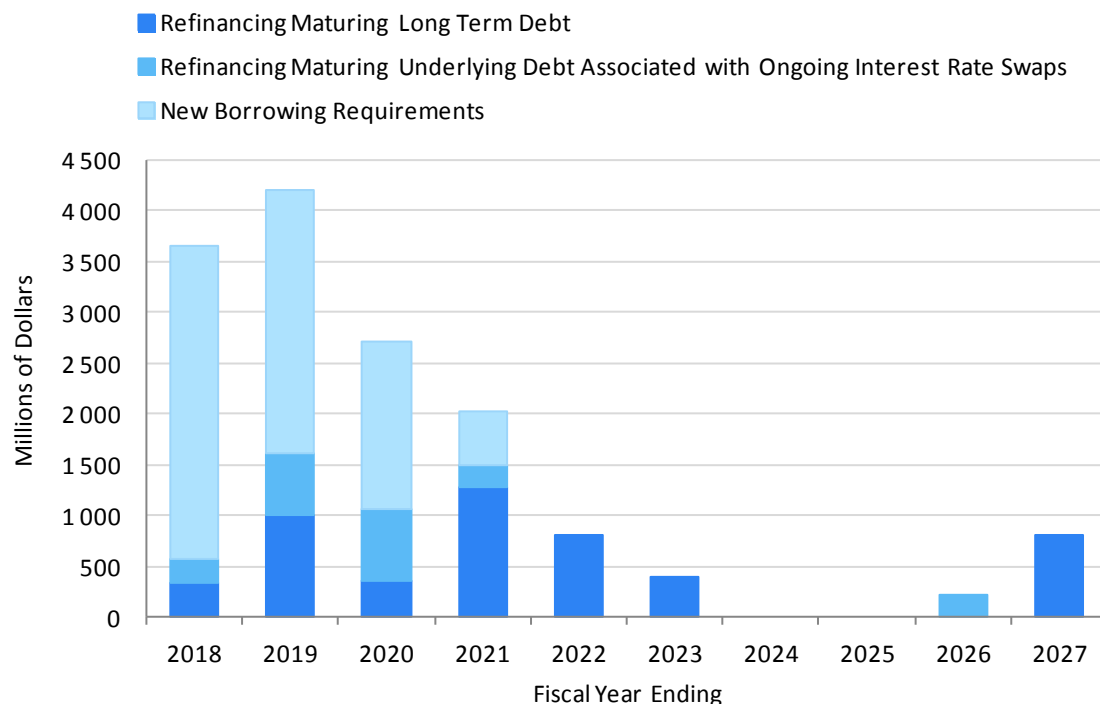
13 Accordingly, the MHEB made a decision to support the completion of these Projects and
14 in February 2017, the Keeyask Hydropower Limited Partnership (KHLP) and Manitoba
15 Hydro announced the new control budget of \$8.7 billion and a revised ISD of August
16 2021 for the Keeyask Project.
17

18 As noted in Section 2.2, the Keeyask Project and U.S. Tie-Lines are net income negative
19 upon entering service and remains net income burden for a 30 year period. Manitoba
20 Hydro's financial position now must recognize the new reality of the carrying cost of this
21 significant asset coming into service.

2.6 **COST OF DEBT FINANCING IS THE LARGEST EXPENSE FOR MANITOBA HYDRO, MAKING IT HIGHLY VULNERABLE TO CHANGES IN INTEREST RATES, WHICH ARE CURRENTLY AT HISTORIC LOWS**

Unlike private utilities, Manitoba Hydro does not have access to share capital as a source of funds and must rely on a combination of internally generated cash from operations and debt financing in order to fund its capital investment program. As shown in **Figure 2.32** below, Manitoba Hydro is forecasting that in the next 4 years (2017/18 to 2020/21) it will fund the vast majority of new major generation and transmission capital expenditures through debt financing. As such, Manitoba Hydro will be borrowing \$8 billion over the next four years (net of refinancing) as it completes its major investments. These total forecast debt requirements are unprecedented in Manitoba Hydro's history.

Figure 2.32 New and Amended Long Term Debt



Given this significant level of debt financing, Manitoba Hydro's sensitivity to interest rate changes will also be elevated. As shown in **Figure 2.13** included in Section 2.2

1 above, cash interest on debt financing is the largest expense for the Corporation and
2 estimated to be in excess of \$1 billion by 2019/20.

3
4 Actual interest rates in the Canadian capital markets have been on a downward
5 trajectory over the past two decades, and are currently at the lowest levels in Canadian
6 history. The implications from this record low interest rate environment are such that,
7 should interest rates rise, and with the increasing level of debt financing required by
8 Manitoba Hydro, the Corporation is at risk of experiencing escalating debt servicing
9 costs.

10
11 Manitoba Hydro's proposed and indicative rate increases will allow it to reduce its
12 borrowing requirements in the future and serve to mitigate future rate increases that
13 may be required should interest rates rise.

2.7 **MANITOBA HYDRO HAS DEVELOPED A STRONG FINANCIAL PLAN THAT INCLUDES
ACCELERATED COST REDUCTIONS**

Manitoba Hydro's current financial plan addresses the serious deterioration in the Corporation's capital structure, and restores its financial strength more quickly than in its previous plans. This is accomplished by accelerating the cost reductions it had committed to in previous plans as well as accelerating the proposed and indicative rate increases to be requested.

In MH15, Manitoba Hydro limited increases in O&A for 2015/16 to 2021/22 to below inflationary levels at 1%, excluding the impacts of accounting changes. In order to be able to meet this level of O&A, Manitoba Hydro committed to reducing approximately 330 operational positions over the period 2014/15 to 2016/17. As of December 31, 2016, Manitoba Hydro had exceeded this target and achieved a cumulative reduction of 429 operational positions through attrition, the application of technology, and consolidation and elimination of work processes where appropriate.

In MH16, Manitoba Hydro has taken a more aggressive approach to reducing its O&A costs by accelerating its cost reduction program. As shown in **Figure 2.4**, the annual O&A expenditure forecast over the next 10 years in MH16 is \$0.8 billion lower when compared to MH15. In addition, Manitoba Hydro's O&A in 2016/17 was approx. \$16 million (or 3%) less than forecast in MH15 for 2016/17.

MH16 includes the impacts of initiatives to reduce headcount by 15% along with other enhanced cost reduction efforts. This includes a reduction in the number of Vice-Presidents by 30%, as well as a reduction in the number of direct reports to the Vice-Presidents by 40%. Manitoba Hydro will be further streamlining its province-wide workforce by eliminating approximately 900 full-time equivalent employees beginning with a Voluntary Departure Program launched in April 2017. Together, these reductions are expected to result in annual O&A savings of approximately \$70 million over the next five years totaling approximately \$350 million to 2021/22. An offsetting provision for a total of \$55 million in restructuring costs has been included in other expenses over the next three years.

1 On their own, however, staff reductions will not be nearly enough to restore Manitoba
2 Hydro's financial position. Manitoba Hydro will also need to increase revenues, through
3 higher rate increases and continued pursuit of additional firm export sales. This
4 combination of cost reductions and proposed and indicative rate increases will
5 reestablish Manitoba Hydro on a proper financial footing earlier than previously
6 forecast.

7
8 Moreover, accelerating the rate increases in the next five years will allow for future rate
9 increases to return to levels at or near inflationary growth after fiscal 2021/22. On a
10 cumulative basis, the rate increases in MH16 would reach 68% in 12 years, which
11 compares to 59% in IFF15. It is imperative that Manitoba Hydro follow the rate increase
12 trajectory reflected in MH16, which is consistent with its accelerated cost reductions, in
13 order to achieve an adequate income and cash flow level to mitigate risks during a
14 period of significant financing and capital investment.

2.8 **MANITOBA HYDRO RECOGNIZES THE CHALLENGES ASSOCIATED WITH RATE INCREASES AND IS COMMITTED TO ASSISTING CUSTOMERS WITH MANAGING THEIR ENERGY BILLS**

Manitoba has a significant percentage of households that are considered low-income (approximately 142,000, or 30% of Manitoba residential households are at LICO-125 or below). LICO-125 is a measurement of household income and the level of household income is an important determinant of the standard of living for families.

Manitoba Hydro acknowledges that its proposed electricity rate increases will have an impact on customers. Manitoba Hydro has traditionally assisted low-income households by way of the Affordable Energy Program which targets DSM programs to the lower income market. Manitoba Hydro is of the view that the issue of affordability of energy, like any other essential items such as food and housing, extends beyond considerations associated with electricity price increases.

Issues of poverty and distributional 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.

As discussed in Tab 7, Manitoba Hydro offers programs to assist customers in managing their energy consumption through the implementation of energy efficiency opportunities in their homes and businesses. Moreover, to assist low-income customers, Manitoba Hydro continues to provide targeted and enhanced support through its Affordable Energy Program, to improve the energy efficiency of their homes resulting in lower energy bills and increased comfort.

Manitoba Hydro actively participated in the Bill Affordability Stakeholder Engagement Process undertaken in 2016 to review existing initiatives and explore potential alternatives to further address bill affordability for Manitobans. Manitoba Hydro's existing suite of bill affordability initiatives includes the Affordable Energy Program, Neighbours Helping Neighbours Program and Bill Accommodation practices. These

1 initiatives were reviewed by stakeholders in the collaborative process and
2 enhancements were suggested to further increase assistance to lower income
3 customers. Manitoba Hydro will explore these going forward and is committed to
4 enhancing, where possible, its programs and processes to assist low-income customers.

2.9 CUSTOMER BILL IMPACTS AND COMPARISONS TO OTHER JURISDICTIONS

Manitoba enjoys an advantage over many other jurisdictions with respect to the cost of electricity for residential and general service customers. As shown in **Figure 2.33** below, and discussed in Tab 9, Manitoba Hydro has among the lowest average retail electricity rates in North America.

Figure 2.33 Total Average Retail Rate (Canadian \$)

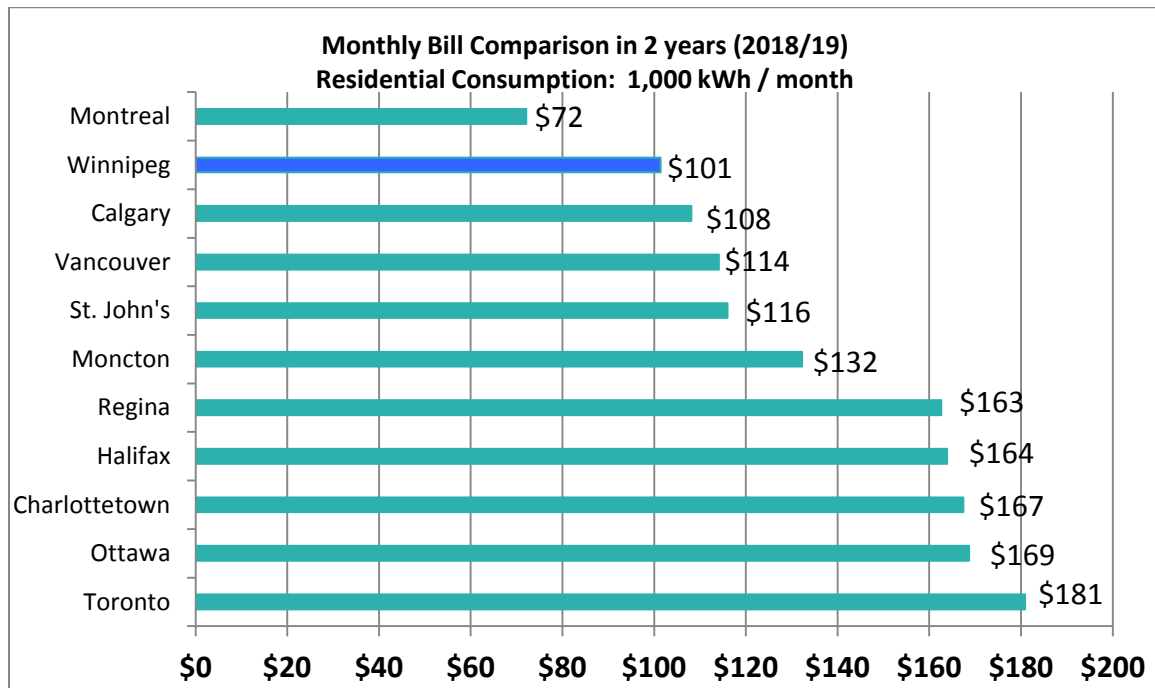
State / Province	Cents per kWh
Manitoba	6.48
Quebec	6.84
British Columbia	8.56
Saskatchewan	10.09
Oklahoma	10.14
Louisiana	10.45
Iowa	10.48
Nevada	10.51
Washington	10.64
Arkansas	10.68
North Dakota	11.53
South Dakota	12.94
Minnesota	13.03
Wisconsin	14.56

The August 1, 2017 rate increase, if approved, would result in a \$6.88 increase in the monthly bill of a residential customer without electric space heat using 1,000 kilowatt-hours ("kWh") per month, and a \$13.14 increase in the monthly bill for a residential customer with electric space heat using 2,000 kWh per month.

The April 1, 2018 rate increase, if approved, would result in an additional \$7.43 increase to the monthly bill of a residential customer without electric space heat and an additional \$14.19 increase to the monthly bill for a residential customer using electricity for space heat.

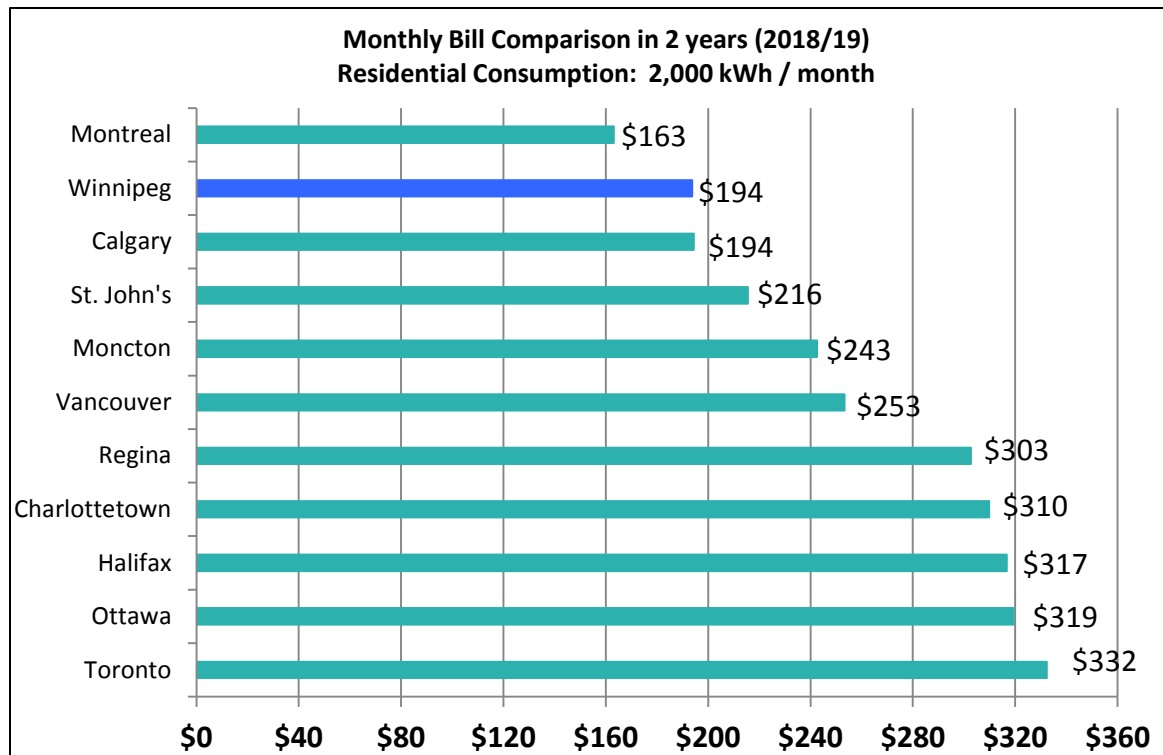
Manitoba enjoys an advantage over most of the Canadian jurisdictions with respect to the average monthly bills of residential customers and even with the proposed rate increases, this rate advantage is expected to continue, as shown in **Figure 2.34** and **2.35** below.

Figure 2.34 Residential Monthly Bill Comparisons (1,000 kWh per month)



Note: Winnipeg bill reflects 7.9% rate increase in 2017/18 and 2018/19. Where published information is available, projected rate increases have been reflected in the bill calculations for other cities, and where not available, annual rate increases of 2% have been assumed. Analysis does not consider the impact that the implementation of a carbon tax may have on electricity prices in the future.

Figure 2.35 Residential Monthly Bill Comparisons (2,000 kWh per month)



Note: Winnipeg bill reflects 7.9% rate increase in 2017/18 and 2018/19. Where published information is available, projected rate increases have been reflected in the bill calculations for other cities, and where not available, annual rate increases of 2% have been assumed. Analysis does not consider the impact that the implementation of a carbon tax may have on electricity prices in the future.

2.10 LONG TERM RISKS IF RATE INCREASES ARE NOT GRANTED

Rate stability for customers is dependent on the financial stability of Manitoba Hydro. Manitoba Hydro and its customers continue to face a number of serious risks if the proposed rate increases are not granted, including:

- Increased borrowing requirements, higher debt levels and increased carrying costs to be recovered from customers;
- Further deterioration of the Corporation's financial position when a drought is experienced;
- Increased risk to customers of rate instability and larger future rate increases;
- Increased risk to customers of a deterioration of service quality and reliability; and,
- Potential negative implications to Provincial credit ratings and ultimately to Manitoba Hydro's cost of borrowing.

Since its last GRA application, Manitoba Hydro has experienced a further deterioration of its anticipated export revenues, a significant weakening in its forecast of domestic load and significantly increased capital costs associated with its Major New Generation and Transmission projects. In response to these challenging conditions, Manitoba Hydro is dramatically advancing the pace and scale of internal cost reductions. Manitoba Hydro is also requesting higher rate increases (7.9% per year for the next 5 years) than were proposed in previous financial plans.

Due to the capitalization of large amounts of interest accruing to the work in progress on its major projects, the accounting treatment of interest obscures the negative impact on Manitoba Hydro's cash requirements for its operations. If this cash deficit cannot be addressed through higher domestic revenues, it must be balanced by incremental borrowing. The incremental borrowing to meet current cash requirements simply adds to the debt burden shouldered by Manitoba Hydro and increases the debt servicing costs to current and future ratepayers.

The requested 7.9% rate increases in the first five years of the forecast will result in improvements to near term cash flows and assist to address the cash deficit experienced by the Corporation. The increased revenues in the early years of the

1 forecast provide for stronger financial metrics in later years of the forecast due to the
2 reduction in the impact of interest compounding on the additional debt that would
3 otherwise be required.

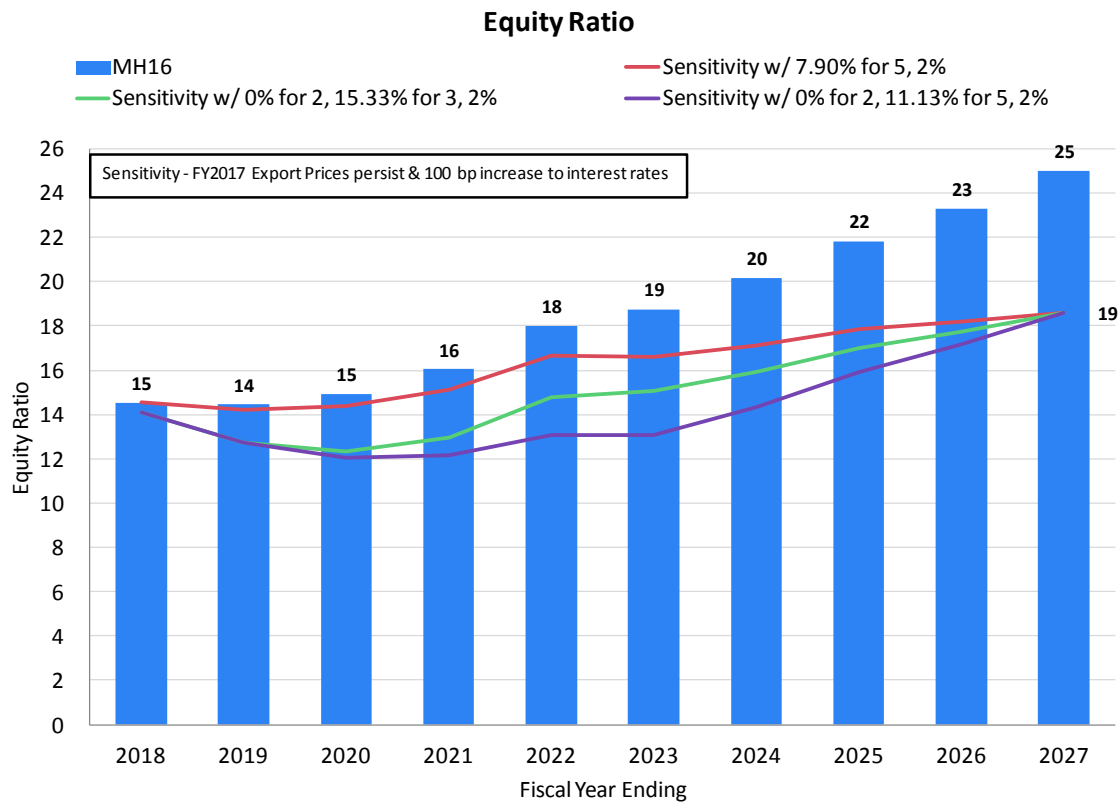
4
5 Manitoba Hydro's financial plan requires both the savings from internal cost reductions
6 and incremental domestic revenues from the proposed rate increases in order to offset
7 the forecast weakness in export earnings, the revised outlook for the Keeyask project,
8 deterioration of domestic load and to improve its financial performance. Manitoba
9 Hydro cannot assure its financial stability if the benefits of internal cost reduction
10 programs are immediately refunded to customers through reductions in the allowed
11 level of rate increase.

12
13 The Corporation's financial plan will serve to provide the ratepayers the benefit of a
14 return to inflationary levels of rate increases after 5 years instead of 12 years as shown
15 in MH15. Approvals of rate increases less than the requested 7.9% in the test years will
16 only service to increase pressure on future rate increases, particularly if key risks are
17 present.

18
19 As shown in **Figure 2.36** below, should interest rates rise by 100 bp in 2017/18 and
20 export prices remain consistent with levels seen since the financial crisis through to
21 2016/17, even with the proposed rate increases, Manitoba Hydro will only modestly
22 improve its equity capitalization to 19% by the end of the 10-year period. Without rate
23 increases in the two test years, rates would either need to be over 15% per year for
24 three years (2019/20 through 2021/22) or over 11% per year for five years (2019/20
25 through 2023/24) before returning to inflationary rate increases to match the 19%
26 equity capitalization by the end of the 10-year period which, in itself, reflects a
27 significant underperformance against Manitoba Hydro's financial plan.

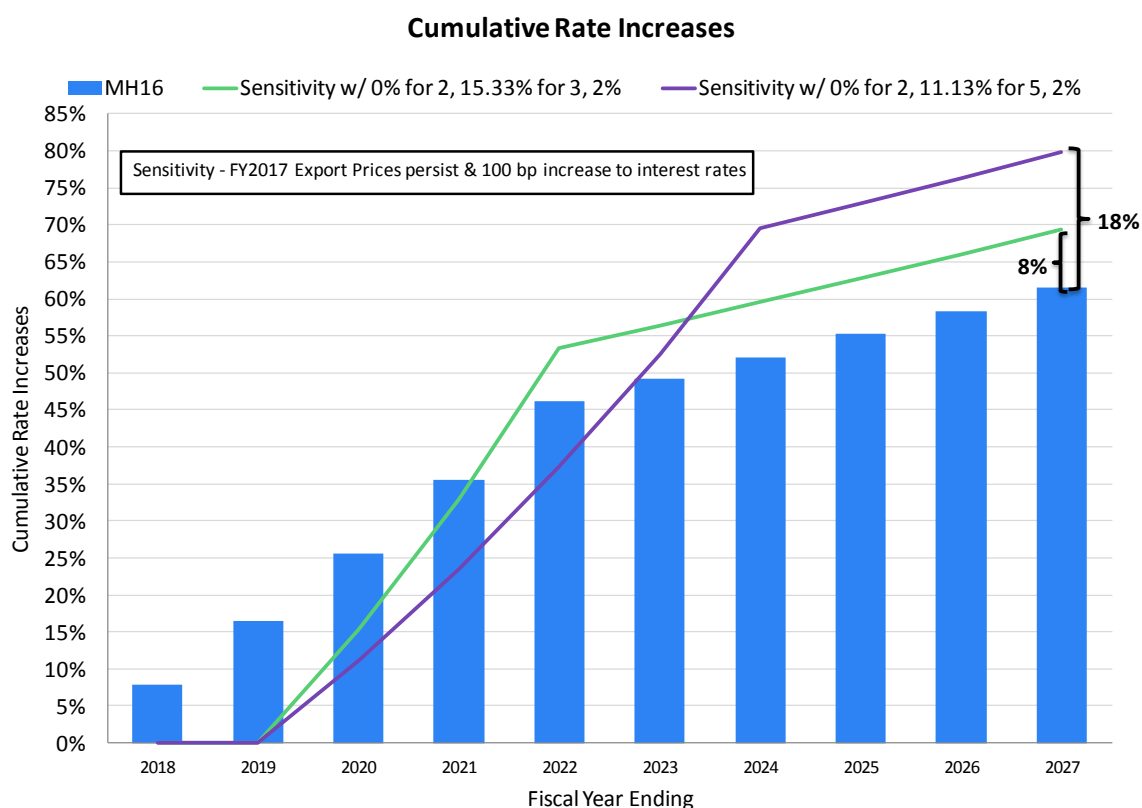
28

1 **Figure 2.36 Equity Ratio – Sensitivity Analysis**



2
3
4 Approval of rate increases less than the requested 7.9% in the two test years will likely
5 result in higher rate increases in later years and/or delay the return to inflationary level
6 rate increases. **Figure 2.37** shows that without rate increases in the two test years, rates
7 could be as much as 8% to 18% higher than what is being proposed by the end of the
8 10-year period should interest rates increase and export prices remain flat.
9

Figure 2.37 Cumulative Rate Increase Scenarios – Sensitivity Analysis



Therefore, it is necessary to reset the threshold for required rate increases over the upcoming five years in order to provide sufficient financial support and stability for Manitoba Hydro.