

Volume 1 – Board Counsel’s Book of Documents

NFAT Review

Subject: Mr. Scott Thomson, Manitoba Hydro CEO, Presentation

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Terms of Reference - Needs For and Alternatives To (NFAT) Review

NFAT review for Manitoba Hydro's proposed preferred development plan for the Keeyask and Conawapa Generating Stations, their associated domestic AC transmission facilities and a new Canada-USA transmission interconnection

INTRODUCTION

On January 13, 2011, the Government of Manitoba notified Manitoba Hydro (Hydro) of its intention to carry out a public Needs For and Alternatives To (NFAT) review and assessment of the corporation's proposed preferred development plan (Plan) for major new hydro-electric generation and Canada-USA interconnection facilities using an independent body.

On November 15, 2012 the Minister of Innovation, Energy and Mines announced that the Government of Manitoba had asked the Manitoba Public Utilities Board (PUB) to conduct the NFAT for the Keeyask and Conawapa Generating Stations and their associated transmission facilities. This document, including Appendix A, outlines the Terms of Reference for the NFAT.

THE PLAN

Hydro's Plan is intended to meet a growing provincial demand for electricity and take advantage of opportunities to export power to US customer utilities. The Plan includes the Keeyask and Conawapa Generating Stations, their associated domestic AC transmission facilities and a new Canada-USA transmission interconnection. Hydro has stated that its Plan is being brought forward now to take advantage of the proposed Canada-USA interconnection and long-term firm export sale opportunities that occur rather infrequently. Hydro's Plan is dependent upon developing a new transmission interconnection into the USA and entering into long-term firm export sales with US-based electric utilities Minnesota Power and Wisconsin Public Service.

Hydro asserts that the Plan will provide significant benefits to Manitobans. Hydro also asserts that the value proposition of its Plan is justified on a very broad basis, taking into consideration inherent uncertainties that exist over a reasonable range of future possible critical inputs into its business case, and that it is the best development option when compared to alternatives.

MANDATE

The NFAT will be conducted under the authority of Section 107 of *The Public Utilities Board Act* ("The PUB Act"). PUB members designated by the Chair to conduct the NFAT under section 15(6) of The PUB Act will constitute the NFAT Panel (the "Panel"). Panel members will exercise their duty to conduct the assigned NFAT in accordance with The PUB Act and these Terms of Reference.

For greater certainty, in conducting the NFAT, the Panel members who are designated by the Chair to conduct the review:

- (a) may hear evidence *in camera* for the purpose of protecting Commercially Sensitive Information as defined in Appendix A, which forms a part of these Terms of Reference;

- (b) may exercise discretion over the access of any person to Commercially Sensitive Information; and
- (c) shall follow the Rules of Practice and Procedure of the PUB, as amended from time to time, if not otherwise dealt with under these Terms of Reference.

At the completion of its review, the Panel will provide a report to the Minister responsible for the administration of *The Public Utilities Board Act* (currently the Minister of Healthy Living, Seniors and Consumer Affairs) no later than June 20, 2014. The report will include recommendations to the Government of Manitoba on the needs for Hydro's preferred development Plan and an overall assessment as to whether or not the Plan is in the best long-term interest of the province of Manitoba when compared to other options and alternatives.

PUBLIC PARTICIPATION

The public will be encouraged to provide input and comment on the Plan as part of the NFAT.

SCOPE OF THE NFAT REVIEW

The Panel will review and assess the needs for and alternatives to Hydro's Plan. Its assessment will be based upon the evidence submitted by Hydro, intervenors and independent expert consultants used by PUB to assist in the NFAT. The Panel's report to the Minister will address the following items:

1. An assessment as to whether the needs for Hydro's Plan are thoroughly justified, and sound, its timing is warranted, and the factors that Hydro is relying upon to prove its needs are complete, reasonable and accurate. The assessment will take the following factors into consideration:
 - a. The alignment of the Plan to Hydro's mandate, as set out in Section 2 of *The Manitoba Hydro Act*.
 - b. The alignment of the Plan to Manitoba's Clean Energy Strategy and the Principles of Sustainable Development as outlined in *The Sustainable Development Act*.
 - c. The extent to which the Plan is needed to address reliability and security requirements of Manitoba's electricity supply.
 - d. The reasonableness, thoroughness and soundness of all critical inputs and assumptions Hydro relied upon for its justification of its needs. This should include Hydro's planning load forecast and future load scenarios, its demand and supply analysis, export expectations and commitments, and demand side management and conservation forecasts.
2. An assessment as to whether the Plan is justified as superior to potential alternatives that could fulfill the need. The assessment will take the following factors into consideration:
 - a. If preferred and alternative resource and conservation evaluations are complete, accurate, thorough, reasonable and sound;
 - b. The alignment of the Plan and alternatives to Manitoba's Clean Energy Strategy, *The Climate Change and Emissions Reduction Act* and the Principles of Sustainable Development as outlined in *The Sustainable Development Act*;

- c. The accuracy and reasonableness of the modeling of export contract sale prices, terms, conditions, scheduling provisions, export transmission costs, and the reasonableness of projected revenues;
- d. The reasonableness of forecasted critical inputs including construction costs, opportunity export revenues, future fuel prices, electricity market price forecasts, the determinants of those values, and export volumes;
- e. The reasonableness of the scope and evaluation of risks and the benefits proposed to arise from the development and the reasonableness and the reliability of Hydro's interpretation of the most likely future outcomes as a result of climate changes, interest rate fluctuations, export market prices, domestic load fluctuations, droughts, competing technologies, fuel prices, carbon pricing, technology developments, economic conditions, Hydro's transmission positions and other relevant factors;
- f. The impact on domestic electricity rates over time with and without the Plan and with alternatives;
- g. The financial and economic risks of the Plan and export contracts and export opportunity revenues in relation to alternative development strategies;
- h. The socio-economic impacts and benefits of the Plan and alternatives to northern and aboriginal communities;
- i. The macro environmental impact of the Plan compared to alternatives;
- j. If the Plan has been justified to provide the highest level of overall socio-economic benefit to Manitobans, and is justified to be the preferable long-term electricity development option for Manitoba when compared to alternatives.

Independent Expert Consultants

The Panel shall establish a process for the thorough review of any information that the Panel determines to be relevant to the conduct of the NFAT, including relevant Commercially Sensitive Information, as defined in Appendix A, subject to these Terms of Reference.

The Panel may use one or more independent expert consultant(s) for the purpose of the NFAT. In addition to such other questions and issues as the Panel may determine they should examine, the independent expert consultant(s) shall be expected to critically examine the following:

- (a) the high level forecasts of export revenues that are filed by Hydro and whether the forecasts appropriately and accurately reflect the export contracts, including Commercially Sensitive Information.
- (b) the accuracy and reasonableness of Hydro's approach to producing an assessment of financial risks (including drought), the assessment of which is derived using Commercially Sensitive Information;
- (c) the appropriateness and correct application of methodologies that cannot be publicly disclosed by MH because they contain Commercially Sensitive Information, such as whether Hydro's approach to comparing generation sequences follows sound industry practice;

(d) whether high level summaries filed by Hydro of Net Present Values and Internal Rates of Return which are derived from Commercially Sensitive Information reflect sound assumptions and calculations; and

(e) the accuracy and soundness of Hydro's calculation of a consensus forecast of future market prices for electricity and fuels which is derived from Commercially Sensitive Information.

The PUB shall hire the independent expert consultant(s).

The independent expert consultant(s) shall provide a report(s) to be filed in evidence on the public record, which shall contain their analysis of the submissions filed by Hydro, with sufficient information to satisfy the Panel that the review was conducted with due diligence. The report(s) shall not draw conclusions as to the needs for or alternatives to the Plan, which is the role of the Panel.

The independent expert consultant(s) shall be available for cross-examination at the public hearing, and shall be available as a resource to legal counsel for registered intervenors as deemed necessary by the PUB to prepare for the cross-examination of Hydro witnesses on Commercially Sensitive Information.

The independent expert consultant(s) may also provide such advice to the Panel, and file such report(s) with the Panel *in camera*, that contain, reference, or analyse Commercially Sensitive Information in sufficient detail to satisfy the Panel. Cross-examination of the independent expert consultant(s) on such issues shall be permitted *in camera*.

The independent expert consultant(s) shall not quote in their publicly filed report(s) Commercially Sensitive Information or information that would enable a third party to reverse-engineer Commercially Sensitive Information ("reverse-engineer" means to discover, synthesize or otherwise recreate the Commercially Sensitive Information following a detailed examination). No public cross-examination of the independent expert consultant(s) shall take place with respect to Commercially Sensitive Information. The independent expert consultant(s) will be required to execute a non-disclosure agreement satisfactory to Hydro and the Panel.

NOT IN SCOPE

The following items are not in the scope of the NFAT:

- The Bipole III transmission line and converter station project;
- The Pointe Du Bois project;
- The commercial arrangements between Hydro and its aboriginal partners for the development of the proposed hydro-electric generating facilities (the impacts of these are included in the cost of the projects that are part of the Plan);
- The environmental reviews of the proposed projects that are part of the Plan, including Environmental Impact Statements (these will be conducted through individual processes by the Manitoba Clean Environment Commission ("CEC"), and where possible the impacts of the matters to be considered by the CEC are included in the costs of the projects that are part of the Plan);
- Aboriginal consultation pursuant to Section 35 of the *Constitution Act* (this is conducted as a separate Crown-Aboriginal consultation process);

- Any past Hydro development proposals or government assessments of past development proposals, including past NFATs;
- Historic environmental costs.

Appendix A

PROVISIONS FOR THE PROTECTION OF COMMERCIALY SENSITIVE INFORMATION:

Transparency

The Panel is directed to conduct the NFAT in a transparent and public process. However, in conducting the NFAT, the Panel is to ensure adequate protection of any information the disclosure of which may reasonably be expected to cause undue financial loss to Manitoba Hydro (“Hydro”) or any of its contractual counterparties or to harm significantly Hydro’s or its contractual counterparties’ or domestic customers’ competitive position, including, but not limited to, any sections of the following documents containing such information (collectively, “Commercially Sensitive Information”):

- (a) any and all export contracts and term sheets now or hereafter in existence for the purchase and sale of power and energy entered into between Hydro and its customers in the United States of America, including but not limited to the export contracts and term sheets commonly described as follows: Minnesota Power 250 MW Energy Exchange Agreement; Minnesota Power 250 MW Power Sale Agreement; Wisconsin Public Service 100 MW Power Sale Agreement; Wisconsin Public Service 108 MW Energy Sale Agreement; Wisconsin Public Service Term Sheet, Northern States Power 375/325 MW System Power Sale Agreement; Northern States Power 125 MW System Power Sale Agreement, and Northern States Power 350 MW Seasonal Diversity Agreement (collectively, “Export Contracts”);
- (b) the internal, non-public load forecast prepared by Hydro on an annual basis (collectively, “Load Forecast”); and
- (c) the Hydro document dated September 24, 2010 titled “THE 2010/11 POWER RESOURCE PLAN, Report PPD #10-07” and any further existing or future power resource plans hereinafter developed by Hydro (collectively, “Power Resource Plan”)

Document Filings and Evidence

In conducting the NFAT, the Panel shall be able to require the production, from Hydro, of any documents and other such evidence as the Panel determines to be relevant to the conduct of the NFAT within the scope of the Terms of Reference from the Province of Manitoba. The procedures for filings and evidence shall be as set out below:

- (a) Public Filings

Any documents that do not contain Commercially Sensitive Information are to be filed on the public record. As part of its NFAT submission Hydro shall file on the public record copies of its Export Contracts, Load Forecast and Power Resource Plan, with details considered by Hydro to be Commercially Sensitive Information redacted.

To the extent that information necessary for the conduct of the NFAT cannot be made public due to the presence of Commercially Sensitive Information, Hydro shall file on the

public record high level summaries and reports that incorporate the relevant information, at a level of summary and aggregation which will not disclose Commercially Sensitive Information.

Any evidence before the Panel shall be public, other than evidence with respect to Commercially Sensitive Information, which testimony shall be received in camera as further described in (b) below. To the extent that it deems practical, the Panel shall limit the scope of *in camera* proceedings so that the major issues in the NFAT review can be canvassed and discussed in public.

(b) Confidential Filings

Any documents that the Panel determines to be relevant but that contain Commercially Sensitive Information are to be filed with the Panel in confidence in unredacted form, including unredacted copies of the Export Contracts, Load Forecast and Power Resource Plan.

On an *in camera* basis, the Panel may:

- i) review the complete, unredacted versions of Hydro documents that contain Commercially Sensitive Information; and
- ii) permit evidence with respect to Commercially Sensitive Information.

Access to In Camera Evidence

Based on the *in camera* review, the Panel may choose to publish findings and conclusions about export revenues, forecast market prices and the like, to inform the public discussion and serve as inputs to further analysis and review by participants at the public hearing, or it may choose to reserve comment until the conclusion of the hearing.

The documents filed and evidence adduced *in camera* shall not be made public, other than through the high-level summaries as described above, and shall only be disclosed to or shared with the following persons, on the terms and conditions as noted below:

1. Members of the Panel, the Board's Executive Director and Board staff may review Commercially Sensitive Information and participate in the *in camera* process for the purpose of carrying out their specific duties with respect to the NFAT without having to sign an undertaking or a non-disclosure agreement.
2. Legal counsel of record of the Board and counsel for registered interveners may review Commercially Sensitive Information and participate in the *in camera* process upon execution of an undertaking to the Panel in a form agreeable to the Panel and Hydro.
3. Any independent consultant(s) appointed by the Panel and any non-staff Panel advisors with a need to know, as determined by the Chair, may review Commercially Sensitive Information and participate in the *in camera* process upon execution of a non-disclosure agreement in a form agreeable to the Panel and Hydro.

Subject to the following dispute resolution provision, the Panel will not publish Commercially Sensitive Information in Orders or other public documents or include information that would enable a third party to reverse engineer Commercially Sensitive Information. The Panel will establish procedures to protect the documents and evidence from inadvertent disclosure and will instruct each individual who receives access to do the same. If the Panel so chooses, it may solicit Hydro's comments on particular documents that are in the process of being prepared in the interests of avoiding inadvertent disclosures.

Dispute Resolution Regarding Commercially Sensitive Information

If, during the in camera review, the Panel identifies any Commercially Sensitive Information, other than third party proprietary price forecasts, which the Panel considers would be beneficial to place on the public record at the NFAT, the Panel may refer those matters in dispute to a neutral third party to be agreed upon between the Panel and Hydro. The third party will receive written submissions and make a decision thereon, on an expedited basis, which decision will be given effect to in the proceedings before the Panel. In arriving at any such decision, the neutral third party shall specifically take into account the general undesirability of making disclosure of any Commercially Sensitive Information that may have been furnished to Hydro by third parties, in reliance upon contractual commitments by Hydro to maintain confidentiality, and the importance of maintaining such confidences.

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MH Development Plans – NFAT Chapter 9 Table 9.3

Plan Number	Development Plan Short Name	Description of Development Plan
1	All Gas	Natural Gas -Fired Generation starting in 2022/23
2	K22/Gas	Keeyask 2022/23, Natural Gas -Fired Generation starting in 2029/30
3	Wind/Gas	Wind Generation starting in 2022/23 supported by Natural Gas -Fired Generation starting in 2025/26
4	K19/Gas24/250MW	Keeyask 2019/20, Natural Gas -Fired Generation starting in 2024/25, 250MW Export/50 MW Import U.S. Interconnection 2020/21, 250 MW MP Sale
5	K19/Gas25/750MW (WPS Sale & Inv) ²	Keeyask 2019/20, Natural Gas -Fired Generation starting in 2025/26, 750MW Import/Export U.S. Interconnection 2020/21, 250 MW MP Sale , Proposed 300 MW WPS Sale
6	K19/Gas31/750MW	Keeyask 2019/20, Imports , Natural Gas -Fired Generation starting in 2031/32, 750 MW Import/Export U.S. Interconnection 2020/21, 250 MW MP Sale
7	SCGT/C26	Simple Cycle Gas Turbine in 2022/23, Conawapa 2026/27, Natural Gas -Fired Generation starting in 2038/39
8	CCGT/C26	Combined Cycle Gas Turbine in 2022/23, Conawapa 2026/27, Natural Gas -Fired Generation starting in 2039/40
9	Wind/C26	Wind in 2022/23, Conawapa 2026/27, Natural Gas -Fired Generation starting in 2036/37
10	K22/C29	Keeyask 2022/23, Conawapa 2029/30, Natural Gas -Fired Generation starting in 2040/41
11	K19/C31/250MW	Keeyask 2019/20, Natural Gas -Fired Generation starting in 2024/25, Conawapa 2031/32, 250 MW Export/50 MW Import U.S. Interconnection 2020/21, 250 MW MP Sale
12	K19/C31/750MW	Keeyask 2019/20, Imports , Conawapa 2031/32, Natural Gas -Fired Generation starting in 2041/42, 750 MW Import/Export U.S. Interconnection 2020/21, 250 MW MP Sale
13	K19/C25/250MW	Keeyask 2019/20, Conawapa 2025/26, Natural Gas -Fired Generation starting in 2040/41, 250 MW Export/50 MW Import U.S. Interconnection 2020/21, 250 MW MP Sale
14	K19/C25/750MW (WPS Sale & Inv) ² Preferred Development Plan	Keeyask 2019/20, Conawapa 2025/26, Natural Gas -Fired Generation starting in 2041/42, 750 MW Import/Export U.S. Interconnection 2020/21, 250 MW MP Sale , Proposed 300 MW WPS Sale
15	K19/C25/750MW	Keeyask 2019/20, Conawapa 2025/26, Natural Gas -Fired Generation starting in 2041/42, 750 MW Import/Export U.S. Interconnection 2020/21, 250 MW MP Sale

² Inv refers to WPS investment in the U.S. portion of the 750 MW interconnection facilities

Preferred Development Plan (Plan 14):

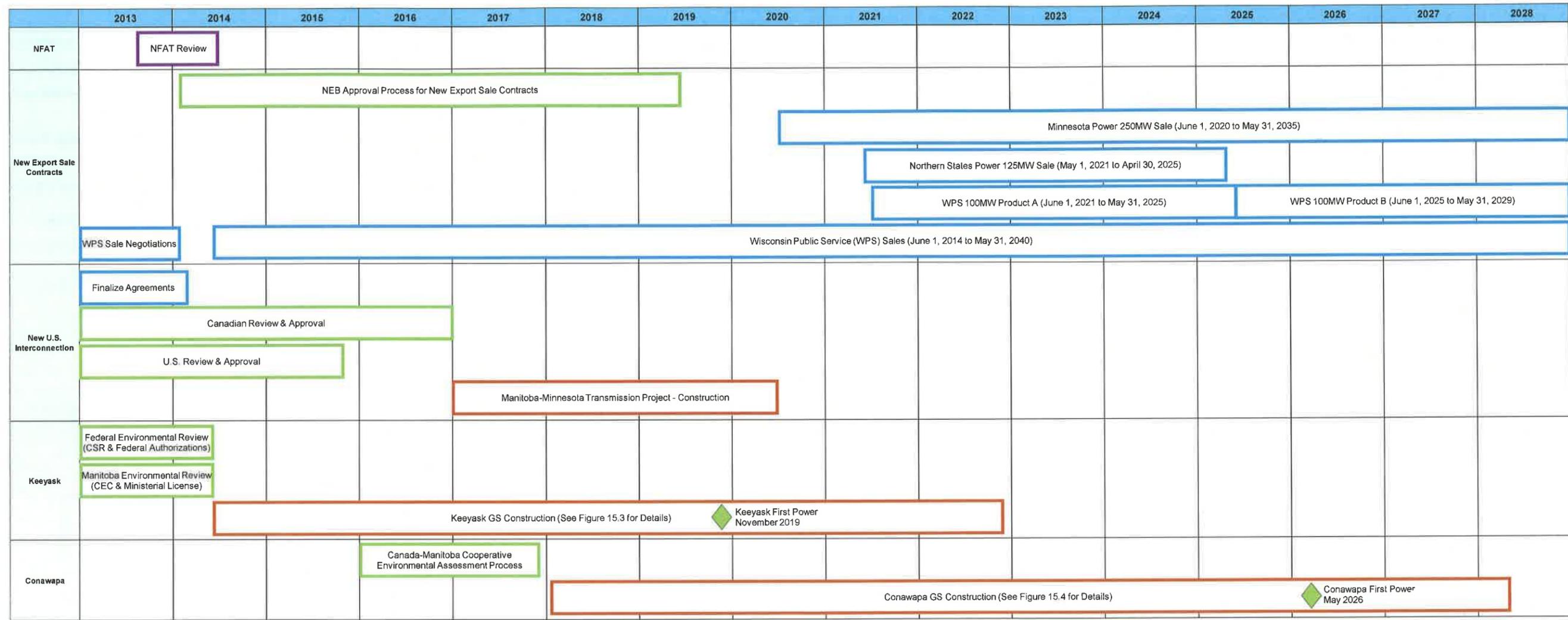
Manitoba Hydro is seeking government approval for its Preferred Development Plan, which requires the following commitments in June 2014:

- start construction of the Keeyask generating station for a 2019 in-service date (ISD)
- proceed with a 250 MW export agreement with Minnesota Power (MP)
- proceed with a 100 MW export agreement with Wisconsin Public Service (WPS)
- proceed with a 750 MW U.S. transmission interconnection
- proceed with a 300 MW export agreement with WPS subject to satisfactory conclusion of negotiations currently still underway.

The plan includes:

- Keeyask G.S., 695 MW, ISD of 2019 (\$6.2 billion)
- Conawapa G.S., 1,485 MW, with an earliest ISD of 2026 (\$10.2 billion)
- Manitoba-Minnesota transmission line – 500 kV AC, 750 MW (\$350 million + 40% of \$700 million)
- Transmission system improvements to increase the capacity of the North-South AC system, with ISD coincident with ISD of final units of Conawapa (\$500 million)

1 **Figure 15.1 MANITOBA HYDRO IMPLEMENTATION SCHEDULE – PREFERRED DEVELOPMENT PLAN**



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MH Export Contracts after 2015

Customer	Contract Name	Capacity (MW)	Period	Type	Term	Contingent Upon	Status
Minnesota Power	MP 250	250		System Participation	June 1, 2020 to May 31, 2035	Keeyask G.S. and New U.S. Interconnection	Signed
	MP Energy Exchange ¹	0		Energy Exchange	June 1, 2020 to May 31, 2035	Keeyask G.S. and New U.S. Interconnection	Signed
	MP 50	50		System Participation	May 1, 2015 to May 31, 2020	Not contingent	Signed
Northern States Power	NSP 125	125		System Participation	May 1, 2021 to April 30, 2025	New Hydro	Signed
	NSP 375/325 SPS	375 summer / 325 winter		System Participation	May 1, 2015 to Apr 30, 2025	Not contingent	Signed
	NSP 350 Diversity Exchange	350		Energy Exchange	May 1, 2015 to Apr 30, 2025	Not contingent	Signed
Wisconsin Public Service	WPS 100 Product A	100		System Participation	June 1, 2021 to May 31, 2025	Keeyask G.S.	Signed
	WPS 100 Product B	0		Surplus Energy	June 1, 2025 to May 31, 2029	Keeyask G.S.	Signed
	WPS	Up to 300		System Participation and Surplus Energy	June 1, 2014 to May 31, 2040	New Hydro and New U.S. Interconnection	Under Discussion
Great River Energy	GRE Diversity Exchange	200		Energy Exchange	Nov 1, 2014 to Apr 30, 2030	Not contingent	Signed
SaskPower	SaskPower 25	25		System Participation	Nov 1, 2015 to May 31, 2022	Not contingent, early termination provision	Under Discussion

Sources: Chapter 6 Table 6.4; MH Export Contract Term Sheets (Public)

Note 1: Energy Exchange may be expanded; needs to be confirmed

Note 2: This contract or term sheet is not available on MH's website, although there may be a public version available

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C.C.S.M. c. H190
The Manitoba Hydro Act

Purposes and objects of Act

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

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

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

S.M. 1997, c. 55, s. 3.

Approval of L.G. in C. required where aggregate value exceeds \$5,000,000

15(1.3) The corporation or any subsidiary shall not, without the approval of the Lieutenant Governor in Council,

(a) carry out the purposes and objects of the Act; or

(b) carry on a related business venture;

by way of a partnership, joint venture or any similar arrangement, with any other person, or by way of a company in which the corporation or a subsidiary owns shares or securities, wherein the aggregate value of the investments of the corporation and any subsidiary in, and the obligations of the corporation and any subsidiary to, such partnership, joint venture, company or similar arrangement, with any other person, exceeds \$5,000,000.

Powers of corporation with approval of L.G. in C.

16(1) With the approval of the Lieutenant Governor in Council the corporation may

(d) within such territorial or other limits as the Lieutenant Governor in Council may from time to time prescribe, control and regulate the development, generation, transmission, distribution, and supply, of power in Manitoba,

(g) acquire for use in Manitoba power generated outside Manitoba by the government of any other province, or of any state of the United States, or by any person in that other province or state;

(i) sell, lease or otherwise dispose of any property of the corporation to a subsidiary or make any other investment in, or incur any obligation to, a subsidiary, where the aggregate value of the property, investments and obligations to the subsidiary exceeds \$5,000,000.;

(i.1) develop new power generation stations;

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Corporate Strategic Plan

Published November 2013



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This photo, courtesy of Lawrence Janzen (Dorsey/Riel converter stations) shows the Riel terminal station on September 19, 2013 during commissioning of the bay and structure lights in the 230-kilovolt north yard. The Riel Reliability Improvement Initiative is key to Manitoba Hydro's commitment in maintaining a reliable supply of electricity.





Message from the President & CEO

Manitoba Hydro's Corporate Strategic Plan (CSP) is the primary tool for the Executive Committee and Manitoba Hydro-Electric Board to establish, communicate and drive corporate priorities and strategy within the organization. The CSP is dynamic and designed to reflect the evolving nature of the energy industry within which Manitoba Hydro operates. It will be updated and re-published every three years unless changes to the strategic direction prompt a need for an earlier revision.

Most people flip a switch or turn up the thermostat without much thought as to where the energy behind it comes from. In the past year we have initiated a discussion with customers to consider what lies behind the switch. To provide a reliable supply of electricity and natural gas to meet the current and future energy needs of the province we must invest to renew, upgrade and construct new infrastructure.

Our plan continues the proven strategy of developing this province's clean, renewable hydro resources and building interconnections to leverage the associated export sale opportunities while enhancing reliability. To meet the province's energy needs, the most economic options are pursued which continue to include aggressively pursuing demand side options. We are investing in a powerful future for Manitoba, ensuring the next generation will continue to enjoy the benefits of affordable, reliable and sustainable electricity when they need it.

As a Crown Corporation, Manitoba Hydro is committed to being an outstanding corporate citizen. We aspire to create positive relationships with our customers, employees and all stakeholders. The Corporation works closely with economic development agencies to attract new business, encourage expansion of existing businesses and to retain existing customers. Through purchasing, investments and job creation, Manitoba Hydro is a significant contributor to economic development in communities province-wide.

I am proud of our company and its achievements. I know the future promises to be an exciting and challenging one. I'm confident that our employees will continue to do what they've always done – take personal responsibility for their own contributions and embrace these new challenges head on.

 A handwritten signature in black ink, appearing to read "Scott Thomson".

Scott A. Thomson, CA
President & CEO

Meeting Manitobans' long-term energy needs

Electricity

The Manitoba demand for electricity is continuing to grow and new energy sources are required. This is a direct result of Manitoba's continued economic growth through:

- Increases in population and related services;
- Higher average energy usage per residential customer;
- Continued Manitoba industrial and commercial customer expansion.

To meet this increased demand, Manitoba Hydro's plan continues to include aggressively pursuing demand side options and developing clean, renewable hydro resources. It also includes new transmission interconnection and distribution infrastructure to deliver power to Manitoba customers with enhanced access to export markets.

The plan includes:

- Power Smart* energy conservation programs (> 800 MW in planned cumulative capacity savings);
- Keeyask generation, 695 MW;
- Conawapa generation, 1 485 MW;
- Transmission associated with Keeyask and Conawapa;
- Investment in a significant portion of existing infrastructure to renew and upgrade the electric system to improve the reliability of supply.
- Additional transmission import/export capacity to Minnesota and Wisconsin;
- New major export sales.



* Manitoba Hydro is a licensee of the Trademark and Official Mark.

Left: One of three transformers moving through the streets of Winnipeg to the Riel station in Springfield. They were installed as part of Manitoba Hydro's reliability improvements on its 500-kilovolt line linking Manitoba and Minnesota.

Meeting Manitobans' long-term energy needs

Electricity (continued from page 4)

This plan, relative to alternative options:

- Results in the overall highest net benefits to Manitoba Hydro and lowest long-term domestic rates for Manitobans;
- Supports Manitoba Hydro's long-term fiscal health;



Above: About 96 per cent of the electricity Manitoba produces each year – 30 billion kilowatt-hours on average – is clean, renewable power generated at 15 hydroelectric generating stations on the Nelson, Winnipeg, Saskatchewan, Burntwood and Laurie rivers.

- Protects customer service by providing the highest level of system reliability and energy security;
- Supports risk management and flexibility to respond to changing conditions such as higher or lower load growth, uncertainty in level of future demand side management (DSM), changes in river flows due to climate change and additional export market opportunities;
- Provides the highest financial benefit and offers the highest socio-economic benefits (including employment and provincial economic growth) to Manitobans;
- Provides the most beneficial package of socio-economic impacts and benefits to northern and aboriginal communities through training, employment, business opportunities, income sharing and participation in environmental and socio-economic protection;
- Capitalizes on Manitoba's valuable endowment of renewable hydropower rather than imported non-renewable resources;
- Supports Manitoba's Clean Energy Strategy and sustainable development principles by providing clean renewable energy and a legacy for future generations.

The plan incorporates different pathways to allow for future flexibility in adjusting the plan based on changing conditions. A pathway consists of:

- A choice to embark upon an initial development plan today;
- A sequence of decision points that will occur in the future as information modifies or eliminates current uncertainties, such as price forecasts for natural gas and exports and approvals of new interconnections;
- Examples of alternative plans or changes to the initial plan that can be chosen to respond to emerging realities.

A pathway represents the initial decision to commit to one development plan at the outset but not an obligation to rigidly see that plan through regardless of circumstances. Load growth, Power Smart plans, export contracts, natural gas price forecasts, export price forecasts, greenhouse gas restrictions, capital cost estimates, interest rates and other parameters will be continually monitored and reviewed.

Decisions for future power generation and transmission and distribution system development will depend on the best information available at that time. If circumstances warrant, the plan will be modified at key decision points.

Meeting Manitobans' long-term energy needs

Trends and factors influencing the North American energy markets

Composition of energy supply

The need for new generation in the United States and Canada is expected to be driven by modest load growth and the replacement of a portion of the aging generation fleet. Electricity demand in both Canada and the United States will continue to increase over the resource planning horizon, with the majority of this growth driven by increased residential and commercial consumption.

Energy and environmental considerations and policies are and will continue to be major factors influencing resource choices

and market price for electricity. Global interest and attention to environmental issues and the effects of climate change could have profound impact on the energy industry and provide an opportunity for Manitoba Hydro.

Renewable Portfolio Standards (RPS) exist in many states to encourage the development of renewable electricity generation. These policies require a certain proportion of energy served to be delivered from eligible renewable sources. To the extent that these types of programs include Canadian

hydropower as an eligible resource, they would provide an additional incentive to buy electricity from Manitoba.

Recent developments in oil and gas extraction technologies have significantly increased the availability of these resources. The growth of shale gas production has resulted in an abundant new United States energy supply source. When combined with the economic slowdown, these factors have changed the long-term outlook for North American domestic natural gas prices and may impact both customer and utility options. While many utilities will choose to develop natural gas generation, they are likely to continue to seek out emission-free alternatives in order to diversify their portfolio of resources, mitigate expected natural gas price uncertainty and volatility, protect against future carbon price liabilities, and improve environmental performance.



Left: The Nelson River featuring Long Spruce Generating Station with Kettle Generating Station in the background.

6



20 YEAR FINANCIAL OUTLOOK

2009/10 – 2028/29

FINANCIAL PLANNING
CONTROLLER DIVISION
FINANCE & ADMINISTRATION

January, 2010

OVERVIEW

The 20 Year Financial Outlook is an extension to the Integrated Financial Forecast IFF09-1 which was approved by the Manitoba Hydro-Electric Board on November 19, 2009. The 20 Year Financial Outlook depicts the long-term financial direction of Manitoba Hydro based on current assumptions of future events.

The first decade of the 20 Year Financial Outlook (the decade of investment) shows the financial impacts of major investments in new generation and transmission. Financial ratios are projected to weaken slightly in the first decade but rebound strongly in the second decade (the decade of returns). Domestic rate increases are projected to range from 2.9% to 3.5% per year in the first decade, then drop to 2.0% per year for the entire second decade. Equity (retained earnings) is projected to remain strong throughout the period, rising from \$2.2 billion at March 31, 2010 to \$11.2 billion at the end of 20 years. Drought remains one of the major risks with a repeat of the worst 5 year drought on record projected to cost \$2.4 billion (assuming drought commencing in 2011/12).

KEY ASSUMPTIONS

The key assumptions included in the 20 Year Financial Outlook reflect similar assumption as the 11 year IFF and include the following:

1) Domestic Load Growth

Domestic electricity load will grow at an average of 1.5% per year for net firm energy to 2019/20 and then 1.3% per year to 2028/29. Net total peak demand grows at an average of 1.3% per year over the 20 Year Financial Outlook to 2028/29.

Natural gas volumes are projected to decline approximately 0.2% per year over the 20 Year Financial Outlook to 2028/29.

2) Domestic Rate Increases

Average electricity rate increases of 2.9% per year are projected in 2010/11 and 2011/12 followed by 3.5% per year to 2019/20. Average electricity rate increases then drop to 2%, consistent with long-term projected inflation, for the last 9 years of the 20 Year Financial Outlook.

Natural gas rate increases are projected to be only the rates necessary to generate net income of approximately \$3 to \$6 million per year (rate increases average less than 1% per year).

2009 20 YEAR FINANCIAL OUTLOOK

3) Inflation

The Manitoba Consumers Price Index is projected to increase at an average 2% per year commencing in 2011/12.

4) Interest Rates

The very low current short and long-term interest rates are projected to rise over the next 12 to 18 months with long-term rates reaching 6.10% by 2013/14 (excluding the debt guarantee fee of 1.0%) and then remain constant to 2028/29.

5) Foreign Exchange Rates

The US-Canadian exchange rate is projected to rise from the current level of 1.03 (\$1.00 US = \$0.97 Cdn) to 1.07 in 2012/13, 1.14 in 2016/17 and 1.15 by 2023/24.

6) Export Sales Contracts

The term sheets negotiated for the 15 year 500 MW Wisconsin Public Service sale (commencing in 2018) and the 14 year 250 MW Minnesota Power sale (commencing in 2022) will be finalized into long-term contracts. The 10 year Northern States Power contract extension of 375MW to 500MW (commencing in 2015) will also be finalized.

7) Carbon Pricing

Electricity export prices reflect anticipated greenhouse gas legislation and regulation which will likely impose significant constraints on emissions and will result in upward pressures on future market prices for electricity.

8) Capital Expenditures

Investments in new property, plant and equipment are projected to be significant during the first decade with major expenditures on Wuskwatim, Keeyask, Conawapa and Bipole 3 (total capital expenditures to 2019/20 projected to be \$16.5 billion). The second decade will see the completion of Conawapa in 2022/23 plus the addition of new transmission to the US. No other new major generation and transmission projects are forecast in the second decade of the forecast. Figure 1 illustrates projected capital expenditures by major categories including new major generation & transmission, gas and other electric capital requirements including system refurbishment and upgrades necessitated by aging infrastructure.

NET INCOME AND FINANCIAL TARGETS

Projected consolidated net income, equity ratios, interest coverage ratios, and capital coverage ratios for the 20 Year Financial Outlook are depicted in Table 1 and Figures 2 to 5.

Table 1
20 YEAR FINANCIAL OUTLOOK

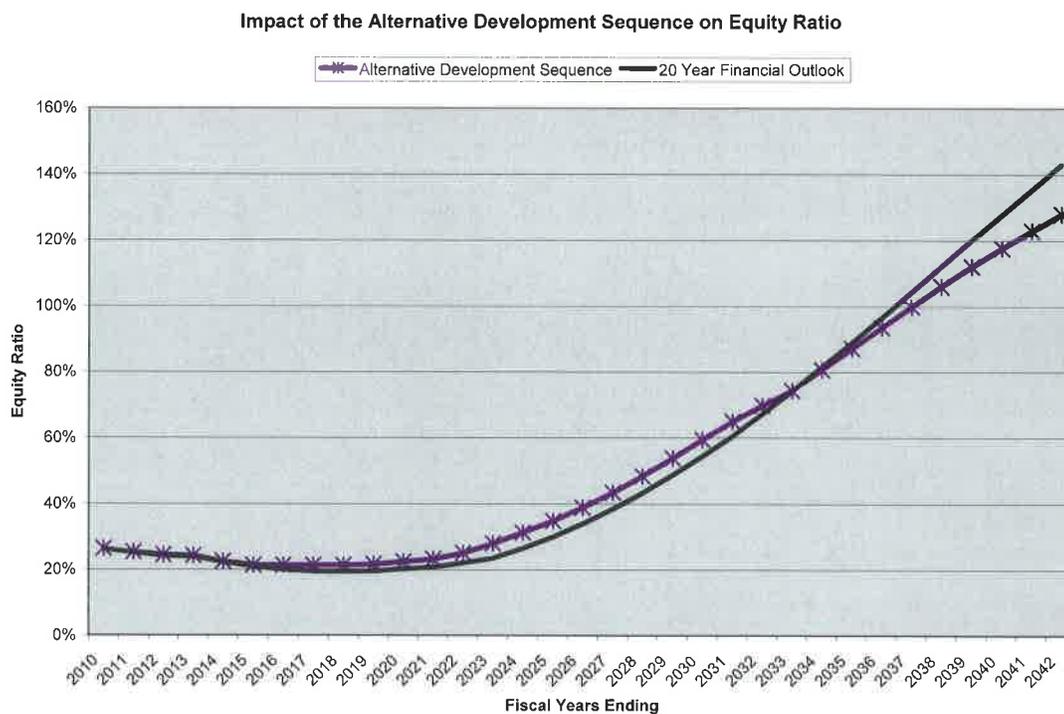
<u>Year Ending</u> <u>March 31</u>	<u>NET</u> <u>INCOME</u> <i>(Millions)</i>	<u>RETAINED</u> <u>EARNINGS</u> <i>(Millions)</i>	<u>RATIOS</u>		
			<u>Debt/Equity</u>	<u>Interest</u> <u>Coverage</u>	<u>Capital</u> <u>Coverage</u>
2009 (actual)	\$ 298	\$2 120	75:25	1.58	1.81
2010	129	2 227	74:26	1.24	1.39
2011	88	2 315	75:25	1.15	1.09
2012	98	2 396	76:24	1.15	1.14
2013	83	2 479	76:24	1.12	1.28
2014	137	2 616	78:22	1.19	1.25
2015	122	2 738	79:21	1.15	1.52
2016	260	2 997	80:20	1.30	1.86
2017	271	3 268	80:20	1.27	1.83
2018	246	3 515	80:20	1.23	1.91
2019	257	3 772	80:20	1.22	2.14
2020	287	4 059	79:21	1.22	2.56
2021	307	4 366	79:21	1.24	2.23
2022	450	4 816	78:22	1.36	2.19
2023	554	5 369	76:24	1.44	2.25
2024	744	6 113	73:27	1.58	2.53
2025	805	6 918	70:30	1.65	2.45
2026	922	7 840	66:34	1.77	2.74
2027	1 019	8 859	61:39	1.88	2.85
2028	1 127	9 986	56:44	2.02	3.07
2029	1 237	11 223	51:49	2.18	3.09

Note: Assumes projected rate increases of 2.9% April 1, 2010; 2.9% April 1, 2011; 3.5% from 2013 to 2020; and 2.0% from 2021 to 2029.

2009 20 YEAR FINANCIAL OUTLOOK

Alternative Development Sequence

The alternative power resource development plan for major infrastructure and resources to meet Manitoba requirements includes Conawapa in 2021/22 and a combined cycle gas turbine in 2033/34. This sequence excludes the sales related to the Wisconsin Public Service and Minnesota Power term sheets, the construction of Keeyask and the planned interconnection to the US. Although the equity ratio is slightly higher in the Alternative Development Sequence, the equity ratio under the 20 Year Financial Outlook crosses over by 2033/34 as the benefits of hydro development and additional tie-line capability are realized. Thereafter, the benefits are substantially positive for the entire life of the generation and transmission facilities. With respect to transmission, another benefit of the sale scenario is that counterparties in the US will be making large investments in new transmission which will enhance reliability and provide additional export sale opportunities. Figure 9 below compares the equity ratios under the Alternative Development Sequence and 20 Year Financial Outlook.

Figure 9

MANITOBA
THE PUBLIC UTILITIES BOARD ACT

Order No. 40/11

March 30, 2011

Before: Graham Lane, C.A., Chairman
Robert Mayer, Q.C., Vice-Chair

INTERIM RATES FOR MANITOBA HYDRO
EFFECTIVE APRIL 1, 2011

March 30, 2011
Order No. 40/11
Page 26 of 45

that its preference is to have concluded a GRA proceeding before approving rate changes.

This hearing is unique in the Board's regulatory history, and not only with respect to interim grid rate Orders awaiting finalization, along with an interim diesel rate decision, but also with respect to the complexities of the issues; the importance of the potential outcomes for ratepayers, the Utility and the Province; and, as well, this proceeding's length, scope, cost and public profile.

MH filed its GRA early in 2010, and in the normal course of events the hearing would have taken place and been concluded with a final rate order issued well before the summer of 2010.

Circumstances resulted in a lengthy delay in the commencement of the oral hearing, and while the importance of the matters before the Board have also contributed to the lengthy process, the facts are that MH has indicated plans to spend in the range of \$20 billion in a "decade of investment", a plan that requires a need for massive new borrowings and, as it would appear, a decade of higher than inflation rate increases. MH projects that during the decade of investment it will seek annual rate increases of 3.5% each year, accumulating in the range of 45% in the 'decade of investment'.

CAC/MSOS is correct in noting that from 2004 on, MH's rates have increased by considerably more than the rate of inflation. However, it is also useful to take into account that before 2004, MH rates, other than industrial rates which actually fell, remained frozen for approximately a decade. It is also useful to note that since 2004, the Utility has had to confront a drought, which led to a loss in one fiscal year in excess

March 30, 2011
Order No. 40/11
Page 27 of 45

of \$400 million, a credit crisis and major global recession (which contributed to a reduction in demand and a fall in export prices), and with what some observers have portrayed as a “game changer”- new production techniques that have led to major new reserves of natural gas and plunging and now low natural gas prices (which has also contributed to lower export prices).

It has not been an uneventful decade for MH, and it would seem the next decade will be as equally challenging. MH plans a “decade of investment” and, ahead of new Manitoba domestic demand, the construction of major new generation and transmission assets to support the entering into major new export sales contracts with American counterparties, contracts yet to be finalized and which will involve both commitments and risks.

In the end, the results of MH’s actions are of considerable significance to not only Manitoba and the Utility’s customers, but to the overall Manitoba economy. If the new investments planned by MH do not generate the export revenues MH’s expects, or if the costs of its planned investments exceed their current forecasts and are not able to be fully recovered by the now forecast domestic rates and export sales revenue then domestic rates will have to rise higher, and perhaps faster, than the levels now predicted by MH.

Contract and construction risks are not the only risks faced by MH. Already long identified by the Board and the Utility are risks including equipment failure, drought, currency fluctuations, interest and finance cost increases, market disruptions, load forecast variances, etc. etc.

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Order No. 40/11
Page 43 of 45

That said, the interests of consumers are another factor that the Board must, and does, take into consideration in assessing the public interest. The economic conditions of the past year, and now, consist of trying times and challenges for consumers. That weighs heavy on the mind of the Board, which still awaits evidence in this hearing on measures and viable options towards addressing the particular payment and energy efficiency problems of lower income consumers.

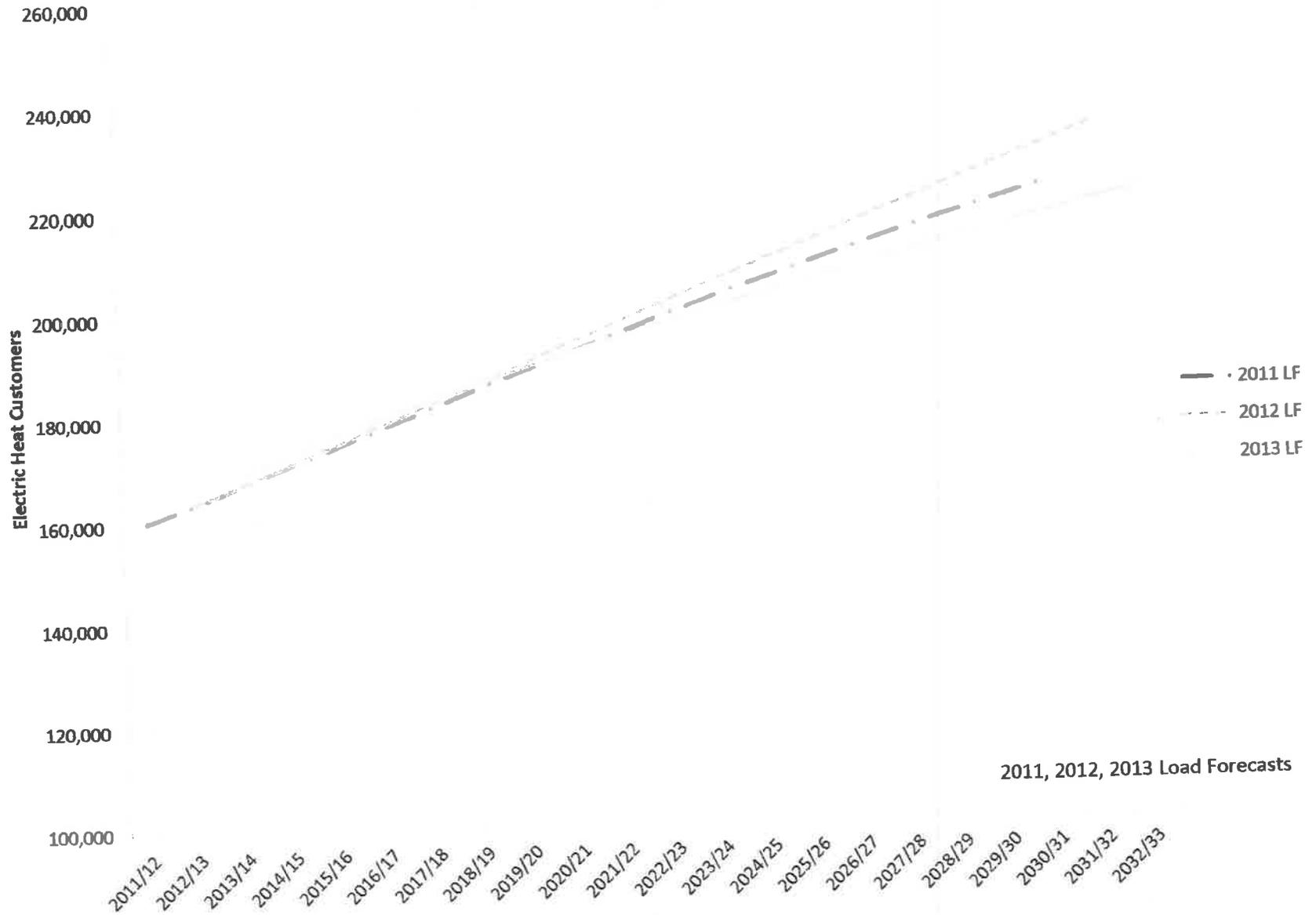
While financial challenges lie ahead for MH, with its ambitious capital plans, those challenges and issues need to be reviewed taking into account the long-term and such a review has yet to be held. Yet, and despite prior Board Directives, MH has not pursued the required review of its capital plans and export intentions, all of which impact domestic rates. At this point in time, the Board is not confident that MH's preferred and forecast capital expenditure plans for the "decade of investment" represent the approach most likely to ensure the lowest rates possible for domestic Manitoba customers.

And, if the further interim rate increase to be granted as of April 1, 2011 was to be deferred until the conclusion of the GRA, the rate increase required to recover the additional revenues would mathematically need to be higher to recover the additional revenues in the remaining months of MH's fiscal year 2011/12. The Board has previously stated its disapproval of "retroactive" rates or rate riders.

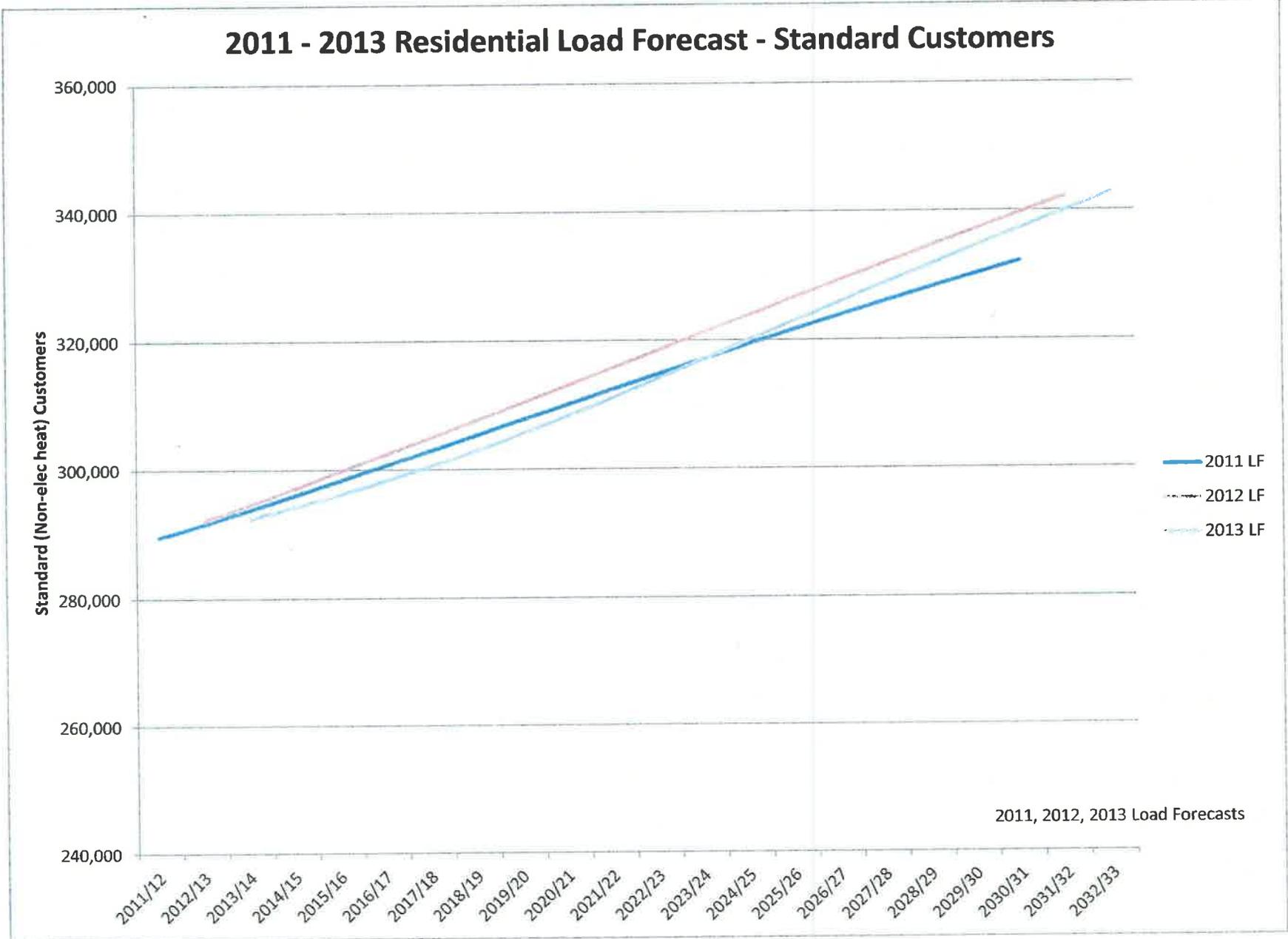
By this interim rate approval, the Board is protecting the short-term financial status of MH with the maintenance of adequate retained earnings. Examining MH's financial forecasts clearly disclose that domestic rate increases are required to keep MH producing annual net income results, without those regular increases, the forecasts

7

2011 - 2013 Residential Load Forecast - Electric Heat Customers



8



9

1 REFERENCE: September 5, 2013 Technical Conference; 2012 Forecast GS Top
2 Consumers

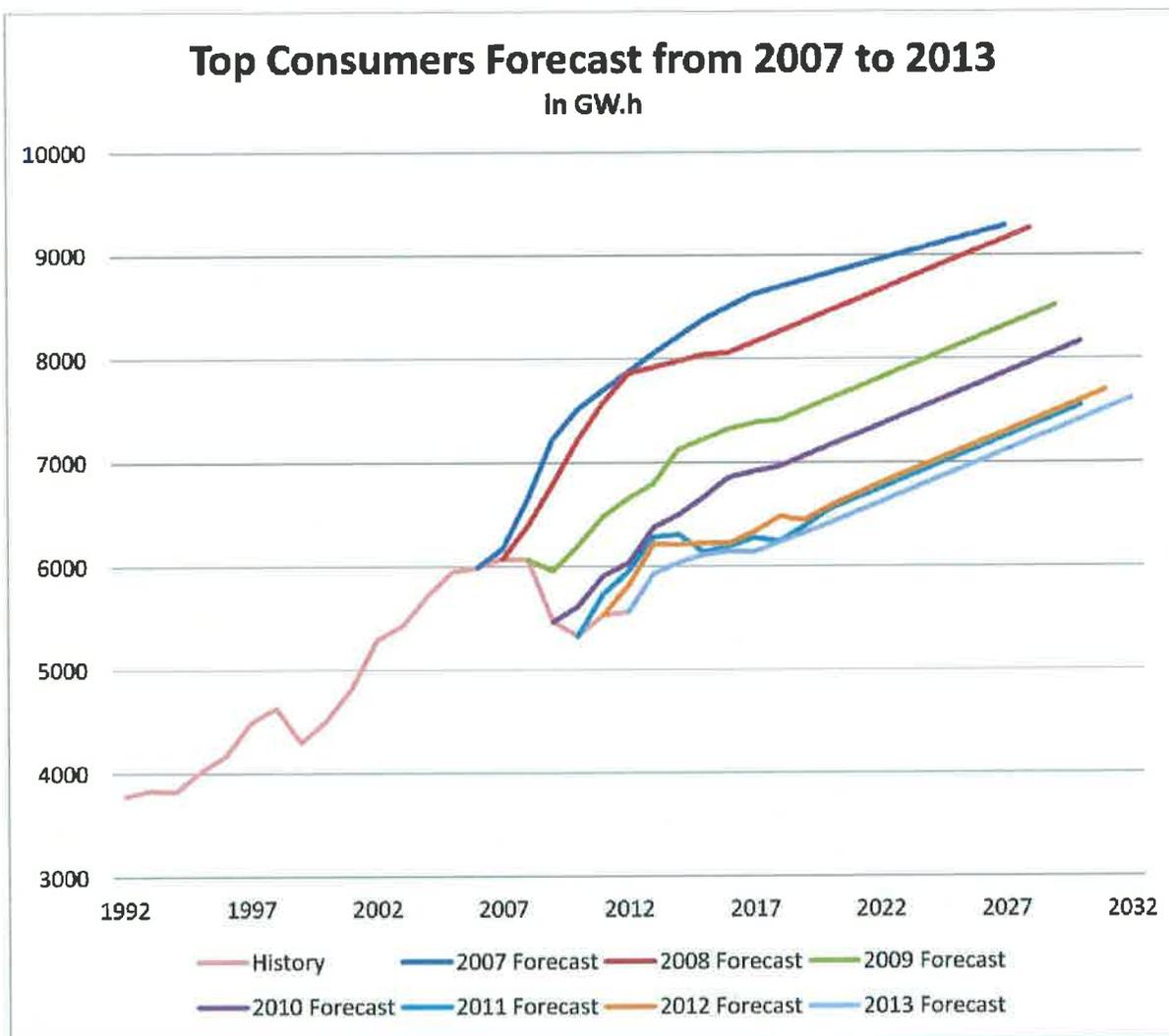
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4 QUESTION:

5 Please provide an enlarged graph adding the Top Consumers forecasts for
6 2007/2008/2009/2010/2011.

7

8 RESPONSE:



9

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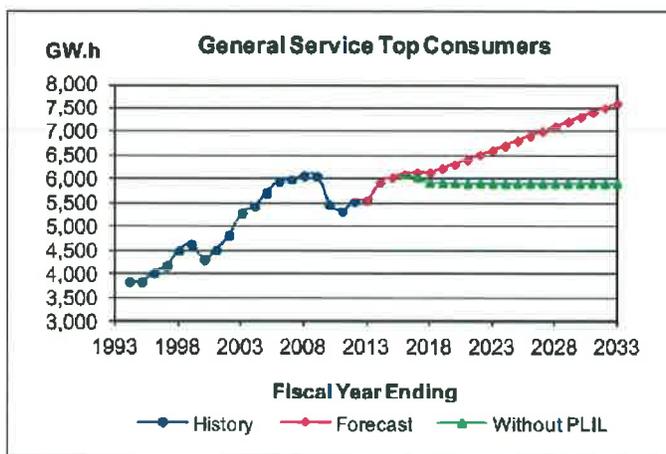
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General Service Top Consumers

General Service Top Consumers includes the top energy consuming businesses in Manitoba and represents 26% of all General Consumers Sales. GS Top Consumers includes 17 companies that account for 31 customers in the Primary Metals, Chemicals, Petrol/Oil/Natural Gas, Pulp/Paper, Food/Beverage and Colleges/Universities sectors.

Figure 8 - General Service Top Consumers

GS Top Consumers has grown 91 GW.h (2.0%) per year over the past 20 years and but only 28 GW.h (0.5%) over the past 10 years. The loss of one Top Consumer and the effect of the economic downturn from 2008 to 2011 lowered the past 10 year growth rate. The 2013 forecast is expected to grow 106 GW.h (1.8%) per year for the next 10 years and 103 GW.h (1.6%) per year for the next 20 years. A loss of a major load is expected by 2016. This loss is more than offset by confirmed plans and expected increases of other Top Consumers. In the long term, GS Top Consumers is expected to grow at a rate reflective of its historic growth.



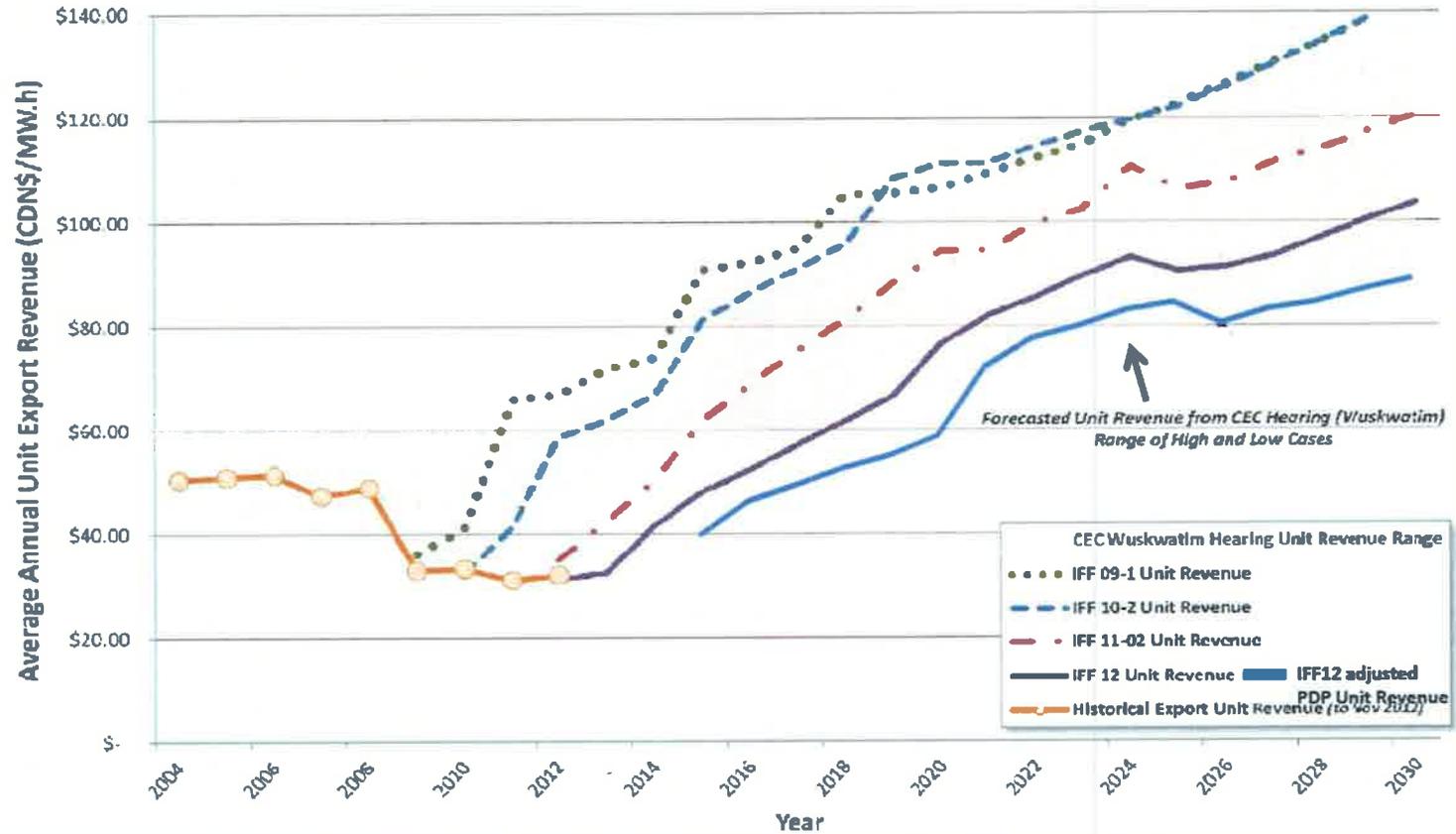
The 2013 forecast is expected to grow 106 GW.h (1.8%) per year for the next 10 years and 103 GW.h (1.6%) per year for the next 20 years. A loss of a major load is expected by 2016. This loss is more than offset by confirmed plans and expected increases of other Top Consumers. In the long term, GS Top Consumers is expected to grow at a rate reflective of its historic growth.

Table 16 - General Service Top Consumers

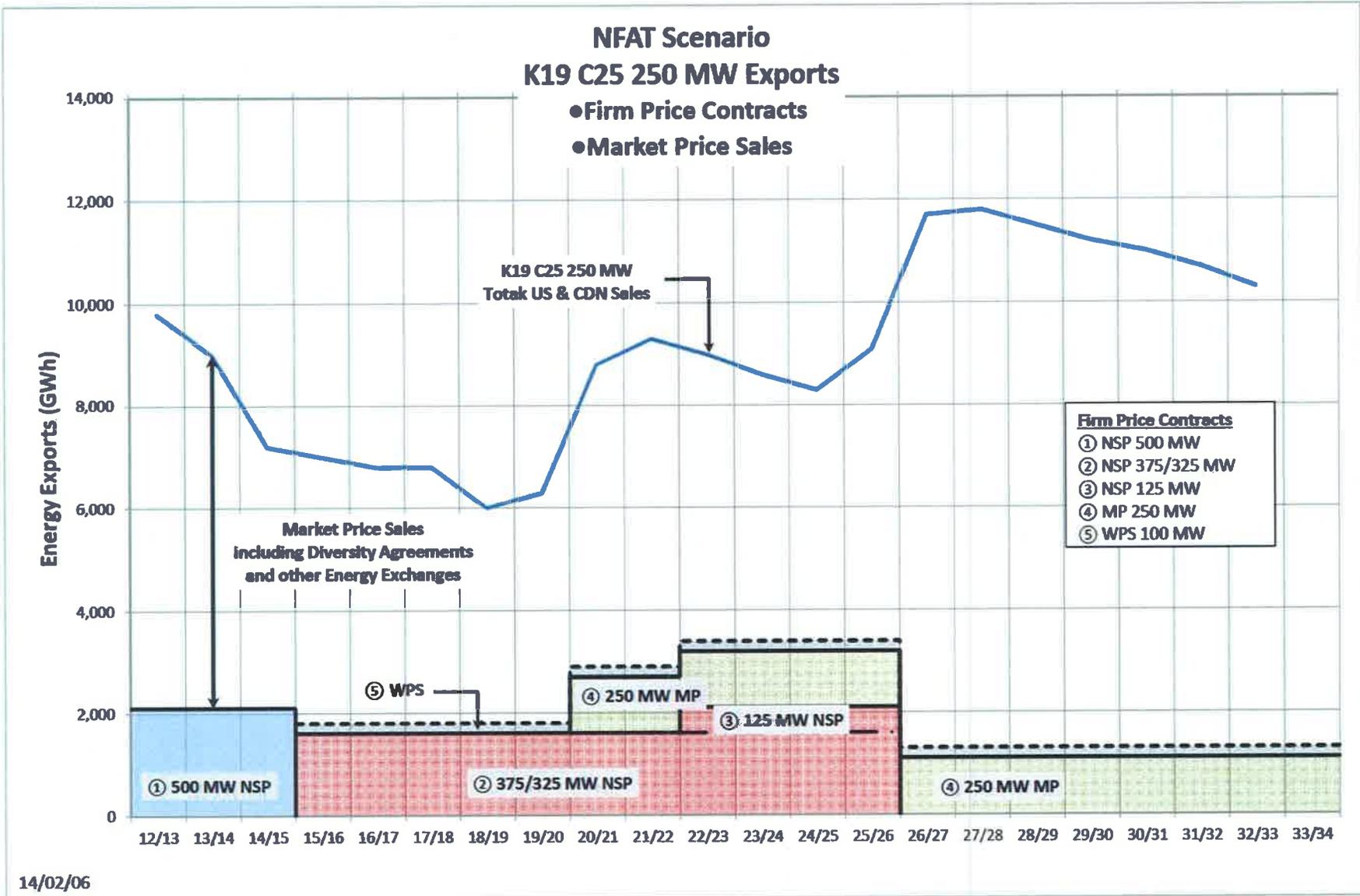
GENERAL SERVICE TOP CONSUMERS (GW.h)					
HISTORICAL/FORECAST WITH PLIL					
Fiscal Year	Sales	Fiscal Year	Individual	PLIL	Total
1993/94	3836	2013/14	5925	0	5925
1994/95	3825	2014/15	6036	0	6036
1995/96	4021	2015/16	6110	0	6110
1996/97	4173	2016/17	6045	100	6145
1997/98	4493	2017/18	5940	200	6140
1998/99	4632	2018/19	5932	300	6232
1999/00	4299	2019/20	5922	400	6322
2000/01	4515	2020/21	5912	500	6412
2001/02	4818	2021/22	5917	600	6517
2002/03	5282	2022/23	5915	700	6615
2003/04	5423	2023/24	5915	800	6715
2004/05	5714	2024/25	5915	900	6815
2005/06	5948	2025/26	5915	1000	6915
2006/07	5989	2026/27	5915	1100	7015
2007/08	6075	2027/28	5915	1200	7115
2008/09	6065	2028/29	5915	1300	7215
2009/10	5461	2029/30	5915	1400	7315
2010/11	5324	2030/31	5915	1500	7415
2011/12	5531	2031/32	5915	1600	7515
2012/13	5560	2032/33	5915	1700	7615

11

Manitoba Hydro's Average Unit Export Revenue Historical and Forecasted (in Nominal \$CDN/MW.h)



12



13

MH Export Contracts after 2015

Customer	Contract Name	Capacity (MW)	Period	Type	Term	Contingent Upon	Status
Minnesota Power	MP 250	250		System Participation	June 1, 2020 to May 31, 2035	Keeyask G.S. and New U.S. Interconnection	Signed
	MP Energy Exchange ¹	0		Energy Exchange	June 1, 2020 to May 31, 2035	Keeyask G.S. and New U.S. Interconnection	Signed
	MP 50	50		System Participation	May 1, 2015 to May 31, 2020	Not contingent	Signed
Northern States Power	NSP 125	125		System Participation	May 1, 2021 to April 30, 2025	New Hydro	Signed
	NSP 375/325 SPS	375 summer / 325 winter		System Participation	May 1, 2015 to Apr 30, 2025	Not contingent	Signed
	NSP 350 Diversity Exchange	350		Energy Exchange	May 1, 2015 to Apr 30, 2025	Not contingent	Signed
Wisconsin Public Service	WPS 100 Product A	100		System Participation	June 1, 2021 to May 31, 2025	Keeyask G.S.	Signed
	WPS 100 Product B	0		Surplus Energy	June 1, 2025 to May 31, 2029	Keeyask G.S.	Signed
	WPS	Up to 300		System Participation and Surplus Energy	June 1, 2014 to May 31, 2040	New Hydro and New U.S. Interconnection	Under Discussion
Great River Energy	GRE Diversity Exchange	200		Energy Exchange	Nov 1, 2014 to Apr 30, 2030	Not contingent	Signed
SaskPower	SaskPower 25	25		System Participation	Nov 1, 2015 to May 31, 2022	Not contingent, early termination provision	Under Discussion

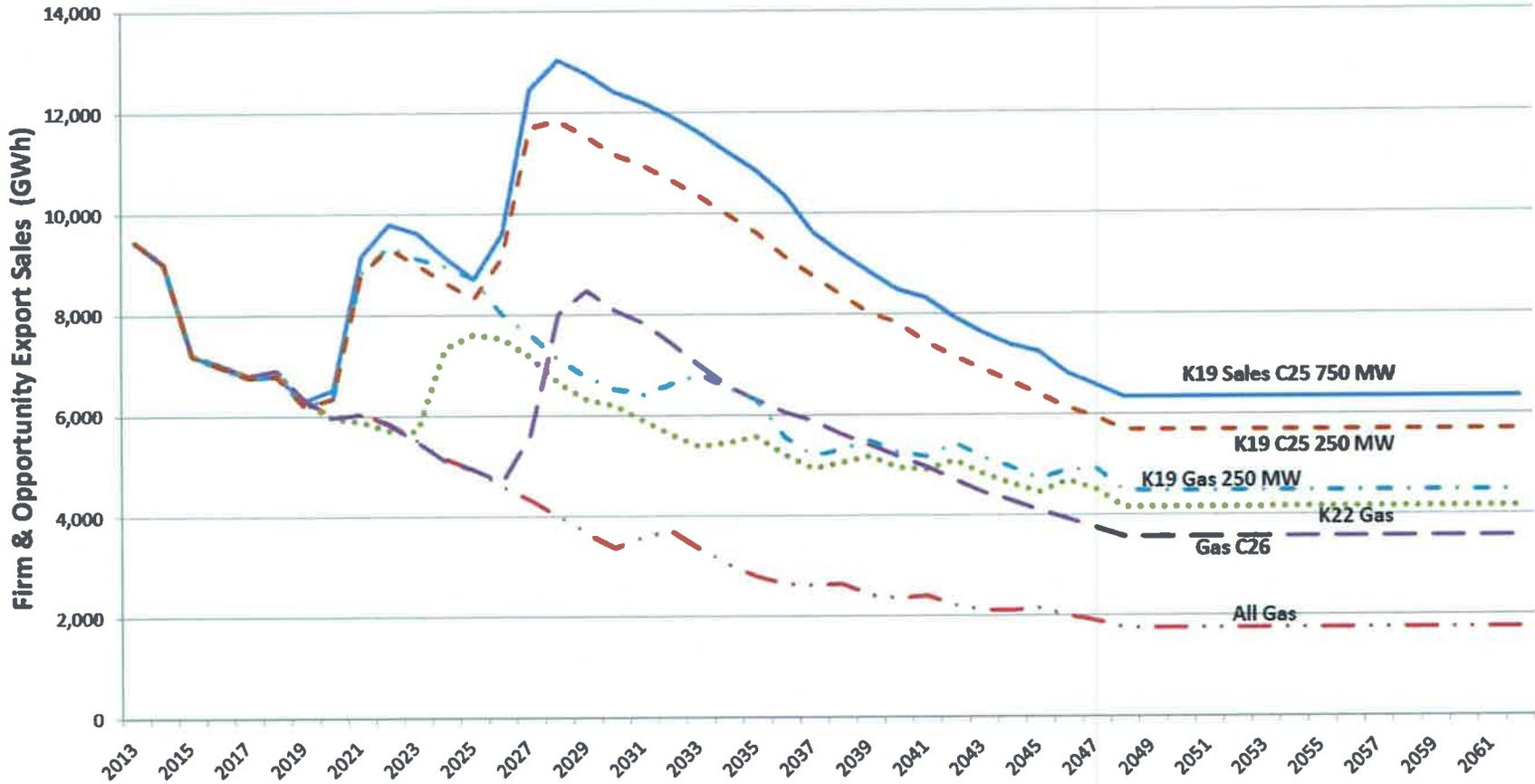
Sources: Chapter 6 Table 6.4; MH Export Contract Term Sheets (Public)

Note 1: Energy Exchange may be expanded; needs to be confirmed

Note 2: This contract or term sheet is not available on MH's website, although there may be a public version available

14

NFAT Development Plan Scenarios

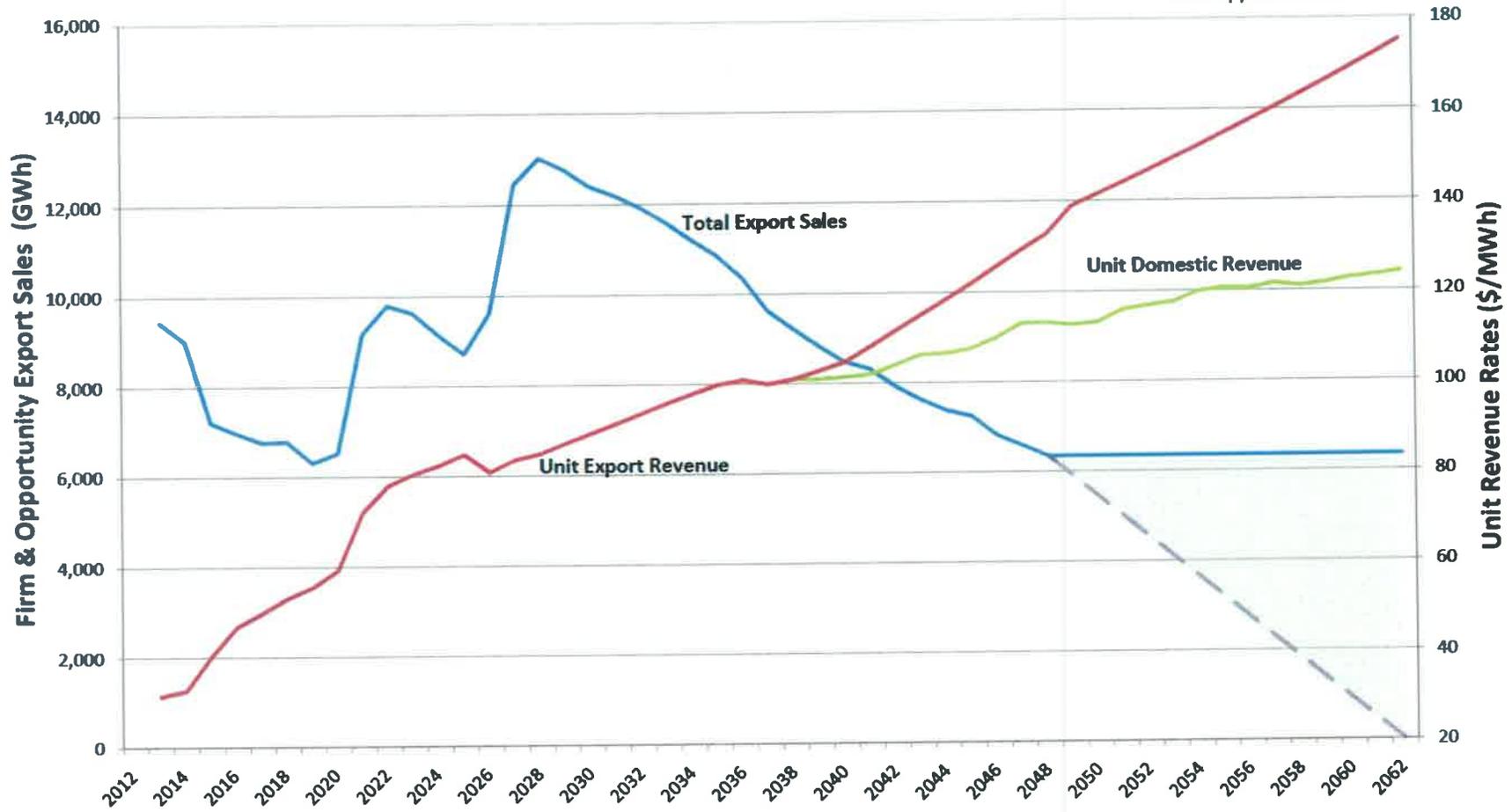


2014/02/05

15

K19 Sales C25 750 MW Preferred Development Plan

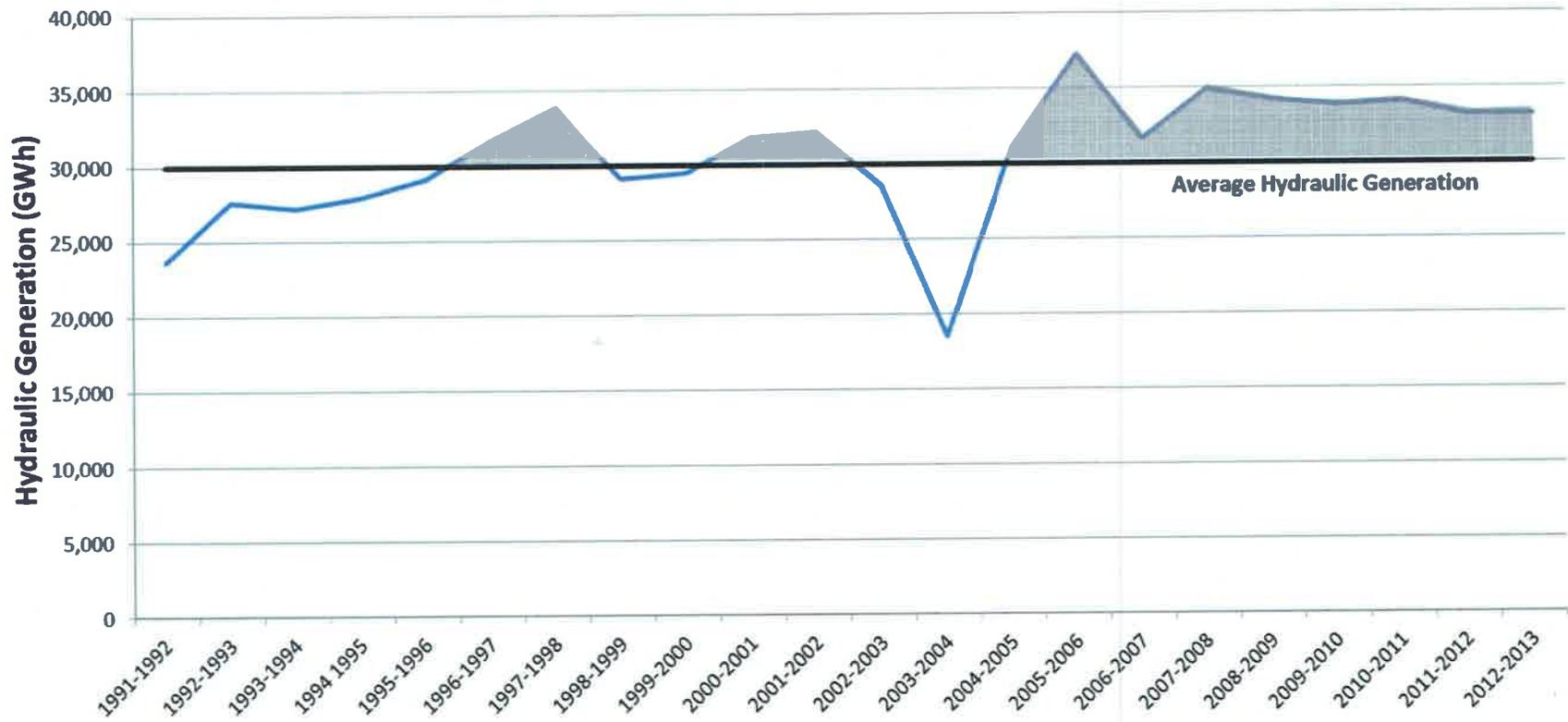
Ref.: Appendix 11.3



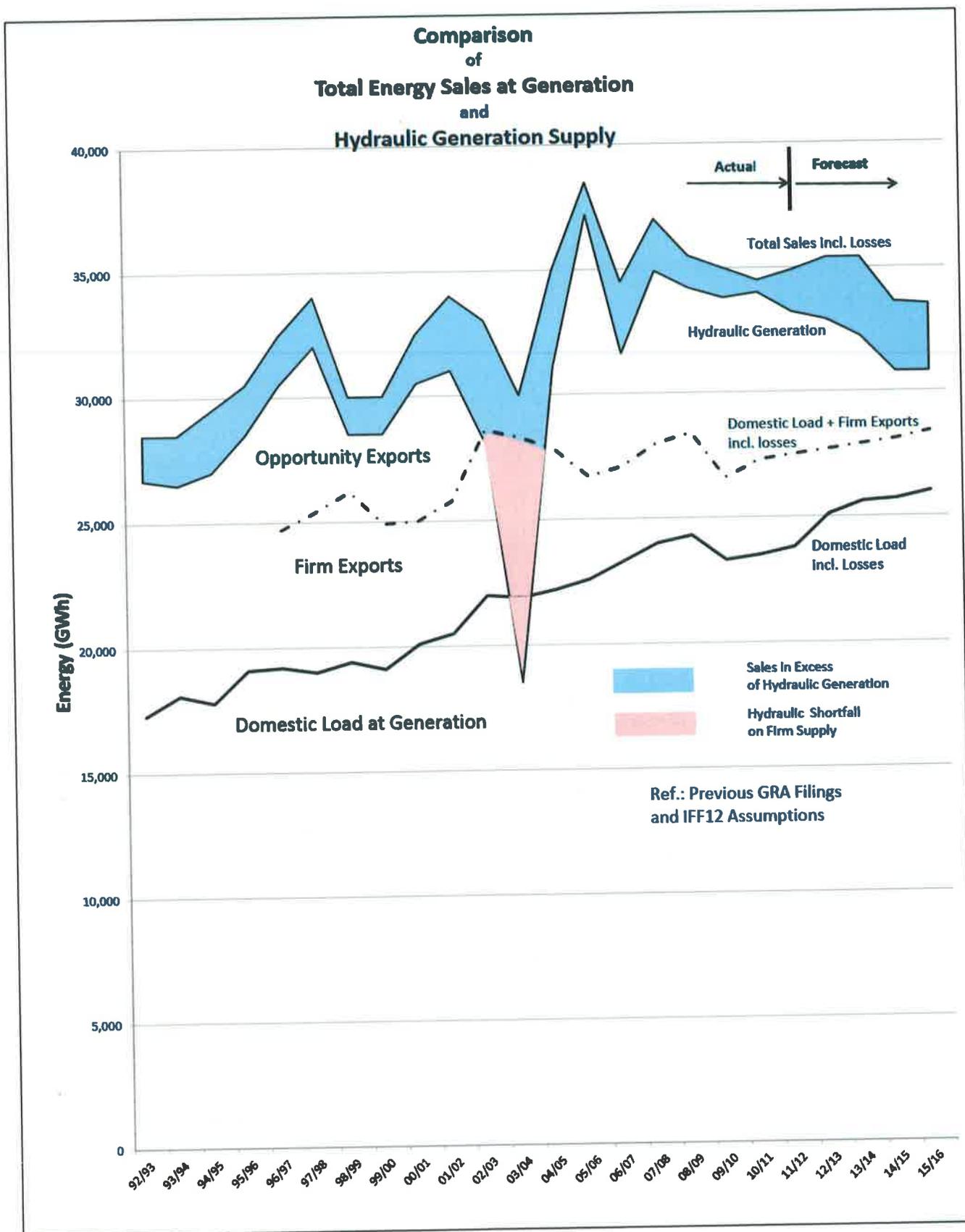
2014/02/05

16

Table 1
Total Hydraulic Generation



17



18

1

	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06
	Actual						
A Canadian	90,233	109,275	92,615	84,143	53,601	78,255	172,938
B U.S.	286,337	370,397	495,278	379,287	297,394	475,243	654,083
C Total Extraprovincial Revenues	376,570	479,673	587,893	463,430	350,994	553,499	827,021
D Average Exchange Rate	1.17	1.1723	1.5665	1.5445	1.3491	1.2732	1.1893
E Average Price/MWh	34.26	39.09	49.02	48.93	49.91	50.51	50.98
F U.S. Revenue in US\$	244,732	315,958	316,169	245,573	220,439	373,267	549,973

	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
	Actual						
A Canadian	85,440	110,062	131,363	65,737	63,150	48,289	40,707
B U.S.	506,985	514,909	491,283	360,904	335,157	314,755	311,926
C Total Extraprovincial Revenues	592,426	624,971	622,646	426,641	398,307	363,044	352,633
D Average Exchange Rate	1.1352	1.0256	1.1345	1.0846	1.0191	0.9895	1.0037
E Average Price/MWh	51.38	47.36	48.85	32.99	33.31	31.10	34.50
F U.S. Revenue in US\$	446,604	502,056	433,039	332,753	328,875	318,095	310,776

2

19

1 **REFERENCE: Chapter 5: The Manitoba Hydro System Interconnections and Export**
2 **Markets; 2012 GRA PUB/MH I-11(a), (b) and (c)**

3

4 **QUESTION:**

5 Please re-file, extending the following data out to 2012/13:

- 6 • Total sales table
- 7 • Total U.S. sales table
- 8 • Opportunity exports table
- 9 • Export revenues table with added lines showing various thermal and purchased energy
10 components to support Manitoba Hydro energy sales as well as purchases to serve
11 merchant trading.

12

13 **RESPONSE:**

	TOTAL SALES								
	DEPENDABLE SALES			OPPORTUNITY SALES			SYSTEM MERCHANT SALES		
	GWh	CAD \$M	AvgPrice	GWh	CAD \$M	AvgPrice	GWh	CAD \$M	AvgPrice
2000/01	6,352	258	40.64	5,801	217	37.39	0	0	0
2001/02	6,277	322	51.65	6,022	281	46.63	0	0	0
2002/03	6,544	339	53.37	3,191	137	42.97	0	0	0
2003/04	6,231	295	48.46	735	52	48.46	11	0.5	44.43
2004/05	5,633	290	51.44	4,798	239	51.44	315	11	33.32
2005/06	4,044	240	59.25	10,303	510	47.73	919	63	60.07
2006/07	3,654	218	59.67	6,250	295	46.53	1,206	60	43.38
2007/08	3,921	209	53.22	7,099	328	44.42	1,262	72	49.17
2008/09	4,087	233	57.12	6,039	287	43.64	1,598	86	48.08
2009/10	3,263	186	56.99	7,597	184	22.98	775	26	28.29
2010/11	3,377	172	51.09	6,967	181	24.77	712	27	36.93
2011/12	3,742	175	46.79	6,502	152	22.18	436	17	31.10
2012/13	3,636	177	48.69	5,451	146	25.18	150	9	34.18

14

20

1

	TOTAL U.S. SALES								
	U.S. DEPENDABLE SALES			U.S. OPPORTUNITY SALES			U.S. SYSTEM MERCHANT SALES		
	GWh	CAD \$M	AvgPrice	GWh	CAD \$M	AvgPrice	GWh	CAD \$M	AvgPrice
2000/01	4,895	199	40.69	4,511	167	36.95	0	0	0
2001/02	4,767	263	55.15	5,083	247	48.66	0	0	0
2002/03	4,947	277	56.09	2,713	115	42.30	0	0	0
2003/04	5,245	259	49.45	507	35	69.42	0	0	0
2004/05	5,633	290	51.44	3,218	171	54.48	109	1	10.64
2005/06	4,044	240	59.25	8,879	401	45.12	0	0	0
2006/07	3,654	218	59.67	5,877	270	46.24	0	0	0
2007/08	3,921	209	53.22	6,618	289	44.19	0	0	0
2008/09	4,087	233	57.12	5,622	237	43.24	0	0	0
2009/10	3,263	186	56.99	7,224	160	22.28	33	2	0
2010/11	3,377	172	51.09	6,062	146	24.44	5	0.3	37.82
2011/12	3,742	175	46.79	5,616	117	21.13	80	3	35.21
2012/13	3,636	177	48.69	4,690	113	23.62	63	2	29.92

2

	OPPORTUNITY EXPORTS					
	On Peak	Off Peak	On Peak	Off Peak	On Peak	Off Peak
	GWh	GWh	Avg Price (CAD\$)	Avg Price (CAD\$)	Revenues (CAD \$M)	Revenues (CAD \$M)
2005/06	3,142	7,161	72.73	36.75	245	265
2006/07	1,972	4,278	66.26	37.44	135	160
2007/08	2,212	4,887	66.19	32.97	162	166
2008/09	1,802	4,237	71.78	29.37	153	134
2009/10	2,497	5,100	31.14	18.74	84	100
2010/11	2,268	4,699	31.90	21.23	76	105
2011/12	1,952	4,550	28.76	22.51	59	93
2012/13	2,165	3,286	29.87	22.02	69	77

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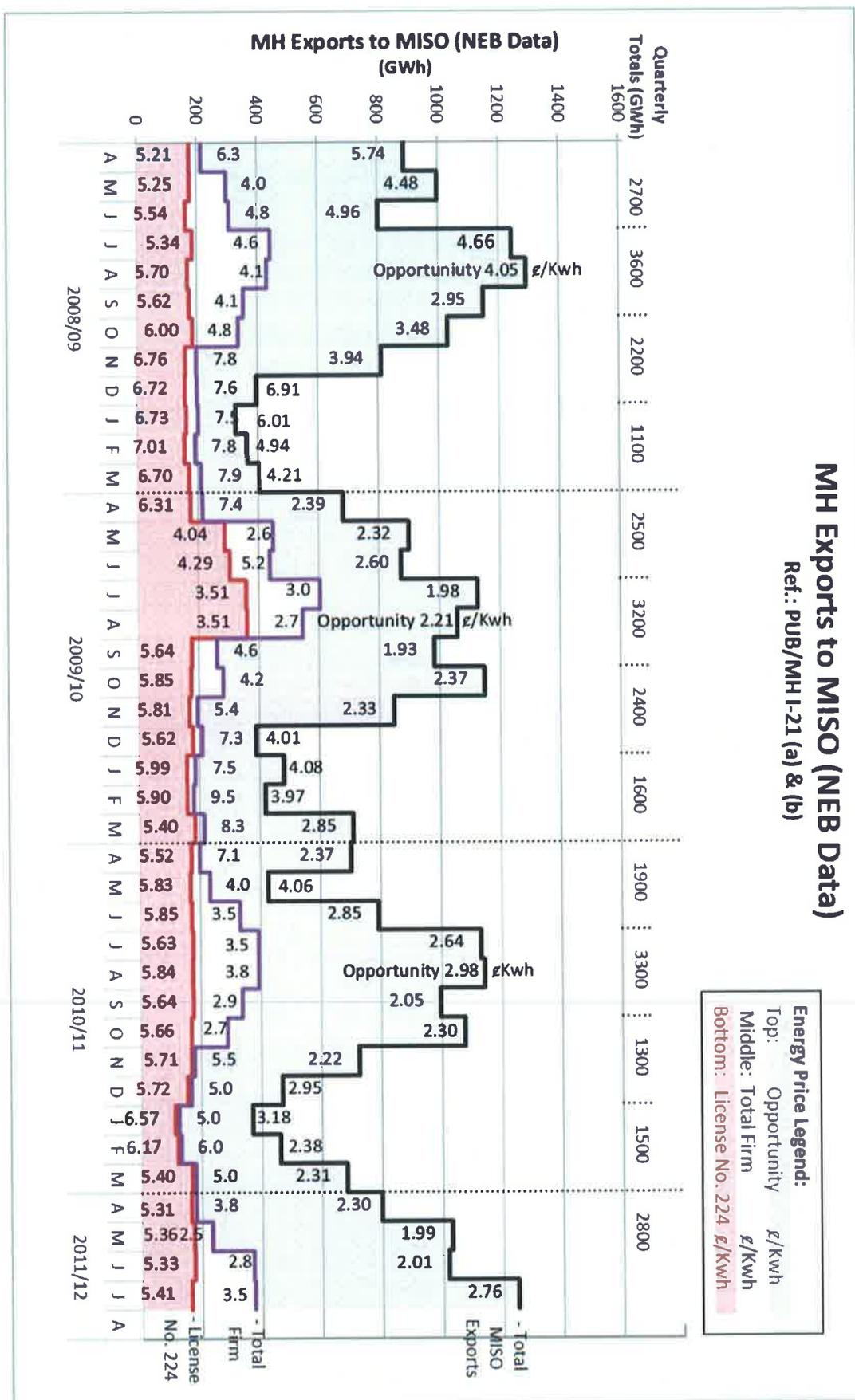
	EXPORT REVENUES											
	2008/09			2009/10			2010/11			2011/12		
	GWh	\$M (Cdn)	Avg Price	GWh	\$M (Cdn)	Avg Price	GWh	\$M (Cdn)	Avg Price	GWh	\$M (Cdn)	Avg Price
Opportunity Bilateral	1305	101	71.37	2628	60	24.08	1851	52	28.44	1923	50	26.02
Market Day Ahead	4040	122	30.33	3111	59	19.09	3233	69	21.39	2720	52	18.68
Real Time	690	60	50.88	1858	71	27.33	1883	60	26.83	1859	50	23.24
Merchant	1598	86	48.08	775	26	28.29	712	27	36.93	436	17	31.10

2

	Fuel & Power Purchased									
	2008/09		2009/10		2010/11		2011/12		2012/13	
	GWh	\$M (Cdn)	GWh	\$M (Cdn)	GWh	\$M (Cdn)	GWh	\$M (Cdn)	GWh	\$M (Cdn)
System Merchant	1598	80	775	25	712	24	436	14	150	6
Power Purchases	981	57	1320	33	1154	34	1634	79	1584	71
Transmission Charges		21		33		36		39		44
Fuel Purchases		18		13		12		14		12

3

22



MH Exports to MISO (NEB Data)

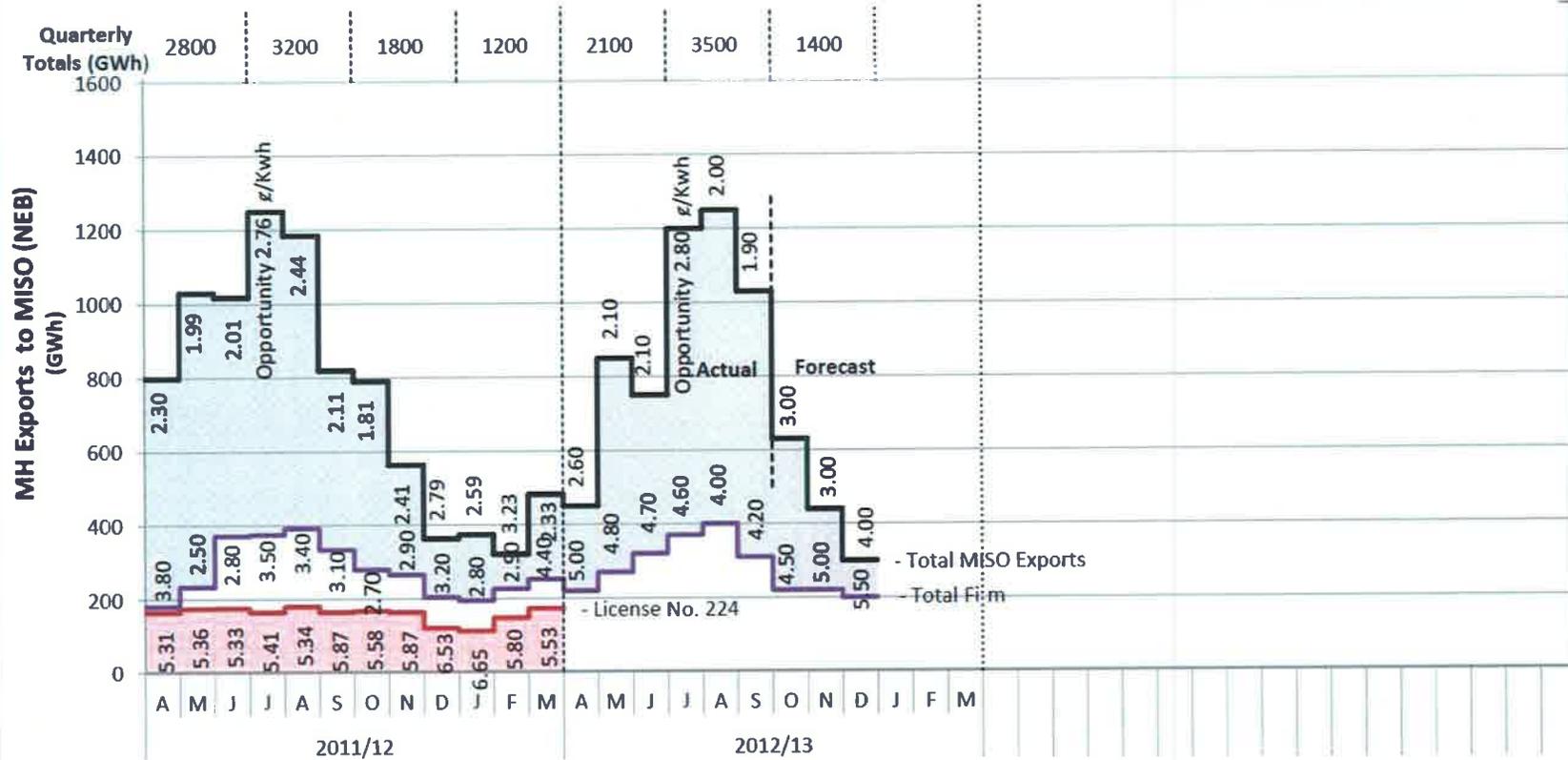
Ref.: PUB/MH I-21 (a) & (b)

Energy Price Legend:
 Top: Opportunity \$/kWh
 Middle: Total Firm ¢/kWh
 Bottom: License No. 224 ¢/kWh

MH Exports to MISO (NEB Data)

Ref.: PUB/MH I-21 (a) & (b)
 IFF11-2 Average Price Calculations
 PUB/MH I-14

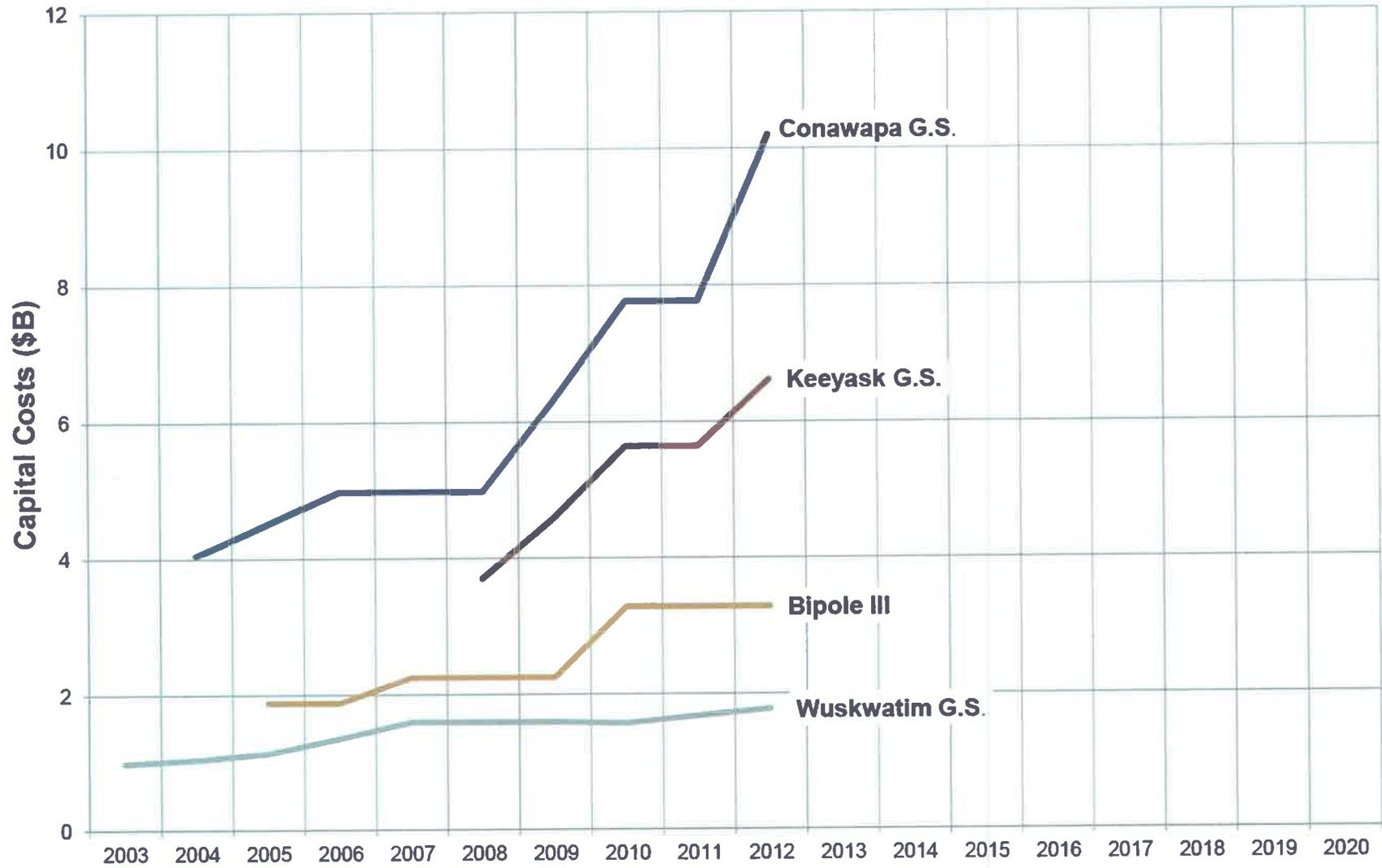
Energy Price Legend:
 Top: Opportunity ¢/kwh
 Middle: Total Firm ¢/kwh
 Bottom: License No 224 ¢/kwh



23

Capital Cost Estimates at in-service

Ref.: PUB/MH I-93(a) amended



24

2012/13 & 2013/14 Electric General Rate Application

ANSWER: PUB/MH I-93(a)

Progression of Project Costs in \$ M										
	CEF-03	CEF-04	CEF-05	CEF-06	CEF-07	CEF-08	CEF-09	CEF-10	CEF-11	CEF-12
Wuskwatim G.S.		846	935	1,094	1,275	1,275	1,275	1,275	1,375	1,449
Wuskwatim Transmission		199	200	257	320	316	316	291	298	323
Wuskwatim Total Project	988	1,045	1,135	1,351	1,595	1,591	1,591	1,566	1,673	1,772
Herblet Lake Transmission	57	55	54	54	95	93	93	75	75	77
Bipole III	360(E)	388(E)	1,880	1,880	2,248	2,248	2,248	3,280	3,280	3,280
Riel C.S.	96	101	103	103	105	268	268	268	268	268
Kelsey G.S.	121	121	166	166	184	190	190	302	302	302
Kettle G.S.		61	61	61	61	76	76	166	166	166
Pointe du Bois Improvements and Upgrades	421	288	692	834	818	818				183
Pointe du Bois Spillway							318	398	398	560
Pointe du Bois Trans.					83	86	86	86	86	86
Pointe du Bois Rebuild								1,538	1,538	1,538
Slave Falls G.S.				179	192	198	198	223	230	240
Conawapa G.S.		4,050	4,516	4,978	4,978	4,978	6,325	7,771	7,771	10,192
Keeyask G.S.			1,657			3,700	4,592	5,637	5,637	6,220
500 KV Dorsey U.S. Border						205	205	205	205	205
Gilliam Redevelopment										367
New G&T Totals	2,043	6,209	10,262	9,797	10,359	14,451	16,190	21,415	21,636	25,556

25

1 **REFERENCE: Chapter 2: Manitoba's Preferred Development Plan Facilities; Page No.:**
2 **35 of 59**

3
4 **PREAMBLE: In Service Cost = Base Cost x Escalation & Interest + Money Spent to Date**

5
6 **QUESTION:**

7 Can the "Money Spent to Date" category be broken down?

8
9 **RESPONSE:**

10 Yes, the "Money Spent to Date" is provided below for Keeyask and Conawapa, as of March 31,
11 2012.

	Actuals to March 31/2012	Interest Cap to March 31/2012	Total sunk including Interest Cap
Keeyask GS Licensing & Planning	312,728,643	153,735,465	466,464,108
Infrastructure Upgrade	26,196,006	1,139,528	27,335,534
Generating Station	6,454,594	703,375	7,157,969
Transmission	997,048	117,205	1,114,253
Keeyask Totals	346,376,291	155,695,573	502,071,864

12

13

	Actuals to March 31/2012	Interest Cap to March 31/2012	Total sunk including Interest Cap
Conawapa GS Licensing & Planning	166,938,082	52,510,658	219,448,740
Infrastructure Upgrade	18,490	3,882	22,372
Generating Station Infrastructure	1,067,072	23,765	1,090,837
Generating Station	8,355,431	1,048,206	9,403,637
Conawapa totals	176,379,075	53,586,511	229,965,586

26

1 REFERENCE: Appendix 9.3 Economic Evaluation Documentation; Section: 1.3; Page
2 No.: 5; Table 1.2

4 PREAMBLE: Certain expenditures have been made and are expected to be made by
5 June 2014 on both the Keeyask and Conawapa projects.

7 QUESTION:

8 What amount of the expenditure that is considered "sunk" for the purposes of the calculations
9 made in the application has yet to be incurred to protect the in-service dates for Keeyask and
10 Conawapa? (i.e., what amount of the Sunk Cost expenditures listed in Table 1.2 of Appendix 9.3
11 were actually expended as of August 31, 2013?)

12

13 RESPONSE:

14 For the purpose of the economic evaluation of the development plans, all cash flows are based
15 on 2014 base (or constant) dollars that do not include interest and escalation. The costs
16 provided in the table below are consistent with those used in the NFAT economic evaluations.
17 Since the NFAT economic evaluations were completed before August 31, 2013, the costs in
18 fiscal year 2013/14 are forecast and are therefore not actual dollars spent. The table below
19 provides an estimate of the dollars spent to August 31, 2013 on Keeyask and Conawapa,
20 expressed in billions of 2014 base dollars.

21

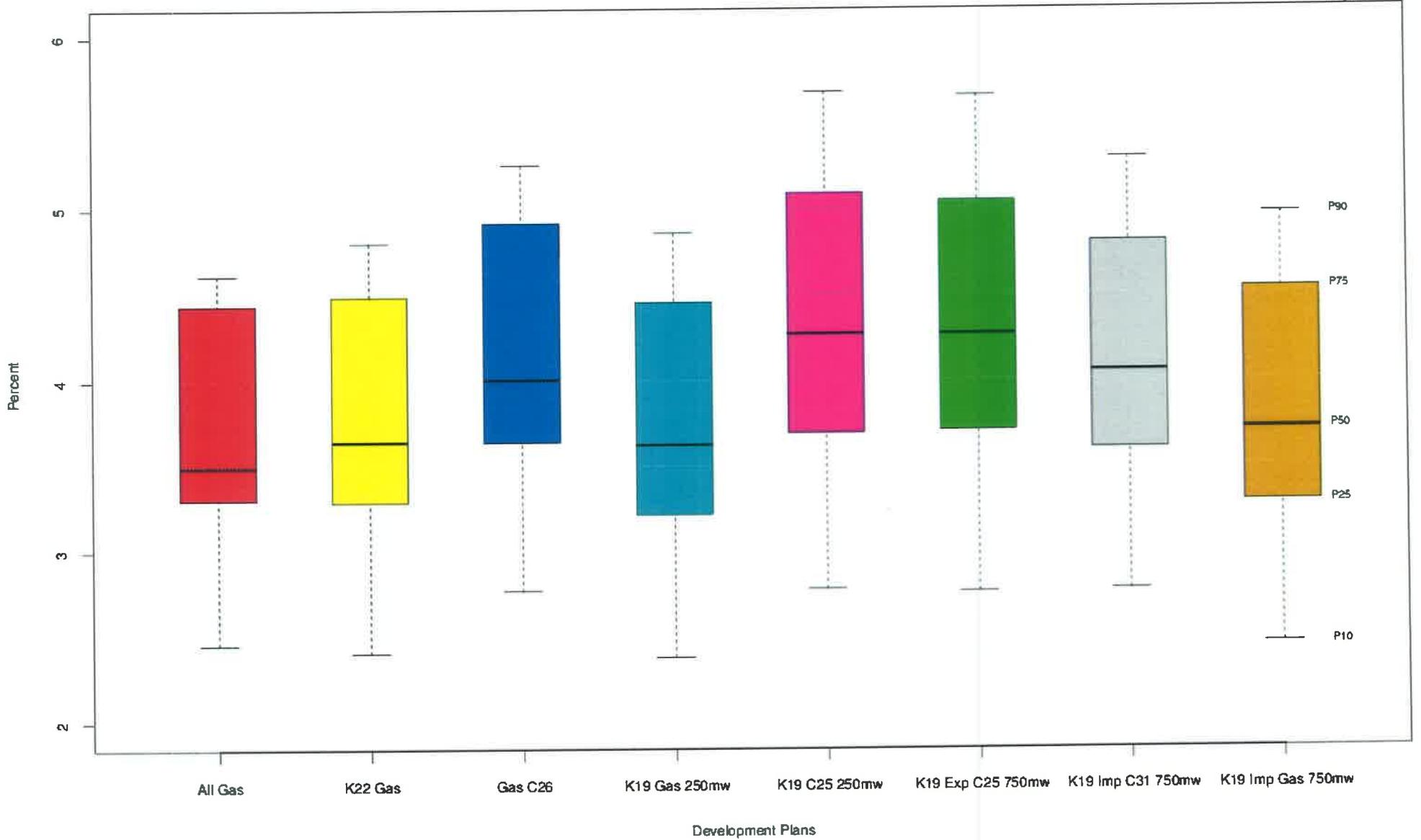
	Costs Spent to August 31, 2013	Estimate of Sunk Costs yet to be incurred from August 31, 2013 to June 2014	Total Sunk Costs (as provided in Table 1.2 of Appendix 9.3)
Conawapa G.S.	\$0.30	\$0.04	\$0.3
Keeyask G.S.	\$0.80	\$0.25	\$1.0

22

27

Even-Annual Rate Increases
for Years 2015-2032

Figure 11.2

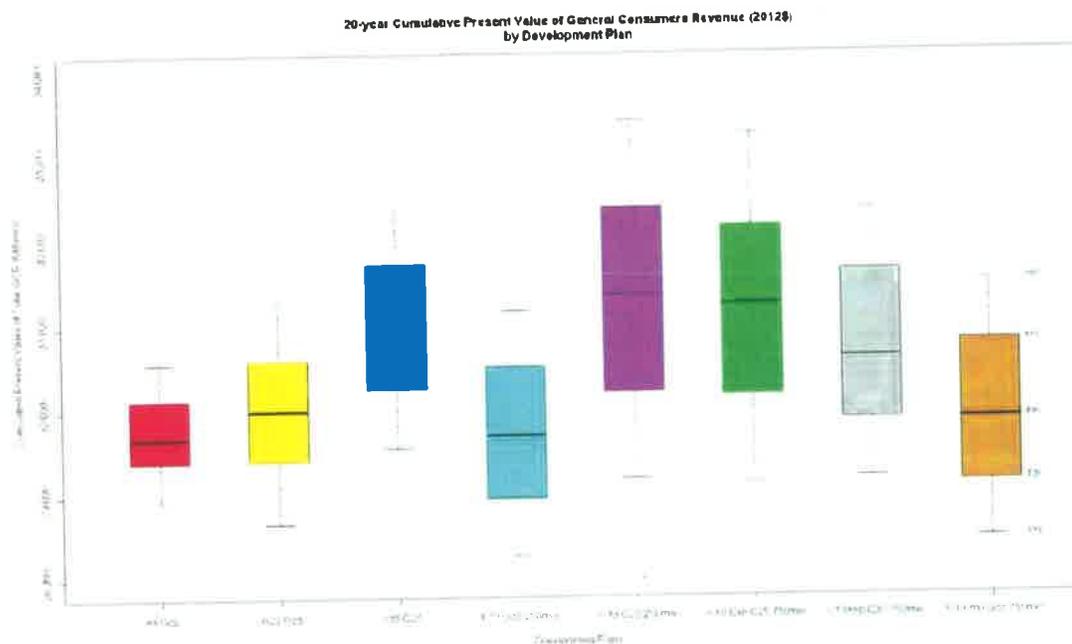


28

1 Figure 11.11 shows the projected 20 year cumulative present value of total general consumers'
 2 revenue for 2012/13 to 2031/32.

- 3
- 4 • During this time frame, the projected 20 year cumulative present values for the
 5 Preferred Development Plan (green) are generally higher, in keeping with its higher
 6 upfront capital investment.
 - 7 • The rank order of the development plans are very similar to what was presented in
 8 Figure 11.2 of the main submission which is the result of the even-annual rate setting
 9 methodology to achieve the targeted debt/equity ratio of 75:25 by the end of 2031/32.

Figure 11.11

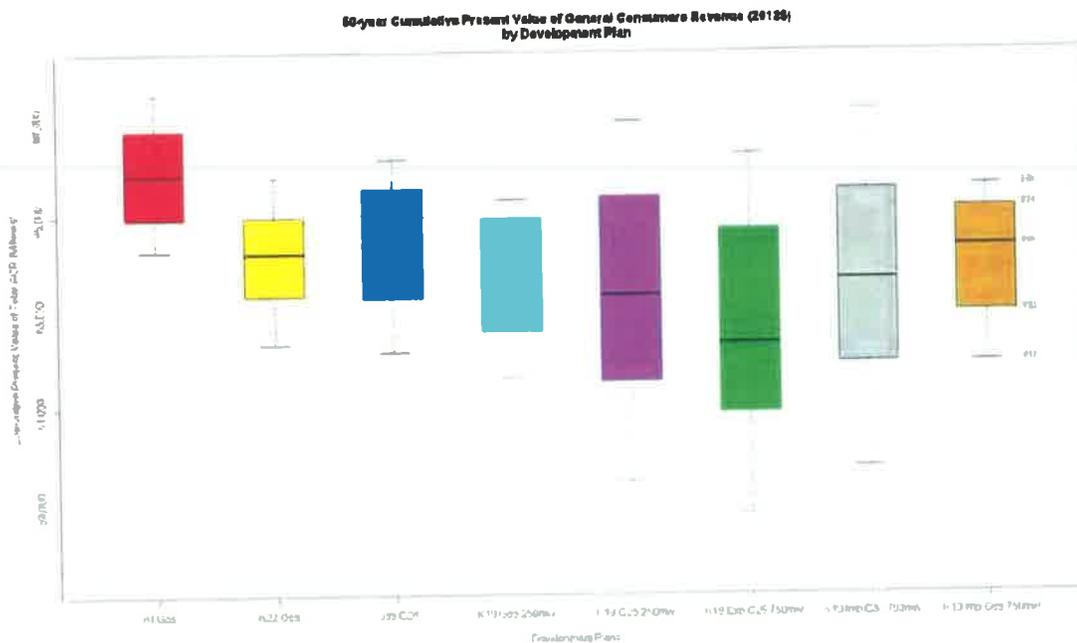


10

11

- 1 Figure 11.12 shows the projected 50 year cumulative present value of total general consumers'
- 2 revenue for 2012/13 to 2061/62. The Preferred Development Plan (green) has the lowest 50
- 3 year cumulative present value across the P25, P50 and P75 probability values.

Figure 11.12



5

6

29

1 **REFERENCE: Chapter 11: Financial Evaluation of Development Plans; Section: 11.2;**
 2 **Page No.: 12-Nov; Ratepayer Impacts**

3
 4 **QUESTION:**

5 Please provide a table that compares the cumulative additional domestic revenue that is
 6 indicated by each of the preferred development plans and the evaluated alternatives.

7
 8 **RESPONSE:**

9 The following table represents the Cumulative Annual Additional Domestic Revenue for each of
 10 the eight development plans evaluated in Chapter 11 under the reference scenario.

Cumulative Annual Additional Domestic Revenue – Reference Scenario (Millions)								
FYr	1. All Gas	7. Gas C26	2. K22 Gas	4. K19 Gas 250mw	13. K19 C25 250mw	12. K19 Imp C31 750mw	6. K19 Imp Gas 750mw	14. K19 Sales C25 750mw
2014	48	48	48	48	48	48	48	48
2015	144	151	145	144	152	150	145	152
2016	293	312	296	293	317	310	296	316
2017	497	536	503	496	547	531	504	544
2018	760	827	770	759	845	818	771	841
2019	1,085	1,189	1,101	1,083	1,218	1,175	1,102	1,212
2020	1,475	1,626	1,498	1,473	1,668	1,605	1,500	1,658
2021	1,936	2,144	1,968	1,933	2,202	2,115	1,970	2,188
2022	2,471	2,748	2,513	2,467	2,826	2,710	2,517	2,807
2023	3,085	3,443	3,140	3,080	3,544	3,394	3,144	3,520
2024	3,783	4,236	3,852	3,776	4,364	4,173	3,857	4,334
2025	4,570	5,132	4,655	4,561	5,292	5,055	4,662	5,254
2026	5,450	6,139	5,554	5,439	6,335	6,044	5,563	6,288
2027	6,429	7,261	6,555	6,416	7,498	7,146	6,565	7,442
2028	7,512	8,507	7,663	7,497	8,791	8,369	7,675	8,724
2029	8,707	9,885	8,885	8,689	10,221	9,721	8,899	10,142
2030	10,018	11,402	10,227	9,997	11,798	11,210	10,244	11,704
2031	11,452	13,066	11,695	11,428	13,528	12,841	11,715	13,419
2032	13,016	14,885	13,298	12,988	15,422	14,625	13,321	15,295
2033	14,015	16,023	14,351	13,949	16,563	15,646	14,309	16,352
2034	15,069	17,181	15,416	14,952	17,722	16,906	15,336	17,428
2035	16,292	18,401	16,673	16,052	18,936	18,252	16,475	18,551
2036	17,573	19,644	17,987	17,244	20,187	19,654	17,716	19,708
2037	18,882	20,899	19,349	18,493	21,465	21,074	19,005	20,919



Needs For and Alternatives To
PUB/MH I-150a

Cumulative Annual Additional Domestic Revenue – Reference Scenario (Millions)								
FYr	1. All Gas	7. Gas C26	2. K22 Gas	4. K19 Gas 250mw	13. K19 C25 250mw	12. K19 Imp C31 750mw	6. K19 Imp Gas 750mw	14. K19 Sales C25 750mw
2038	20,354	22,202	20,714	19,750	22,784	22,532	20,362	22,179
2039	21,904	23,574	22,209	21,139	24,123	24,003	21,721	23,454
2040	23,501	24,992	23,777	22,606	25,481	25,503	23,213	24,763
2041	25,280	26,476	25,397	24,132	26,942	27,032	24,815	26,108
2042	27,176	28,070	27,171	25,806	28,437	28,645	26,483	27,538
2043	29,215	29,787	29,096	27,630	30,014	30,348	28,282	29,064
2044	31,300	31,597	31,089	29,523	31,623	32,075	30,175	30,617
2045	33,557	33,469	33,109	31,453	33,314	33,853	32,098	32,226
2046	35,965	35,497	35,315	33,599	35,087	35,734	34,210	33,938
2047	38,505	37,632	37,646	35,802	36,991	37,739	36,448	35,782
2048	41,125	39,804	40,032	38,095	38,924	39,756	38,742	37,650
2049	43,753	41,967	42,400	40,373	40,844	41,750	41,023	39,502
2050	46,428	44,169	44,807	42,687	42,788	43,764	43,342	41,373
2051	49,232	46,483	47,328	45,110	44,820	45,857	45,776	43,340
2052	52,107	48,846	49,898	47,574	46,882	47,977	48,251	45,341
2053	55,070	51,277	52,475	50,076	48,971	50,121	50,770	47,368
2054	58,166	53,824	55,105	52,679	51,149	52,339	53,382	49,476
2055	61,325	56,413	57,759	55,357	53,358	54,576	56,031	51,607
2056	64,560	59,029	60,449	58,074	55,548	56,829	58,724	53,735
2057	67,868	61,687	63,172	60,858	57,771	59,117	61,486	55,900
2058	71,219	64,366	65,921	63,647	59,991	61,386	64,253	58,044
2059	74,658	67,083	68,711	66,483	62,249	63,674	67,062	60,214
2060	78,183	69,848	71,586	69,403	64,553	65,993	69,931	62,421
2061	81,797	72,661	74,522	72,394	66,889	68,333	72,849	64,649
2062	85,550	75,521	77,506	75,444	69,252	70,705	75,890	66,905

30

1 REFERENCE: Chapter 15: Implementation and Risk Management Plan for Preferred
2 Development Plan; Section: 15.1; Page No.: 5

4 QUESTION:

5 Please quantify the "sufficient notice" that would have to be given so that "the Keeyask G.S.
6 construction timeline could be adjusted to correspond to a later ISD if conditions indicate, likely
7 around 2023, and the value of all Keeyask G.S. efforts and expenditures would still be retained."

9 RESPONSE:

10 In general, the earlier a deferral of ISD occurs, the smaller the cost impacts of doing so.

11

12 Manitoba Hydro and the general civil contractor will be preparing to be ready to mobilize for a
13 July 2014 construction start over the first six months of 2014. Current plans are to commit to
14 the general civil contract early March 2014. From a cost minimization impacts perspective, and
15 given the current timeframe of providing this response, it would be most advantageous to defer
16 the ISD by early March or even earlier.

17

18 Given that the actual construction start is not committed under the General Civil Contract until
19 all the required approvals have been obtained, a deferral of ISD prior to commencement of
20 construction (July 2014) will be more amenable to cost minimization than after the construction
21 starts.

22

23 During the first year of construction (July 2014 to July 2015) the construction activities primarily
24 involve Stage I cofferdam, camp completion and South Access Road. During the second year of
25 construction, construction will primarily involve structures excavation. If the project were to be
26 deferred up to this point, these activities could be completed and the remainder of the
27 construction be undertaken at a later date. The main concrete pours start May 2016. Once the

- 1 concrete pours begin it likely would be impractical to stop the project and defer the ISD. Thus
- 2 the latest date it would be practical to defer Keeyask from 2109 would be May 2016. An
- 3 example of a situation similar to this was that of Limestone Generation project which had
- 4 commenced construction but then construction was deferred after the Stage I cofferdam had
- 5 been constructed.