RCM/TREE/MH/RISK-1

Reference: KPMG Report, p. 4.

a) Please provide the Company's rationale for not issuing requests for proposals for power purchases or sales.

ANSWER:

To be of value to its customers as a long term supply, Manitoba Hydro's product must be sourced from dependable energy and accredited capacity, and delivered over firm transmission paths.

On the US side of the border, most of the firm transmission is controlled by Manitoba Hydro's pre-MISO customer base (i.e. NSP, GRE etc). As such, this transmission is unavailable to serve the open market, preventing Manitoba Hydro from using RFPs to market its long term surplus. When existing contracts expire, Manitoba Hydro is incented to work with these customers to extend the sale and the firm transmission and avoid the risk the customer will redirect the firm transmission service or let it lapse. If it lapses, there is a possibility Manitoba Hydro may lose it to a competitor.

Manitoba Hydro regularly meets with customers in Canada and the US to discuss upcoming resource requirements in order to identify mutually beneficial trading opportunities and provide multiple market opportunities for the power produced from Manitoba Hydro's existing and new hydraulic generating facilities. These new hydraulic generating stations and the environmental attributes associated with the energy produced by these new facilities is a key lever that Manitoba Hydro is using to promote the construction of new transmission/interconnections and increase market access.

Manitoba Hydro has issued requests for proposals to purchase power as evident by the recent acquisition of wind energy from the St. Joseph wind farm project.

RCM/TREE/MH/RISK-1

Reference: KPMG Report, p. 4.

b) Please provide all memoranda, reports, or other documentation regarding the Company's consideration and rejection of requests for proposals as a mechanism for procuring or selling power.

ANSWER:

Please see Manitoba Hydro's response to RCM/TREE/MH/RISK-1(a).

RCM/TREE/MH/RISK-1

Reference: KPMG Report, p. 4.

c) Has the Company ever undertaken a survey of other utilities' employment of requests for proposals for the purposes of procuring or selling power? If so, please provide all memoranda, reports, or other documentation of such surveys.

ANSWER:

Manitoba Hydro has not undertaken a survey of other utilities use of requests for proposals for the purposes of procuring or selling power.

RCM/TREE/MH/RISK-1

Reference: KPMG Report, p. 4.

d) Please provide all memoranda or other documentation that discusses the Company's policies regarding the use of requests for proposals to power purchases or sales.

ANSWER:

Manitoba Hydro's external website (http://www.hydro.mb.ca/customer_services/customer_owned_generation/index.shtml) contains information regarding the process followed by Manitoba Hydro in purchasing power from non-utility generators within the Province. In addition, Manitoba Hydro recently approved a corporate policy regarding the purchase of non-utility generation (Corporate Guideline G810) that describes the pricing, considerations, procurement process and installation requirements for independent power purchases. A copy of this policy and the associated recommendation is provided in attachment #1.

As indicated in Manitoba Hydro's response to RCM/TREE/MH/RISK-1(a), the preservation or establishment of new firm transmission service and the associated market access is a primary reason why Manitoba Hydro may not issue requests for proposals to purchase or sell power.

Subject: **Non-Utility Generation (NUG)**
Number: **G810**
Revised: **2010 03 29 (proposed)**

For more information on this policy, contact:
Emerging Energy Systems Department Manager

1. Approvals

See G1-4 Reference 810 for signing authorities for Non-Utility Generation (NUG)(D810).

2. Sale of Independent Power to Manitoba Hydro

Manitoba Hydro will encourage existing and potential customers to install Non-Utility Generation in Manitoba. All concerned parties including the NUG Owner (D810) and NUG (D810) must meet and comply with applicable statutory requirements, including but not limited to, required licenses, Orders-in-Council, permits and approvals.

NUG Owner must supply its on-site load first, if applicable.

For sale of Independent Power (D810) from a NUG 200 kW or less, Manitoba Hydro, at its sole discretion, may purchase independent power made available to it by a NUG Owner at a price to be established and published annually based on the Standard Residential Run-off Rate.

For sale of Independent Power from a NUG greater than 200 kW, Manitoba Hydro, at its sole discretion, may purchase Independent Power made available to it by a NUG Owner for a project-specific price to be determined by Manitoba Hydro which reflects, at a minimum, the value of the power to Manitoba Hydro.

Special consideration may be given to a NUG Owner that meets one or more of the following:

- supports or increases industrial and economic development in Manitoba
- provides support to Manitoba Hydro's transmission system
- provides support to Manitoba Hydro's distribution system

3. Manitoba Hydro Initiated Independent Power Purchases

Manitoba Hydro may solicit Independent Power purchases through a standard procurement process which may consist of processes such as:

- Request for Proposal
- Single-sourcing
- Sole-sourcing
- Expression of Interest.

4. Installation of Non-Utility Generation (NUG)

Installation of non-utility generation in Manitoba must meet and comply with the applicable interconnection and operating requirements of Manitoba Hydro's transmission and distribution system as detailed in its Open Access Transmission Tariff.

First screen of this guideline

Subject: **Definitions**
Number: **D810**
Revised: **2010 03 29 (proposed)**

For more information on this policy, contact:
Emerging Energy Systems Department Manager

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independent power: the electricity generated from non-utility generation.

non-utility generation (NUG): the generation of electricity, through either cogeneration or single purpose facilities, within the province, by entities other than Manitoba Hydro.

NUG owner: a person, customer, individual, or organization, other than Manitoba Hydro, that owns NUG.

RCM/TREE/MH/RISK-2

Reference: KPMG Report, p. 96, Exhibit 3-16.

a) Please explain why the labels for the x axis were redacted in this chart.

ANSWER:

The information on Exhibit 3-16 of the KPMG Report was redacted as its inclusion would result in the graph providing detailed proprietary information that is considered to be confidential based on rationale #3 for Manitoba Hydro redactions to the KPMG Report and Appendices. Rationale #3 relates to detailed non-standard utility practice solution techniques utilized in short- and long-term planning of capacity, energy and water management with specific reference to the mathematical representation of the hydraulic system.

Normally Manitoba Hydro would have redacted the entire chart, but in an effort to provide as much information as possible in the public version of the KPMG report, Manitoba Hydro redacted only the date information, deeming it to be the minimum redaction necessary to protect Manitoba Hydro's interests.

RCM/TREE/MH/RISK-2

Reference: KPMG Report, p. 96, Exhibit 3-16.

b) If this redaction was inadvertent, please provide a version of Exhibit 3-16 without redaction of the x-axis labels.

ANSWER:

The redaction in Exhibit 3-16 was not inadvertent. Please see Manitoba Hydro's response to RCM/TREE/MH/RISK-2(a).

RCM/TREE/MH/RISK-2

Reference: KPMG Report, p. 96, Exhibit 3-16.

c) Please provide in electronic spreadsheet format the annual flow data relied on to create this chart.

ANSWER:

Providing the data relied upon to create Exhibit 3-16 of the KPMG Report would result in the provision of detailed proprietary information that is considered to be confidential based on rationale #3 for Manitoba Hydro redactions to the KPMG Report and Appendices.

RCM/TREE/MH/RISK-3

Reference: KPMG Report, p. 111.

a) Please provide a copy of the referenced 2004 study, entitled MH Briefing Note: *Economic and Financial Impacts of Changes to Manitoba Hydro's Water Supply from Climate Change*.

ANSWER:

Information relevant to this topic is as follows:

In the absence of credible forecasts of runoff and water supply associated with climate change, Manitoba Hydro has developed two scenarios to assess the potential long-term economic and financial risks of significant change in long-term future water supply due to climate change. These sensitivity scenarios are reasonable estimates of the outer bounds of potential water supply changes and assume a gradual 20% reduction and a 20% increase in streamflow, applied uniformly over the Nelson-Churchill basin over a 35-year period.

While there is a general consensus within the scientific community that the climate will generally be warmer with higher average precipitation, there is a great deal of uncertainty about how climate change could potentially impact runoff. Furthermore, in a regional context there is even greater uncertainty as to whether runoff will increase or decrease and where the greatest impacts will be seen. It is due to this uncertainty that specific forecasts of water supply changes and their associated probabilities cannot be provided.

Long–Term Impacts of 20% Flow Reduction/Increase

Economic and financial evaluations have estimated the long-term (35-year study period) implications of a gradual 20% change in water supply by modifying the long-term streamflow records and determining the impact on system costs and benefits. Both the upside and downside risks are evaluated in this fashion. No adjustments have been made to system expansion scenarios to take advantage of or to protect against opportunities or consequences that would become apparent if these flow modifications were experienced. The analysis concludes that:

1. For the scenario of a gradual flow reduction reaching 20% by the year 2039,

   (a) annual revenues would decrease by a levelized average of $75 million per year (2003$, 6% discount rate), beginning with no change in revenue and accumulating to a decrease of $250 million per year (2003$) by the year 2039

   (b) Domestic rate increases would need to be 0.7% higher (or decreases 0.7% lower) each year; cumulatively rates would be 25% higher in 2039 than they otherwise would be.

2. For the scenario of a gradual flow increase reaching 20% by the year 2039,

   (a) Annual revenues would increase by a levelized average of $50 million per year (2003$, 6% discount rate), beginning with no change in revenue and accumulating to an increase of $180 million per year (2003$) by the year 2039.

   (b) Domestic rate increases would need to be 0.5% lower (or decreases 0.5% higher) each year; cumulatively rates would be 16% lower in 2039 than they otherwise would be.

These sensitivity scenarios were judged to conservatively capture the maximum expected changes in water supply in both a spatial and temporal context:

- The water supply to the Nelson-Churchill basin has significant regional diversity; i.e. it is comprised of four major river systems, arising in different physiographic regions and climate zones and includes a vast drainage area of more than one million square kilometers. Therefore, any reductions or increases in streamflow from climate change will likely vary spatially across the watershed.

- If the climate within Manitoba Hydro's watershed has been changing over past decades, there has been no discernable impact on long-term water supply to date. Therefore, it is not unreasonable to assume that it will take decades for the impacts of climate change to be fully manifest.

RCM/TREE/MH/RISK-4

Reference: KPMG Report, p. 114.

a) With regard to the statement that "prices at the MHEB node, however, may be affected by the shift from sales to purchase in the event of a drought," has the Company undertaken any studies of the potential impact on spot prices at the MHEB node in the event of a drought? If so, please provide copies of any such studies.

ANSWER:

Manitoba Hydro has not undertaken any specific studies on the potential impact on spot prices at the MHEB node in the event of a drought.

However, Manitoba Hydro is aware that overnight spot prices are affected by the magnitude of its import/export activities and that day time prices are generally unaffected by its activities.

Overnight, when maximum imports are required, spot prices increase. Overnight, when maximum exports are required, spot prices decrease. The magnitude of import/export price increases/decreases is affected by the availability of wind energy, maintenance outages of other generating units and load demand, all which vary with the time of year. In anticipation of congestion, Manitoba Hydro hedges spot price risk to the extent it can by buying Financial Transmission Rights.

The key factor that drives the price effect is the availability of transmission from the northwest corner of the MISO region to the east. As new transmission is built to accommodate the development of wind in Minnesota and North Dakota, there will be less congestion on average

RCM/TREE/MH/RISK-4

Reference: KPMG Report, p. 114.

b) With regard to the statement that "less costly power [than from MH's thermal plants] is generally available from MISO," has the Company undertaken any studies of the potential difference between spot prices at the MHEB node and the cost of power from the Company's thermal generating plants during drought periods? If so, please provide copies of any such studies.

ANSWER:

As explained in response to PUB/MH I-138(a), Manitoba Hydro's gas-fired generation is inefficient relative to the marginal supply from the import markets. In other words, its 'heat rate' is high as compared to the 'implied heat rate' in neighbouring markets. For example, the heat rate for the Brandon Combustion Turbines are approximately 13.0 mmbtu/MWh versus an average implied heat rate in Manitoba Hydro's on-peak export market of between 7.5 and 10.0 mmbtu/MWh. Therefore, given the market is an equivalent alternative supply source, market purchased energy will typically achieve a savings of roughly 25 to 40 percent over Manitoba Hydro gas-fired generation. This savings increases when considering other non-fuel costs of operating gas-fired generation (e.g., maintenance).

The above explanation applies in most all cases, including drought. Although marginal congestion and/or marginal loss components of the Location Marginal Price at the MHEB node may be relatively higher during times when Manitoba Hydro is importing large quantities of power (i.e. during drought), in most cases the effect will not be large enough to make Manitoba Hydro CT generation more economic than imports.

RCM/TREE/MH/RISK-5

Reference: KPMG Report, p. 115.

a) Please provide copies of all memoranda, procedures, reports, or other documentation that describe the Company's policies or planning protocols for maintaining "some surplus dependable energy to deal with uncertainty in the rate of domestic load growth or in other factors."

ANSWER:

Manitoba Hydro does not reserve surplus dependable energy to "deal with uncertainty in the rate of domestic load growth or in other factors". However, Manitoba Hydro's Generation Planning policy describes the requirements that the Corporation adheres to in order to ensure that appropriate capacity and energy volumes are available to meet domestic load and other requirements. Manitoba Hydro carries a reserve of 12% of the Manitoba forecast peak demand each year plus any reserve requirements in any export contracts to ensure that capacity is available to meet peak power demands. In addition, Manitoba Hydro's Resource Plan will have adequate energy resources to supply firm energy demand in the event that the lowest recorded coincident river flow conditions are repeated.

A copy of the Generation Planning Policy was provided in Attachment #1 of Manitoba Hydro's response to RCM/TREE/MH I-30(a).

RCM/TREE/MH/RISK-6

Reference: KPMG Report, p. 116.

a) Please provide copies of any user manuals or other model documentation for the SPLASH model.

ANSWER:

Manitoba Hydro considers the SPLASH model to be a proprietary model and therefore its user manuals and documentation are considered to be confidential. Therefore, Manitoba Hydro declines to file this information as it is confidential and if released would harm Manitoba Hydro's commercial and financial interests.

RCM/TREE/MH/RISK-7

Reference: KPMG Report, p. 127.

a) Please provide any memoranda, reports, or other documentation that provide the basis for allowing up to 10% of Manitoba energy demand to be served by energy reserves on interconnected utilities.

ANSWER:

The criterion for allowing up to 10% of Manitoba energy demand to be served by energy reserves on interconnected utilities is contained in the "Corporate Policy Statement on Generation Planning (No. G195)" and is found as Appendix A of the attachment to information request RCM/TREE/MH I-30(a).

RCM/TREE/MH/RISK-8

Reference: KPMG Report, p. 128.

a) Please provide a complete copy of the referenced *Manitoba Hydro 2009/10 Power Resource Plan*. [Please note that the copy of this document provided in Appendix 47 appears to be a summary version of the complete document relied on by KPMG for its analysis.]

ANSWER:

The referenced document was prepared by Manitoba Hydro staff for the purpose of internal use and review only. This document contains information related to Manitoba Hydro's strategy for maximizing benefits associated with the development and marketing of energy, capacity, transmission, and environmental attributes in the export market. The document identifies customer and potential customer names, pricing information and the expected value of several proposed transactions (for which commitments have not yet been secured). The document also identifies possible plans of action in the event of developments outside of Manitoba Hydro's control. Manitoba Hydro declines to file this document as the information contained therein is confidential and if released would harm Manitoba Hydro's commercial and financial interests.

RCM/TREE/MH/RISK-9

Reference: KPMG Report, p. 130.

a) With regard to "MH's practice of pre-building required capacity additions":

i. Please explain whether the term "pre-build" is used in this context to refer to the addition of new capacity in advance of when such capacity would be needed to meet energy requirements.

ii. Please provide a list of all capacity additions that have been "pre-built" by the Company in order to "earn incremental earnings."

iii. Please provide a list of all capacity additions that have been "pre-built" by the Company in order to increase firm sales under long-term contracts.

ANSWER:

i. It is Manitoba Hydro's view that the use of the term "pre-build" on page 130 of the KPMG Report refers to building generating facilities in advance of requirements for domestic load.

ii. Limestone G.S., Brandon G.S. Units 6 and 7 and Wuskwatim G.S. were built prior to having explicit need to serve domestic load and the decisions to build were based on favourable economic and financial evaluations.

iii. The decision to advance Limestone G.S. was made in conjunction with a long-term contract with Northern States Power.

RCM/TREE/MH/RISK-9

Reference: KPMG Report, p. 130.

b) Does pre-building to support firm sales under a long-term contract introduce additional risk for the Company? Please explain.

ANSWER:

Advancing generation and transmission, including interconnections, prior to being required for firm commitments (pre-building) reduces the risks associated with drought but may exacerbate Manitoba Hydro's normal business risks such as the risk that capital costs may decrease after committing to construct new resources.

Manitoba Hydro has not made a commitment to advance resources but is working to protect potential in-service-dates. Any commitment to advance resources will depend on the prevailing circumstances at the time. Development plans will be subject to a full examination when a "need for and alternatives to" process is initiated.

Please see CAC/MSOS/MH I-121(a) to (d) for a discussion on the intended purpose of export sales. Please see KPMG Report and Appendices section 4.10 and Appendix J which present and discuss a drought risk analysis of Manitoba Hydro's recommended development plan.

RCM/TREE/MH/RISK-9

Reference: KPMG Report, p. 130.

c) Is the Company or KPMG aware of other utilities in Canada or the U.S. that have experience pre-building capacity in order to increase firm sales under long-term contracts? If so, please provide documentation of such experience.

ANSWER:

Hydro-Québec constructs projects in advance of the requirement to meet local load, as referenced in the following quote from the "Hydro Québec Strategic Plan 2009-2013" (page 25)

"As a result of recent and ongoing hydroelectric development projects, Hydro-Québec Production expects to have the generating capacity needed to ensure export growth. By 2013, we will have nearly 24 TWh at our disposal. This margin of flexibility will enable us to increase the volume of our exports".

RCM/TREE/MH/RISK-10

Reference: KPMG Report, p. 134.

a) With regard to the arguments regarding risk mitigation from long-term contracts:

i. Would KPMG find these arguments valid if the Company added new capacity to the system solely for the purpose of supplying the energy requirements of long-term contracts? Please explain.

ii. Would KPMG find these arguments valid if the Company added new capacity in advance of when needed to meet domestic energy requirements in order to supply the energy requirements of long-term contracts? Please explain.

ANSWER:

KPMG Response:

i. With regard to the arguments regarding risk mitigation from long-term contracts, KPMG's analysis as presented in our report was of Manitoba Hydro's practice of meeting increases in Manitoba load through the use of a strategy that includes the addition of new capacity to the system funded in part through long term contracts.

ii. Same answer as in limb (a) (i) above.

RCM/TREE/MH/RISK-10

Reference: KPMG Report, p. 134.

b) With regard to the discussion of the benefits of stable and matching cash flows from long-term contracts:

i. Are these benefits relative to an alternative where excess supply is sold into the spot market? In other words, is the argument that sales through long-term contracts provide more predictable and stable revenues than sales into the spot market? Please explain.

ii. Please explain how a long-term firm sale of excess dependable energy would reduce the risk of "liquidity events." For example, would a sufficiently severe drought reduce net revenues from a long-term sale as well as cash flow from other sources of revenue?

ANSWER:

KPMG Response:

i. As explained in section 4.5.1.2 of the KPMG report, sales of power through long-term contracts (that include a predefined electricity price mechanism) should provide more predictable and stable revenues than sales spot markets, that may be potentially volatile (from a price perspective) over the term of the long-term contract.

ii. The excess dependable energy that is sold through long term contracts (which include a pre-defined electricity price mechanism) should provide more predictable and stable revenues than spot market sales. Spot market sales may be potentially volatile (from a price perspective) over a term similar to a long-term contract. Use of long term contracts to sell excess dependable energy thus leads to reduced revenue volatility for Manitoba Hydro. As explained in section 4.5.1.1, reduced revenue volatility is a desirable outcome for Manitoba Hydro and helps reduce the risk of having a liquidity event. Further, Manitoba Hydro's dependable energy calculation takes into account the worst drought experienced on its historical record. This mitigates the risk that in a drought of no greater severity than the worst drought on Manitoba Hydro's historical record, Manitoba Hydro would not have sufficient energy to meet its obligations under the long-term contracts.

RCM/TREE/MH/RISK-11

Reference: KPMG Report, p. 145.

a) In general, does KPMG believe that utility investment in new hydro plant solely for the purpose of supplying power for a long-term contract would reduce or increase risks to ratepayers? Please explain.

ANSWER:

KPMG Response:

KPMG's arguments are in context of Manitoba Hydro's current power sales mix and current strategy that includes addition of new capacity to the system for the purposes of meeting increases in Manitoba load and not in the context of the theoretical argument posed in RCM/TREE's information request under limb (a) of this Information Request. To answer the question posed in limb (a) of this Information Request would require further analysis by KPMG.

RCM/TREE/MH/RISK-12

Reference: KPMG Report, p. 163.

a) Please provide a copy of the referenced report "Major Facilities Strategy, A Power Supply Perspective."

ANSWER:

The referenced document was prepared by Manitoba Hydro staff and was drafted for the purpose of internal review only. This document details Manitoba Hydro's strategy for maximizing benefits associated with the development and marketing of energy, capacity, transmission and environmental attributes in the export market. In this context, the document identifies customer and potential customer names, pricing information and the expected value of several proposed transactions (for which commitments have not yet been secured). The document also identifies possible plans of action in the event of developments outside of Manitoba Hydro's control. Manitoba Hydro declines to file this document as the information contained therein is confidential and if released would harm Manitoba Hydro's commercial and financial interests.

RCM/TREE/MH/RISK-13

Reference: KPMG Report, p. 163.

a) Please provide a complete description of the "series of studies" that the Company is conducting regarding the probabilities of drought.

ANSWER:

The statistical studies to date have been projects by post graduate researchers investigating methods of evaluating joint probability of concurrent multi-year drought in Manitoba Hydro's major sub-basins. The research projects have had limited success in reproducing the mean and variance of the parent record, due in part to the lack of streamflow records in several of the sub-basins in Manitoba Hydro's watershed. The Nelson-Churchill water supply is complex and spatially diverse, comprised of inflow from four major river systems in four different climatic regions and three different physiographic regions. Consequently, the joint probability of concurrent droughts in each major watershed is still not well understood. Therefore, the confidence in the predicted return period of droughts of varying duration and severity is quite low.

Manitoba Hydro also supported post-graduate research projects investigating paleo-climatic data such as tree-rings and lake sediments as indicators of past drought events in a number of sub-basins within the Nelson-Churchill watershed. These studies were intended to investigate whether paleo-climatic data could provide information about past climate extremes (both flood and drought), which could be used by Manitoba Hydro to reconstruct basin-wide droughts in past centuries. While some inference of past extreme droughts was evident in some of the regions studied, in most cases the correlation between tree-rings or lake sediments and streamflow was poor and would not provide enough data to represent past streamflow for the entire basin on a continuous basis. In addition, it was found that tree-rings in the Prairie region do not respond well to winter precipitation, making this type of information difficult to use in drought probability analyses.

RCM/TREE/MH/RISK-13

Reference: KPMG Report, p. 163.

b) Please provide all memoranda, reports, or other documentation regarding the scope, progress, and interim findings of these studies of drought probability.

ANSWER:

Manitoba Hydro has participated in various collaborative initiatives and reviewed a variety of technical external documents over an extended period of time on the subject of water supply and climate change. The majority of this work does not specifically address the probability of drought for the Manitoba Hydro system. In addition, this information is not available in a form that would allow Manitoba Hydro to respond to this information request.

RCM/TREE/MH/RISK-13

Reference: KPMG Report, p. 163.

c) Please provide the date by which the Company expects to complete these studies.

ANSWER:

Since results to date have been inconclusive on probabilities of drought, Manitoba Hydro will continue studies and participate in collaborative research work in this area. Therefore, the date by which Manitoba Hydro expects to complete these studies is undetermined.

RCM/TREE/MH/RISK-14

Reference: KPMG Report, p. 173.

a) Please provide a complete description of the methodology employed by the SPLASH model to forecast export quantities and revenues associated with the "additional US transmission interconnection capabilities" that accompany the new export contracts. Please provide all documentation for the SPLASH model that describes this methodology.

ANSWER:

Manitoba Hydro considers the SPLASH model to be a proprietary model and therefore its methodology and related documentation are considered to be confidential. Therefore, Manitoba Hydro declines to file this information as it is confidential and if released would harm Manitoba Hydro's commercial and financial interests.

RCM/TREE/MH/RISK-15

Reference: KPMG Report, p. 176, Exhibit 4-19.

a) Please provide all SPLASH output reports, electronic spreadsheets, or other workpapers relied on to develop or generated in the process of developing Exhibit 4-19.

ANSWER:

The information requested is considered to be confidential based on rationale #7 for Manitoba Hydro redactions to the KPMG Report and Appendices. Rationale #7 relates to economic and financial benefits including NPV calculations that are confidential and therefore, if released publicly, can harm Manitoba Hydro in negotiation of export sales.

RCM/TREE/MH/RISK-15

Reference: KPMG Report, p. 176, Exhibit 4-19.

b) To the extent not already provided, for each case shown in Exhibit 4-19, please provide for each year of the planning horizon the annual costs and revenues used to derive the NPV for the Sale Scenario.

ANSWER:

The information requested is considered to be confidential based on rationale #7 for Manitoba Hydro redactions to the KPMG Report and Appendices. Rationale #7 relates to economic and financial benefits including NPV calculations that are confidential and therefore, if released publicly, can harm Manitoba Hydro in negotiation of export sales.

RCM/TREE/MH/RISK-15

Reference: KPMG Report, p. 176, Exhibit 4-19.

c) To the extent not already provided, for each case shown in Exhibit 4-19, please provide for each year of the planning horizon the annual costs and revenues used to derive the NPV for the No Sale Scenario.

ANSWER:

The information requested is considered to be confidential based on rationale #7 for Manitoba Hydro redactions to the KPMG Report and Appendices. Rationale #7 relates to economic and financial benefits including NPV calculations that are confidential and therefore, if released publicly, can harm Manitoba Hydro in negotiation of export sales.

RCM/TREE/MH/RISK-15

Reference: KPMG Report, p. 176, Exhibit 4-19.

d) To the extent not already provided, for each case shown in Exhibit 4-19, please provide for each year of the planning horizon the annual export revenues associated with the new transmission facilities that accompany the new export contracts under the Sale Scenario.

ANSWER:

The information requested is considered to be confidential based on rationale #7 for Manitoba Hydro redactions to the KPMG Report and Appendices. Rationale #7 relates to economic and financial benefits including NPV calculations that are confidential and therefore, if released publicly, can harm Manitoba Hydro in negotiation of export sales.

RCM/TREE/MH/RISK-15

Reference: KPMG Report, p. 176, Exhibit 4-19.

e) Please provide the annual discount rates used to derive the expected NPVs for the Sale and No Sale Scenarios. Please provide all workpapers, including electronic spreadsheets, relied on to derive the annual discount rates.

ANSWER:

The information requested is considered to be confidential based on rationale #7 for Manitoba Hydro redactions to the KPMG Report and Appendices. Rationale #7 relates to economic and financial benefits including NPV calculations that are confidential and therefore, if released publicly, can harm Manitoba Hydro in negotiation of export sales.

RCM/TREE/MH/RISK-16

Reference: KPMG Report, p. 182.

a) Please provide a complete description of the methodology employed by the SPLASH model to forecast import quantities and revenues "due to the increased US transmission interconnection in the Sale Scenario." Please provide all documentation for the SPLASH model that describes this methodology.

ANSWER:

Manitoba Hydro considers the SPLASH model to be a proprietary model and therefore its methodology related to forecast import quantities and revenues is considered to be confidential. Therefore Manitoba Hydro declines to file this information as it is confidential and if released would harm Manitoba Hydro's commercial and financial interests.

RCM/TREE/MH/RISK-17

Reference: KPMG Report, p. 229.

a) Please provide a copy of the referenced Dependable Energy Criteria Policy.

ANSWER:

The criterion related to dependable energy is labelled as the "Corporate Policy Statement on Generation Planning (No. G195)" and is found as Appendix A of the attachment to information request RCM/TREE/MH I-30(a).

RCM/TREE/MH/RISK-18

Reference: KPMG Report, p. 230.

a) Please provide a copy of the referenced Generation Planning G195.

ANSWER:

Please see Manitoba Hydro's response to RCM/TREE/MH/RISK-17 which provides information on the location of the requested document.

RCM/TREE/MH/RISK-19

Reference: KPMG Report, Appendix J.

a) For each of the five-year drought scenarios summarized in Exhibits J-1, J-5, and J-9:

i. Please indicate whether curtailment rights were assumed for the purposes of modeling the new long-term sales contracts. Please reconcile this response with the discussion in Section 4.10.4.

ii. For each of the five years of the simulated drought, please provide the incremental amount of replacement energy from market purchases required to serve the new long-term sales contracts.

iii. For each of the five years of the simulated drought, please provide the incremental costs for market energy purchases required to serve the new long-term sales contracts. Please provide the annual market prices assumed for the purposes of calculating these incremental costs.

iv. For each of the five years of the simulated drought, please provide the incremental amount of replacement energy from the Company's thermal resources required to serve the new long-term sales contracts.

v. For each of the five years of the simulated drought, please provide the incremental costs for energy from the Company's thermal resources required to serve the new long-term sales contracts. Please provide the annual energy costs per MWh assumed for the purposes of calculating these incremental costs.

ANSWER:

i. The treatment of curtailment rights as described in section 4.10.4 of the KPMG Report is consistent with the analysis completed in Appendix J and with the Corporate Policy Statement on Generation Planning (No. G195), which can be found as Appendix A of the attachment to information request RCM/TREE/MH I-30(a). Please also refer to the response provided to MIPUG/MH/RISK-3(b).

ii.-v. Manitoba Hydro operates an integrated system in which all available resources are operated as required to meet the total of the Manitoba load and export obligations on a least cost basis while observing operational limitations. Therefore, it may not be appropriate to allocate a specific generation source, such as imports or thermal, to a specific requirement, such as export sales.

It should be noted that Manitoba Hydro's recommended development plan along with alternatives will be subject to a full examination when the "need for and alternatives to" process is initiated. As a result, Manitoba Hydro declines to provide this information at this time.

RCM/TREE/MH/RISK-20

Reference: Report on Risks Faced by Manitoba Hydro in Power Exports (Appendix 3 of Export Power Sales: Risk Management Issues), p. 16.

a) Did the Company implement a "policy cap on the amount of power that could be committed long term," as recommended by Dr. Bhattacharyya?

i. If so, please provide a complete description of the "policy cap" implemented by the Company, along with all documentation regarding policies and procedures for implementing the "policy cap."

ii. If not, please explain why the Company rejected Dr. Bhattacharyya's recommendation, and provide all memoranda, reports, or other documentation regarding the Company's consideration and rejection of this recommendation.

ANSWER:

No, given that there is specific approval at the executive and Board level for significant amounts of long term power and any sale that requires the construction of new generation, a policy cap is not necessary.

Manitoba Hydro utilizes an approval authority table that is approved by the Export Power Risk Management Committee to identify the authorization necessary for Manitoba Hydro to execute a power related transaction. This authority table stipulates that any long-term power transaction that requires new generation, or is for a term greater than five years and greater than 100MW, must be approved by the Board and the Executive Committee. Power transactions that are for a term greater than five years and less than 100MW must be approved by the EPRMC. In addition, the contract provisions for any long-term power transaction requiring new generation have a Manitoba Hydro condition precedent that the obligation to provide power is dependant upon the construction of new generation and/or transmission facilities.

RCM/TREE/MH/RISK-21

Reference: Report on Risks Faced by Manitoba Hydro in Power Exports, p. 27, Table 4.

a) For each calendar year from 2000 through 2009, and for 2010 through September, please provide net revenues from hedging.

ANSWER:

The hedging products discussed in the Report on Risks Faced by Manitoba Hydro were not in existence prior to the start of the MISO market in April 2005. Data provided for fiscal year 2005/06 and on.

	Net Hedging Revenues
2005/06	8,804,133
2006/07	(443,389)
2007/08	2,852,450
2008/09	3,830,215
2009/10	1,876,709

RCM/TREE/MH/RISK-22

Reference: Report on Risks Faced by Manitoba Hydro in Power Exports, p. 32, Table 5.

a) For each calendar year from 2000 through 2009, and for 2010 through September, please provide:

- **i. Amounts (in GWh) of total surplus energy available for export.**
- **ii. Amounts (in GWh) of dependable surplus energy available for export.**
- **iii. Amounts (in GWh) of total net power exports.**
- **iv. Amounts (in GWh) of long-term power exports.**
- **v. Percentage ratios of dependable surplus energy available for export to total surplus energy available for export.**
- **vi. Percentage ratios of total net power exports to total surplus energy available for exports.**
- **vii. Percentage ratios of long-term power exports to total surplus energy available for exports.**
- **viii. Percentage ratios of long-term power exports to dependable surplus energy available for exports.**

ANSWER:

Manitoba Hydro planning is done on a fiscal year basis and therefore this answer is based on more readily available fiscal year data rather than calendar year data.

Please note that Total Generation includes wind purchases and does not include Station Service. This is consistent with the data presented in Table 5 referenced in this question.

	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Total Generation (including Wind and excluding Station Service)	32,499	32,470	28,997	19,158	31,385	37,578	32,335	35,549	34,757	34,157
Net Manitoba Firm Load	20,469	20,494	21,940	21,890	22,426	22,598	23,305	23,961	24,262	23,275
Surplus Available for Export	12,030	11,976	7,057	-2,732	8,959	14,980	9,030	11,588	10,495	10,882
Dependable surplus energy available for export	7,904	7,486	9,268	8,114	7,539	5,885	5,326	4,683	4,417	4,349
Total Net Exports	11,238	10,840	6,420	-2,678	8,286	13,705	8,230	10,606	9,530	9,927
Total Dependable Exports	6,352	6,277	6,544	6,231	5,677	3,876	3,451	3,764	3,799	3,147
% of dependable surplus energy available for export to totals surplus energy available for export	66%	63%	131%	-297%	84%	39%	59%	40%	42%	40%
% of total net power exports to total surplus energy available for exports	93%	91%	91%	98%	92%	91%	91%	92%	91%	91%
% of dependable power exorts to total surplus energy available for exports	53%	52%	93%	-228%	63%	26%	38%	32%	36%	29%
% of dependable power exorts to dependable surplus energy available for exports	80%	84%	71%	77%	75%	66%	65%	80%	86%	72%

RCM/TREE/MH/RISK-22

Reference: Report on Risks Faced by Manitoba Hydro in Power Exports, p. 32, Table 5.

b) For each calendar year from 2011 through 2030, please provide the Company's current forecast of:

- **i. Annual amounts (in GWh) of total surplus energy available for export.**
- **ii. Annual amounts (in GWh) of dependable surplus energy available for export.**
- **iii. Annual amounts (in GWh) of total net power exports.**
- **iv. Annual amounts (in GWh) of long-term power exports.**
- **v. Annual percentage ratios of dependable surplus energy available for export to total surplus energy available for export.**
- **vi. Annual percentage ratios of total net power exports to total surplus energy available for exports.**
- **vii. Annual percentage ratios of long-term power exports to total surplus energy available for exports.**
- **viii. Annual percentage ratios of long-term power exports to dependable surplus energy available for exports.**

ANSWER:

Manitoba Hydro's planning is carried out on a fiscal year basis and therefore this response is based on more readily available fiscal year data rather than calendar year data. Annual amounts of total surplus energy available for export (i) and net exports (iii) are based on the average of 94 years of flow conditions. The energy quantities that are summarized in the table below are based on assumptions consistent with the recommended development plan from the 2009/10 power resource plan.

	i Average Surplus Energy Avail. for Export GW.h	ii Dependable Surplus Energy Avail. for Export GW.h	iii Net Exports GW.h	iv Long Term Exports GW.h	v Dependable Surplus to Average Surplus	vi Net Exports to Average Energy Avail. For Export	vii Long Term Exports to Average Energy Avail. For Export	viii Long Term Exports to Dependable Energy Avail. For Export
2011/12	8628	5071	6462	3385	59%	75%	39%	67%
2012/13	8967	5404	7289	3259	60%	81%	36%	60%
2013/14	8825	4954	7671	3156	56%	87%	36%	64%
2014/15	8176	4326	7536	3156	53%	92%	39%	73%
2015/16	7900	3513	6846	1560	44%	87%	20%	44%
2016/17	7792	3206	6512	1352	41%	84%	17%	42%
2017/18	7708	3264	6348	1352	42%	82%	18%	41%
2018/19	8522	4813	6183	1926	56%	73%	23%	40%
2019/20	10561	5688	5952	2614	54%	56%	25%	46%
2020/21	11568	5944	8337	3494	51%	72%	30%	59%
2021/22	11469	5694	9449	3648	50%	82%	32%	64%
2022/23	12683	8212	9268	4992	65%	73%	39%	61%
2023/24	15995	10302	10696	5086	64%	67%	32%	49%
2024/25	17061	9951	14066	5086	58%	82%	30%	51%
2025/26	16328	8599	14920	3589	53%	91%	22%	42%
2026/27	15764	8046	14561	3589	51%	92%	23%	45%
2027/28	15471	7615	13996	3589	49%	90%	23%	47%
2028/29	15166	7221	13658	3589	48%	90%	24%	50%
2029/30	14783	6805	13313	3589	46%	90%	24%	53%
2030/31	14318	5746	12873	2633	40%	90%	18%	46%

Note:

Dependable Surplus Energy Avail. For Export (column ii) includes energy from Brandon Unit #5.

Net Exports (column iii) represent the total exports less total imports for each fiscal year, and are derived from the average of 94 flow conditions.