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February 21, 2014

VIA Email and Regular Mail

The Public Utilities Board
400-330 Portage Ave.
Winnipeg, MB R3C 0C4

Attention: Hollis Singh, Secretary

Dear Sir:

Re: Manitoba Hydro's motion regarding the evidence of Whitfield Russell Associates ("Whitfield Russell") filed by the Manitoba Metis Federation ("MMF")

The MMF is in receipt of Manitoba Hydro's motion dated February 18, 2014 and is providing a written answer in response to this motion in accordance with section 22(4) of the Public Utilities Board ("PUB") Rules of Practice and Procedure ("Rules"). While not requested in Hydro's motion and as indicated in our previous correspondence, the MMF would request that the Board direct this motion be heard and disposed of in writing, without an oral hearing.

Procedural note

Based on our reading of PUB Rule 22(2) on motions, a motion must contain a clear and concise statement of the facts, the order or the decision sought and the reasons for such an order or decision. A number of facts have been referred to in various paragraphs of Manitoba Hydro's motion and for ease of reference, we would prefer to include a brief statement of facts and a summary of the decisions the parties are seeking, to assist in considering our response to this motion. We will then provide our response to Hydro's grounds for its motion in the numerical order provided and offer our comments on other matters as brought forward by Hydro. We have also highlighted documents the MMF is submitting in support of our response in accordance with Rule 22(5).[1]

[1] For ease of reference, we have included as **Schedule "A"** to this response, all of the Rules being referred to.

Statement of facts

The MMF applied for intervener standing in the NFAT in the prescribed form and by the deadline of May 14, 2013 and provided oral submissions regarding its application at the first pre-hearing conference of the NFAT held on May 16, 2013. The PUB provided the MMF intervener standing in PUB Order 67/13 to speak to the following as referenced in the NFAT terms of reference ("TOR"):

(a) The impact on domestic rates;
(b) Financial and economic risks;
(c) Socio-economic impacts and benefits of Manitoba Hydro's Preferred Development Plan[2] and alternatives to Northern and Aboriginal communities;
(d) Macro-environmental impacts of the PDP compared to alternatives; and
(e) Whether the PDP is the highest level of overall socio-economic benefit to Manitobans.[3]

(Referred to as "in-scope items" for MMF's consideration in its intervention)

In the MMF's submissions leading up to the PUB's decisions regarding approval of interveners' proposed consultants and budgets, firstly in Order 92/13[4] and additionally in Order 127/13[5], the MMF did not indicate how it proposed to consider the in-scope item of financial and economic risk and what consultants would be hired to provide this evidence on behalf of the MMF as these details were not yet known.

Once these details were known, the MMF informed the PUB on November 12, 2013 of its desire to have Whitfield Russell Associates ("Whitfield Russell") provide evidence on in-scope items for MMF's consideration and that the MMF proposed to provide this evidence within the budget already approved by the PUB. The PUB approved the involvement of Whitfield Russell on November 20, 2013 to assist the MMF in "*issues that have been determined to be in scope for MMF*". The MMF provided an additional submission to the PUB on January 30, 2014 providing a scope of work and budget for additional funding to be provided for the evidence of Whitfield Russell and on February 5, 2014, the PUB provided its approval of a portion of the proposed budget. The MMF filed the report on February 12, 2014 and Hydro filed the motion herein on February 18, 2014.

At issue in the motion and as dealt with in this response to the motion, is whether or not portions of evidence filed by the MMF's consultant, Whitfield Russell, in respect of the above in-scope item (b) financial and economic risks, should be stricken from the record for dealing with matters that are 'out of scope' of the terms of reference.

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[2] Note on references to Hydro's Preferred Development Plan – is also referred to as the "PDP" or the "Plan".
[3] Page 28 of Order 67/13 – http://www.pub.gov.mb.ca/pdf/nfat/67-13.pdf.
[4] See decision on MMF at page 10 – http://www.pub.gov.mb.ca/pdf/nfat/92-13.pdf
[5] See decision on MMF at page 7 – http://www.pub.gov.mb.ca/pdf/nfat/127-13.pdf

Decision sought by Hydro

Hydro is seeking to strike from the written evidence of Whitfield Russell, those sections indicated in the first paragraph of its motion. For ease of reference, we have included these sections and attached them to this submission as **Schedule "B"**.[6] Hydro is also seeking to avoid paying for the costs of Whitfield Russell's report as an additional sanction. Alternatively, Hydro indicates that if the MMF is allowed to maintain the evidence in question, then additional evidence as outlined in Hydro's motion should be heard.

Decision sought by the MMF

In response, the MMF seeks for the PUB to dismiss Manitoba Hydro's motion in its entirety and decide not to strike from the evidence of Whitfield Russell, those sections as outlined by Hydro in its motion. In response to Hydro's alternative argument, the additional evidence outlined by Hydro can be appropriately addressed in the normal course in submitting rebuttal evidence which is something that Hydro, as the Applicant in these proceedings, is entitled to do.

Alternatively, if the PUB at this time, will be reviewing the portions of Whitfield Russell's report as called into question by Hydro, the MMF would seek to have the written and oral evidence of Whitfield Russell heard and that any determinations on the part of the PUB regarding whether or not the evidence of Whitfield Russell is in-scope for the NFAT, be determined in the course of hearing the evidence in public hearings. Further, that determinations on the weight the PUB will give to such evidence, be reserved and spoken to in the PUB's final report.

Response to Hydro's grounds for its motion

Overview

The terms of reference note assertions made by Manitoba Hydro that, "*the Plan will provide significant benefits to Manitobans*" and that the value proposition of the Plan "*is justified on a very broad basis*". Further, that it is *"the best development option when compared to alternatives*".[7] These are significant assertions by Manitoba Hydro. The point of the NFAT is that they should be tested. In order to test these assertions, interveners such as the MMF, need to be able to provide evidence to the PUB (that can then be tested by Hydro) that provides the PUB, as well as all Manitobans, with comfort that Hydro's claims have veracity and substance. Attempting to exclude relevant, in-scope evidence, will not achieve that goal. This is what Manitoba Hydro is attempting to do and the PUB should reject this attempt.

Having reviewed the Plan and completed the information request process in the NFAT, the MMF has aimed to assist the PUB in considering the Plan and provide a unique perspective in speaking to particular in-scope items that the PUB has identified for MMF's consideration. The evidence of Whitfield Russell examines Hydro's Plan and completes a thorough analysis of the financial and economic risks of the Plan when compared to Alternatives. While this evidence discusses Bipole III as it relates to the project components of the Plan and alternatives, it does

[6] In Schedule "B", the sections not being called into question by Hydro have been stricken through. The sections in question have been left blank for ease in reading.
[7] Page 1, NFAT Terms of Reference http://www.pub.gov.mb.ca/pdf/nfat/TermsOfReference-Ap25.pdf

not consider Bipole III as a project component in and of itself as is specified in the terms of reference[8].

With respect, and for the reasons that will be discussed in greater detail below, the MMF believes that any independent review that does not consider a $3.3 billion transmission line that is necessary for the implementation of the Plan would undermine the credibility of this NFAT review on the Plan as a whole. Contrary to Manitoba Hydro's assertions, considering Bipole III as a part of assessing the Plan does not equate to undertaking an NFAT on Bipole III or a hearing on whether Bipole III is truly needed for reliability. This type of contextual evidence is needed for the PUB to undertake a credible review of a Plan in which Bipole III is a fundamental and necessary part.

(1) Portions of Whitfield Russell's evidence are not "out of scope"

The terms of reference for the NFAT on page 4 read as follows:

> The following items are not in the scope of the NFAT:
> - The Bipole III transmission line and converter station project; (emphasis added)

Hydro refers to this section of the TOR and argues that the portions of WRA evidence deal explicitly with the Bipole III transmission line and that this evidence is out of scope. There are two competing views of what exactly is being referred to in the TOR. Hydro is of the view that any mention of Bipole III, whatsoever, is out of scope. The MMF notes that there is a distinction between considering Bipole III as a project in and of itself where questions posed on the merits and purposes of Bipole III are fully tested and considering Bipole III as it relates to in-scope items of the TOR.

In PUB Order 119/13[9], handed down after the first round of information requests, the PUB directed Hydro to answer IRs posed by the Independent Expert Consultants ("IECs) that among other things, dealt with the outputs of Bipoles I, II and III as well as information on incremental costs for Bipole III, Keeyask and Conawapa[10]. The PUB found that this information was relevant to Hydro's ability to deliver on its export commitments – a matter that was in-scope for consideration by the IECs. The PUB further ordered[11] that Hydro did not have to answer IRs posed by the Consumers' Association, Manitoba ("CAC") as the questions related to the level of cost contingencies and capital cost estimate for Bipole III and were found to be out of scope[12].

The PUB's direction in Order 119/13 indicates that there is a distinction between discussions of Bipole III as it relates to matters that are in-scope for the NFAT and discussions of Bipole III as a project component in and of itself. As will be set out in further detail below, the MMF submits that the discussions of Bipole III in Whitfield Russell's evidence are relevant and in-scope items for consideration in the NFAT.

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[8] Page 4, NFAT Terms of Reference
[9] Pages 10-11 Order 119/13 http://www.pub.gov.mb.ca/pdf/nfat/119-13.pdf
[10] See Information Requests – PUB-105 (a)-(c) http://www.pub.gov.mb.ca/nfat_information_requests.html
[11] Pages 11-12 Order 119-13
[12] See Information Requests – CAC-195 (a)-(c)

MMF's comments on the portions of Whitfield Russell's evidence called into question by Hydro

While there is much comment on the purported "partisan" agenda on the part of the MMF and many rhetorical questions posed by counsel, Manitoba Hydro provided very little consideration of the specific sections it is moving to strike. As such, we have included for the PUB's consideration, our comments on how the proposed sections relate to in-scope items of the terms of reference.

In summary, the PUB in this proceeding is analyzing "alternatives to" the Plan, which includes Keeyask in 2019, Conawapa in 2026, Bipole III and enhanced interconnections to the United States. The PUB's analysis encompasses impacts of financial risk. Although Bipole III was positioned front and center in the Clean Environment Commission ("CEC") hearings on Bipole III, Keeyask, Conawapa and enhanced interconnections to the United States were not. The CEC proceeding focused on the environmental impacts and transmission reliability associated with delivering Hydro's existing Northern Hydro generation – other than Keeyask and Conawapaa – to Manitoba consumers.

The CEC's inquiry did not encompass a broad range of engineering, financial and ratemaking issues associated with developing Keeyask and Conawapa for export. Although the CEC addressed enhanced interconnections to the United States as an alternative to Bipole III, it did so only in combination with massive blocks of unneeded in-Manitoba gas-fired generation and long-term firm power purchases from the United States. Keeyask and Conawapa were not front and center in the CEC but were instead addressed only in passing. The ability of Manitoba Hydro to deliver the output of Keeyask and Conawapa by means of Bipole III was positioned by Hydro for consideration by the CEC only as a nice ancillary benefit in the remotely possible event that Keeyask and/or Conawapa were developed later.

Now, however, Keeyask and Conawapa are front and center in this NFAT as components of a detailed engineering and financial review of Manitoba Hydro's preferred total long-term system plan. The clear link between Keeyask and Conawapa, on the one hand, and Bipole III, on the other, has crystallized. That link has become inextricable in terms of system engineering, impacts on ratepayers and financial risk. The facts underlying the PUB's inquiry, differ substantially from those before the CEC, and the scope of the PUB's inquiry into the nature and range of the impacts of Bipole III has been expanded beyond the issues addressed by the CEC.

In the NFAT, the PUB must consider the rate impacts of NOT building Keeyask and Conawapa, and as part of that consideration, the PUB would be remiss not to address the question of whether enhanced interconnections to, and imports from, the United States can meet the reliability need that Manitoba Hydro originally asserted could be fulfilled by Bipole III and, if so, the question of whether Bipole III can be deferred or cancelled, thereby further reducing the burden on Manitoba ratepayers and risks to their power supply. It is those questions, on which Whitfield Russell's report is focused in its discussion of Bipole III, the MMF submits, are highly relevant for the PUB's consideration in the NFAT.

(2) The terms of reference and MMF's submissions regarding the evidence of Whitfield Russell

Manitoba Hydro submits that the MMF cannot unilaterally ignore or amend the terms of reference to include matters that are explicitly excluded. Hydro notes that the Minister determined the relevant matters for consideration in the TOR and we would note that the PUB has considered the discussion of Bipole III as it relates to relevant matters in the TOR in Order 119/13. In submitting this evidence, the MMF endeavored to adhere to the requirements of the TOR and Order 119/13. Rather than ignoring or attempting to amend the TOR as Hydro suggests, the MMF submitted this evidence after careful consideration and with full regard for and particular attention to the TOR and Order 119/13.

Hydro references a number of the MMF's submissions regarding its proposed evidence and the evidence of Whitfield Russell. Hydro has already had the opportunity to fully express these concerns in responses to MMF's proposals regarding its evidence and the PUB has already provided its approval of the MMF's submissions. The MMF proposed and has submitted a report that provides an analysis of the financial and economic risks of the Plan and alternatives which is a relevant matter for consideration in the NFAT.

(3) Leave of the PUB is not needed to call this evidence

As referred to above, the Minister determined the relevant matters for consideration in the TOR and the PUB has considered the discussion of Bipole III as it relates to relevant matters in the TOR in Order 119/13. Leave of the Public Utilities Board to file the evidence of Whitfield Russell is not required, as this evidence has been filed in accordance with the TOR and Order 119/13. The MMF would note that Hydro did not suggest that the PUB seek leave of the Minister after the PUB made its decision on the discussion of Bipole III in Order 119/13.

(4) It is not unfair to hear the evidence of Whitfield Russell

To clarify, the discussion of Bipole III as a reliability project in Whitfield Russell's report, has been provided in response to Hydro's discussion of "The Bipole III Reliability Project" in Chapter 5, The Manitoba Hydro System Interconnections and Export Markets, of Hydro's Business Case. In response to Hydro's insistence that Whitfield Russell's evidence speaks to the merits of Bipole III and its purpose in meeting Hydro's reliability needs, mentions of "reliability", "need" or "deferral" of Bipole III in Whitfield Russell's report, do not speak to the merits of Bipole III as a project in and of itself. Rather, as has been set out in the above sections, this discussion is based within the analysis of the financial and economic risks of the Plan when compared to alternatives.

As outlined in the statement of facts, financial and economic risks of the Plan and alternatives has been an issue of interest to the MMF since the very first pre-hearing conference in the NFAT. Once the MMF reviewed Hydro's Business Case, completed the first round of information requests and reviewed the PUB's Order 119/13, the MMF sought the expertise of Whitfield Russell in speaking to this issue. The MMF submitted its proposals regarding the evidence of and funding for Whitfield Russell in accordance with the Rules and direction provided by the PUB, and all of the parties in the NFAT were copied on same.

This is a matter that has not only been considered by the MMF, but has been considered by other parties and remains open for consideration by other parties to some extent. For instance, the IECs have considered the costs associated with Bipole III and Hydro's ability to deliver on its export commitments. Parties had the ability to expand on the analysis started by the IECs in asking information requests of IECs on its analysis in this regard. In addition, other participants will have the opportunity to ask information requests of, and cross examine Whitfield Russell on, this evidence as well as refer to the information obtained in the pre-hearing and hearing stages of the NFAT in final submissions if they so choose. Manitoba Hydro, as the Applicant in this process, has the ability to file rebuttal evidence immediately before the commencement of hearings and without any further information requests on that evidence from the other parties.

As a result of the foregoing, the MMF submits that the other parties, particularly Manitoba Hydro, will not be unfairly disadvantaged if this evidence is allowed to proceed. Further, there will be opportunities for parties to consider the matters discussed in Whitfield Russell's evidence in the pre-hearing and hearing stages of the NFAT.

In addition, Manitoba Hydro argues that it is unfair to the public, to allow the evidence of Whitfield Russell to be heard. We find this argument particularly troubling coming from Hydro, as the Applicant in these proceedings, that is on one hand, boldly asserting that the Plan is the best development option when compared to alternatives and on the other hand, is vehemently opposed to a thorough analysis of the financial and economic risks of the Plan compared to alternatives.

The terms of reference speak to the need for the NFAT to be held in public and that participation by the public is welcomed. Even certain information that is considered to be commercially sensitive, is to be made available in a particular form as there is to be a balancing of the need to protect commercially sensitive information with the need for evidence to be presented in a transparent and public manner. Similarly, as financial and economic risks of the Plan have been included for consideration of the PUB in the terms of reference, one would expect that the public is entitled to a thorough analysis of same. Committed to this end, the MMF is of the view that the public will benefit from hearing the evidence of Whitfield Russell and engaging in the important discussions that may result.

(5) The CEC did not test or make any determinations on Bipole III's reliability need or undertake a NFAT on Bipole III

The MMF is of the view that the consideration of Bipole III is relevant to the financial and economic risks of the Plan compared to alternatives which is an in-scope item for consideration in this NFAT and is the focus of our submissions in response to Hydro's motion. However, since Hydro has made statements regarding the CEC's consideration of Bipole III, we feel the need to provide further clarification of these matters as have been brought up by Manitoba Hydro.

The MMF believes that all parties familiar with the CEC hearings on Bipole III, can agree that an NFAT has not been conducted on Bipole III. Prior to the commencement of its hearing on Bipole III, the CEC sought clarification from the Minister as to whether or not the terms of reference, were to include an NFAT review. The Minister clarified that the terms of reference did not include instruction for the CEC to conduct an NFAT on Bipole III. These letters have been

attached to this submission as **Schedule "C".** The MMF, while greatly concerned that there has not been an NFAT review of a $3.3 billion transmission line, is fully aware and accepts that this hearing is not a NFAT review of Bipole III.

Similarly, the "reliability" need for Bipole III was not addressed or determined in the CEC hearing. Contrary to Manitoba Hydro's assertions, the CEC Chair made it very clear at the beginning of the Bipole III hearing that issues with respect to the reliability need were not within the CEC's review. The following testimony from the CEC hearing is relevant to this:

- The Chairman: We would see that whatever Manitoba Hydro presents under the rubric of NFAAT would be by way of background. As we have noted, it will not be tested, given the Minister's direction on our terms of reference. It is also something that we will not, as a result, be providing any advice to the Minister in respect of.[13]

- Mr. Meronek: …For example, when Mr. Bedford mentioned reliability, is that off the table in the sense that – is the Commission going to be making recommendations or rendering any advice to the Minister with respect to whether the Bipole III is needed from a reliability point of view, or is it a given that Bipole III will be build, it is just a matter of where?.....[14]

- The Chairman: We see those as being off the table.[15]

While some evidence with respect to the "reliability need" of Bipole III was provided in the hearings, participants were limited in their ability to test this evidence, and, more importantly, the CEC made no finding or determinations with respect to that evidence. In effect, Manitoba Hydro's claims on this front have been left untested based on the manner in which the Manitoba Government has scoped the various reviews before the PUB and the CEC.

With that said, the MMF is in no way suggesting that the PUB hear the evidence of Whitfield Russell as a sort of last minute NFAT review of Bipole III. These comments are offered in response to Manitoba Hydro's mention of the Bipole III hearings before the CEC. The MMF submits that the consideration of Bipole III in Whitfield Russell's evidence is relevant and necessary to the financial and economic risks of the Plan compared to alternatives which is in-scope for this NFAT.

(6) Selective references to WRA evidence

Sections of Whitfield Russell's evidence are quoted by Hydro without reference to the full text. These quotes were included as part of the analysis of the financial and economic risks of Hydro's Plan when compared to alternatives. Hydro suggests that hearing the evidence of Whitfield Russell would be a waste of time. While we are not sure what Hydro envisioned when it first asserted that its Plan provided, "*the best development option when compared to alternatives*", by we would hope that an NFAT review of its Plan would allow for the terms of reference to be given the full consideration that is required.

[13] Lines 14-21 on page 52, Transcript of CEC Pre-Hearing on Bipole III dated September 11, 2012.
[14] Lines 20 -25 on page 62, and line 1 on page 63.
[15] Lines 6-7 Page 63.

MMF's comments on PUB's authority to award costs

Manitoba Hydro argues that as an additional sanction, it should not be made to pay the costs associated with Whitfield Russell's evidence. As Hydro is aware, upon hearing the submissions of the MMF and Hydro on the proposed budget for Whitfield Russell's evidence, the PUB provided its approval of a budget for Whitfield Russell in its decision as set out in its correspondence of February 5, 2014. Hydro does not have the ability to seek to avoid to pay for these costs. It had the ability and exercised that ability, to provide comments to the PUB on MMF's submission.

Additionally, in accordance with the Rules and the NFAT billing protocol, Hydro will have the opportunity to make submissions on 30% of intervener budget amounts being held back pending final approval of the PUB at the conclusion of hearings. Hydro and all other parties, must adhere to and respect, the PUB Rules and processes that the PUB has put in place for the funding for parties in the NFAT.

MMF's comments on the credibility of Whitfield Russell

Manitoba Hydro argues that the MMF has encouraged Whitfield Russell to "revisit" Bipole III and that this is in furtherance of "patently partisan objectives". In accordance with the PUB's approval of MMF's proposal on the involvement of Whitfield Russell, the MMF asked Whitfield Russell to complete an analysis of the financial and economic risks of the Plan when compared to alternatives. In preparing the report, Whitfield Russell reviewed Hydro's Business Case, responses from Hydro to parties' information requests, and other documents related to issue of financial and economic risk in the NFAT.

Whitfield Russell is a highly qualified expert that has provided analyses in all areas of electric utility regulation. Whitfield Russell Associates' professionals have appeared as regulatory and litigation expert witnesses on electric utility planning, operations, contracts and rates before State and federal courts and agencies in more than 30 States in the United States, the District of Columbia, and three Canadian Provinces, including an NFAT Review before the Public Utilities Board here in Manitoba. It is utterly offensive for Manitoba Hydro to suggest that the evidence prepared by a highly qualified expert like Whitfield Russell and submitted by the MMF in accordance with the in-scope items for its consideration, is "partisan".

Conclusion

The evidence of Whitfield Russell relates to relevant matters that are in-scope for consideration by the PUB. The MMF respects the mandate provided by the Minister for this NFAT and has been grateful for the opportunity to assist the PUB in accomplishing its task in providing recommendations to the Minister. In furtherance of this, the MMF remains primarily focused, in contributing to the important analysis being undertaken by all parties involved in the NFAT.

For the reasons as set out herein, the MMF is of the view, that the PUB should decide not to grant the decision sought by Hydro and that Hydro's motion be dismissed in its entirety. If you have any questions or if you would like to discuss this further, please call or email and we will be sure to respond at our earliest opportunity.

Yours truly,

MYERS WENBERG LLP

Per: "Sent Electronically"

JESSICA SAUNDERS
JMS/ra

cc. R.F. Peters and Sven T. Hombach, Board Counsel, Fillmore Riley LLP
Douglas A. Bedford, Patricia J. Ramage and Marla D. Boyd, Manitoba Hydro
Registered Interveners

att. Schedule "A": Sections of Rules being referred to
Schedule "B": Portions of WRA evidence being called into question
Schedule "C": Letters of the CEC and the Minister re: CEC Terms of Reference

Schedule "A"

a) Applicant's oral rebuttal evidence to address issues raised for the first time during Interveners'/Independent witnesses' oral testimony;

b) cross-examination of the applicant's oral rebuttal evidence; and

c) Applicant's re-examination of rebuttal witnesses to clarify points that were first raised during the cross-examination of the rebuttal witnesses.

Attendance of Witnesses (Subpoenas)

20. (1) The Board or party who requires the attendance of a person as a witness before the Board may serve the person with a subpoena requiring him or her to attend the hearing at the time and place stated in the subpoena and the subpoena may also require the person to produce at the hearing the documents or other things in his/her possession, control or power relating to the matters in question in the hearing that are specified in the subpoena.

(2) Any party served with a subpoena and who has an objection to filing a document or to attending the hearing stated in the subpoena may proceed for an order by way a motion pursuant to Rule 22.

(3) The subpoena for a witness to produce a document or to attend a hearing shall be signed by the Secretary of the Board.

Amendments

21. In any proceeding the Board may, on condition or otherwise:

a) allow any amendment to any document;

b) order to be amended or struck out, any document or any part thereof which may tend to prejudice, embarrass or delay the fair hearing of an application on its merits; and

c) order such other amendment as may be necessary for the purpose of hearing and determining the real questions and issues in the proceeding.

Motion

22. (1) Any matter which arises in the course of a proceeding that requires a decision or order of the Board, shall be brought before the Board by a motion.

(2) A motion shall be in writing, in any form, provided it contains a clear and concise statement of the facts, the order or the decision sought and the reasons for such an order or decision.

(3) A motion shall be filed and served on all interested parties at least 6 days before the motion is heard.

(4) Any party who wishes to respond to a motion shall file and serve on all parties a written answer no later than 2:00 p.m. two days before the day the motion is heard.

(5) Any document which a party may wish to submit in support of a motion or response shall accompany the notice or response and shall be filed and served on all parties.

(6) Notwithstanding subsections (2) to (5), a motion may be made orally or in writing at any time during the course of a hearing and shall be disposed of in accordance with such procedures as the Board may direct.

(7) When hearing a motion, the Board may permit oral evidence in addition to any affidavit or other supporting material.

Schedule "B"

Approximately 70% of Manitoba's hydro-electric generating capacity is delivered to southern Manitoba via the Bipole I and Bipole II HVDC transmission lines. Bipoles I and II share the same transmission corridor through the Interlake region over much of their length from northern Manitoba to a common terminus at the Dorsey Converter Station. The existing transmission system is therefore vulnerable to the risk of catastrophic outages of either (or both) Bipoles I and II in the Interlake corridor and/or at Dorsey due to unpredictable events, particularly severe weather. This vulnerability, combined with the significant consequences of prolonged major outages, caused Manitoba Hydro to pursue a major initiative to reduce dependence on the Dorsey Converter Station and the existing HVDC Interlake transmission corridor.

However, as will be discussed in more detail below, Manitoba Hydro's reasoning in support of the reliability need for Bipole III is flawed. Indeed, Manitoba Hydro's PDP will put more eggs in the Northern hydro basket, fill the reserve transmission capacity to be provided initially by Bipole III and return Manitoba Hydro to its dependence on the HVDC Interlake transmission corridor.

THE 78-YEAR STUDY PERIOD IS TOO LONG

Manitoba Hydro's use of an extremely long study period (78 years) serves the purpose of tilting its economic analysis in favor of long-lived assets such as hydro projects that are projected to generate substantial off-system sales revenue. Initially, Manitoba Hydro noted that "The next step was to develop and evaluate potential alternative development plans using the short-listed resource options. The number and size of resource options were selected to cover Manitoba's energy and capacity needs for the next 35 years." See Executive Summary at 17:14-16. However, actual economic evaluations were based on the much longer 78-year time period, as described in Chapter 9 at 7:15-18:

The total study life used in this analysis is 78-years. For the total study life, Manitoba Hydro combines two approaches – a 35-year detailed evaluation and a long-life asset evaluation which extends from the end of the 35-year study period to the end of the service life of hydro-electric generation assets, as representing the longest-lived assets.

Manitoba Hydro's response to LCA/MH 1-189 notes that the 78-year study length was determined by using the weighted-average life of the hydro plants (67) years, extending from the 2025, when the Conawapa Project was initially assumed to go into service. Attachment A of the

~~By relying primarily on surplus capacity additions of large, costly hydro plants based on its expectation of benefits arising from potentially unrealistic high export energy prices, Manitoba Hydro would forgo the flexibility it might otherwise have (i) to adjust to a situation in which loads turn out to be much smaller than those it currently forecasts, (ii) to locate plants where they would be more useful and valuable in reducing losses and the needs for transmission additions, and (iii) to reduce exposure to long transmission lines needed to deliver the output of remote hydro additions to Winnipeg and the US~~. Indeed, Manitoba Hydro's initial rationale for building Bipole III is that, because so much of its generation is located on the Nelson River, far from the major loads in Winnipeg, it needed a backup path to cover the simultaneous loss of Bipoles I and II. By building Keeyask and Conawapa in the same general area, Manitoba Hydro will fill up its backup transmission path and put even more of its eggs in one remote basket, creating the potential for trapping even more generating capacity in the North after an extreme combination of HVDC transmission outages and creating the need for even more backup transmission capacity on Manitoba Hydro's interconnections with the United States. A less risky approach would involve building gas plants in locations closer to the Winnipeg load center where power is needed and the transmission system is networked. Plus, gas plants could be distributed across its service area, reducing the concentration of large blocks of generation in a single transmission-constrained region. Indeed, by planning to build natural gas plants closer to Winnipeg, Manitoba Hydro would avoid any "need" to build Bipole III, which is driven by its high-risk plan to build excess hydro capacity and move even more hydro power to the U.S. market in the hope of making profitable sales.

If Manitoba Hydro insisted that it needed a backup for the simultaneous loss off Bipoles I and II, it could reinforce the capability of its interconnection with the U.S. instead of building Bipole III.

THE COSTS OF BIPOLE III SHOULD BE ATTRIBUTED ONLY TO THOSE ALTERNATIVES WHICH REQUIRE THE EXTRA TRANSMISSION CAPACITY IT PROVIDES

In its Environmental Impact Statement ("EIS") before the Clean Environment Commission ("CEC"), Manitoba Hydro attributed the need for, and the cost of, Bipole III primarily to system reliability. This reliability-based need for Bipole III will be discussed in a later section. But now the real purpose for Bipole III has become apparent. Based upon the economic evaluations of alternatives provided in the NFAT, it is clear that Bipole III is being built primarily to carry the output of Keeyask and Conawapa to both Manitoba loads and to loads in the United States, not to enhance reliability. The long period of negotiation over the export contracts indicates a longstanding intent to build additional hydro on the Nelson River.

Manitoba Hydro's decision to attribute the need for, and the cost of, Bipole III primarily to system reliability has had the effect - advantageous in Manitoba Hydro's eyes - of laying the groundwork for - and diverting attention from - its longstanding plans to build Keeyask and Conawapa. Those plans in fact depend upon Bipole III. Pre-building Bipole III supports the ostensible economic rationale for those plans by attributing a zero cost for Bipole III, and therefore much reduced transmission costs, in those plans. That attribution lowers the ostensible cost below that which Manitoba Hydro will actually incur under the PDP when building Keeyask, Conawapa and Bipole III together. The PDP is Alternative 14 of the NFAT, which calls, in part, for:

i. 2,180 MW (2,025 MW net) of new hydroelectric generation to be constructed at the northern end of the Nelson River (i.e., the 695 MW (net 630 MW) Keeyask Generating Station in 2019 followed by the 1485 MW (net 1395 MW) Conawapa Generating Station) in 2025 and

ii. the output of that new hydroelectric generation to be delivered to the Winnipeg load center by means of Bipole III and the existing HVDC system, as well as upgrades to the collector system and upgrades to the North-South AC transmission system. Much of that output will be redelivered to wholesale buyers in the United States through a new

interconnection with the United States (the 750 MW, 500 kV AC Manitoba-Minnesota Transmission Project).

Manitoba Hydro ignores the cost of Bipole III when assessing its preferred plan through a simple cost allocation sleight of hand: by assuming that the cost of Bipole III will represent a sunk cost under every alternative resource expansion plan. Through this sleight of hand, Manitoba Hydro has given its preferred plan, which must have Bipole III to work, the appearance of being more cost-effective than it really is by not including the costs for Bipole III and has added unwarranted costs to the plans that do not need Bipole III. The cost of Bipole III should instead be attributed only to those plans (including the PDP) that call for the Conawapa Project alone, or both the Keeyask and Conawapa Projects.

A prior 35-year analysis of the expected benefits of proposed northern hydro generation combined with construction of the Bipole III transmission line indicated that the All Gas scenario would be preferred at a 10% real discount rate (assuming that the in-service date ("ISD") of Bipole III was delayed to the 2024 ISD of new hydro generation (Conawapa or Gull), and that the costs of Bipole III were added to the costs of the new hydro generation).[9] See Attachment PUB/MH 1-024, Manitoba Hydro's 2004/05 Power Resource Plan ("PRP") at pages 10-11, attached as Appendix 1. While the hydro generation assumptions in that prior study are different from those in the NFAT (e.g., Conawapa or Gull versus Keeyask and/or Conawapa), the results of those analyses indicate that delaying Bipole III and adding the Bipole III costs to the hydro generation makes the hydro alternatives less desirable. The first part of the study (at 10), assumed Bipole III was built East of Lake Winnipeg. The second part of the study assumed Bipole III's costs were 46% higher with a Western route around Lake Winnipeg, and showed that the All Gas alternative was preferable. In addition, these studies were run using very different assumptions from those in the NFAT (e.g., lower cost estimates for Conawapa and Bipole III, as well as export prices presumably much higher than those used today).

[9] At a 6% discount rate, Conawapa (with 5 units or 10 units) or Gull (including SCGT1X-35, 39) were more favorable than an "all SCCT Sequence."

By adopting the analytical approach for the NFAT that Bipole III is a sunk cost, Manitoba Hydro has biased its analysis in favor of the PDP. Under the PDP, Bipole III will be built first (for commercial service by 2017/2018 and ostensibly for reliability reasons alone), but, in a happy coincidence for Manitoba Hydro, the capacity of Bipole III will be treated as if it is a "free good," available free of charge (although paid for by Manitoba Hydro customers) to accept the output of Keeyask in 2019 and of Conawapa in 2026.

However, the cost of Bipole III is not a "sunk cost." Bipole III has not yet been built but is instead presumably in the early stages of construction with an estimated in-service date of 2017/2018. Much could undoubtedly be saved by cancelling it or deferring its in-service date.[10]

It is not correct to assume that the cost of Bipole III is a neutral factor in assessing all resource plans because not all resource plans require construction of Bipole III in 2017/2018. Many resource plans will not require Bipole III until much later - or at any time. For example, an "all gas" alternative would not need Bipole III at all because that alternative involves adding thermal generation near the Winnipeg load center instead of adding new hydroelectric generation at locations remote from the Winnipeg load center along the Nelson River. Yet the cost of Bipole III is included in Manitoba Hydro's Plan 1, its "all gas" alternative. In a proper analysis, the cost of Bipole III would not be needed at all in the "all gas" alternative (and should not be attributed to that alternative). On the other hand, the cost of Bipole III should be explicitly added to the cost of the PDP because the transmission line is necessary for that alternative to work.

RECOGNIZING THE COST OF BIPOLE III AND OTHER SUNK COSTS WOULD UNDERMINE THE PREFERRED DEVELOPMENT PLAN

~~Bipole III is projected to cost $3.3 billion and enter service in 2017/2018. See the response to PUB/MH I-053a Revised. Moreover, about $1.0 billion of the projected total cost of Keeyask has also been ignored in Manitoba Hydro's analysis because those costs are also considered sunk~~

[10] A twelve (12) year delay of a $3.3 billion investment amortized over 30 years at 5% (assuming a 2% annual escalation in the investment cost) would save $970 million, about the cost of a new 500 kVAC Manitoba-U.S. interconnection.

costs.[11] The $3.3 billion in outlays for Bipole III are projected to be incurred early in Manitoba Hydro's study period (from the present through 2017/2018), and thus the NPV of those outlays will be roughly equal to their $3.3 billion cost.[12]

The $3.3 billion cost of Bipole III exceeds the incremental benefits which the Preferred Development Plan is said to produce under many scenarios as compared to the benefits of the "All Gas Plan." Accordingly, adding the $3.3 billion cost of Bipole III to the NPV of the PDP will make it less attractive than the all-gas plan in many scenarios. See the tabulation of relative benefits in Table 2 at page 23 of 42 of the NFAT Executive Summary. The PDP is Plan 14. In only a third of the scenarios studied does the PDP yield incremental benefits that are more than $3.3 billion greater than the benefits associated with the "All Gas Plan." ~~Those scenarios are based on assumptions of low discount rates and/or high energy prices - both of which assumptions give greater value to off-system sales of power to the United States made possible by adding Keeyask and Conawapa. That is, use of the low discount rate will lend greater value to off-system sales projected to be made at high prices far into the future than would a high discount rate. If the study period were 35 years instead of 78 years, the Preferred Development Plan would produce fewer benefits than would Plan 4 (K19/Gas25/250 MW).~~[13]

Bipole III has a similar effect on the other resource plans. For example, the $3.3 billion cost of Bipole III exceeds the incremental benefits which the Preferred Development Plan will produce

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[11] As noted in Chapter 11 at 5:20-27:

> As such, all costs (incurred or estimated) prior to June 2014 that were required to protect the in-service dates for Keeyask and Conawapa are considered as "sunk" in the economic evaluation. The financial evaluation, however, recognizes these costs need to be included in the revenue requirement at an appropriate point in time.

By expending $1.0 billion on Keeyask even before it was formally selected and approved as an element of the PDP, Manitoba Hydro has provided further support for the notion that development of Keeyask was pre-ordained. Manitoba Hydro's decision to ignore those potentially imprudent expenditures on Keeyask (because they are sunk costs) obviously favors any alternative that includes Keeyask. By not including expenditures on Keeyask to date in its analysis, Manitoba Hydro has further biased that analysis in favor of the PDP.

[12] NPV, or Net Present Value, is "the difference between the present value of the revenue and the present value of the cost. It is the amount of money, if invested today at a stated discount rate, that would grow to an amount sufficient to finance and to provide a return on the investment over the life of the project. When comparing alternatives, the incremental NPV represents the incremental net benefits (or net costs) associated with the increment of investment made for a higher cost investment option,..." See NFAT Chapter 9 at 3:17-22

[13] See LCA/MH 1-397.

under many scenarios as compared to the benefits of Plan 7 (SCGT/C26 - composed of simple cycle gas turbines plus Conawapa in 2026) and Plan 8 (CCGT/C26 - composed of more efficient gas-fired combined cycle generation plus Conawapa in 2026). Again, see the tabulation of relative benefits in Table 2 at page 23 of 42 of the Executive Summary. The incremental benefit of the PDP over the benefits produced by either the SCGT or the CCGT alternatives exceeds $3.3 billion for even fewer scenarios: only those based on assumptions of low discount rates AND high energy prices. Bipole III would be needed in these gas-fired scenarios but not until eight years later than now planned - in 2026 when Conawapa enters commercial service. Pursuing either of those combination Conawapa/gas-fired scenarios would enable Manitoba Hydro to:

1. Defer for eight years the in-service date of Bipole III (or longer depending upon demand growth and trends in export prices), potentially leading to a further deferral and/or cancellation of Bipole III and Conawapa and

2. Build lower-cost SCGTs ($770/kW - See NFAT Chapter 7 at 31 of 39) and/or CCGTs ($1,295/kW - See NFAT Chapter 7 at 31 of 39) instead of Keeyask ($9,048/kW- See the response to PUB/MH I-053a Revised) and share reserves with MISO over the existing 500 kV interconnection; and thereby

3. Reduce economic risk.

~~As noted previously, Manitoba Hydro's economic analysis does not include other sunk costs already expended for other projects (particularly Keeyask and Conawapa) in its economic evaluations of alternatives. See NFAT Chapter 9 at 2:4-6. Therefore, considerable amounts of money are ignored when comparing alternatives. For Keeyask, the effect of sunk costs is pronounced as its sunk costs total approximately $1 billion. See Appendix 9.3 at 5. Manitoba Hydro ignored sunk costs in its economic evaluation because it claims that Manitoba Hydro's customers will need to pay these costs no matter what plan is chosen, whether or not Keeyask or Conawapa come to fruition. It appears that the sunk costs of Keeyask were incurred as a result of Manitoba Hydro's decision to "to protect the in-service dates for Keeyask and Conawapa."~~

Approximately 300 MW of Kettle's generating capacity could be disconnected from the HVDC system and reconnected to the North-South AC system for transmission south to the Winnipeg load center. See NFAT Chapter 2 at 53-54, the response to PUB/MH 1-042f and the response to MMF/MH II-003. Thus, the existing system should be able to accommodate about 592 MW of the 630 MW of generation that is planned to be added at Keeyask without upgrading either Bipole I or II or adding Bipole III.[16]

In addition, the rated capability of both Bipoles I and II could be upgraded to carry the additional generating capacity that would be added at Keeyask. Note that the capacity of Bipole I is 1854 MW while operating at +/-465 kV whereas the ultimate capacity of Bipole III will be 2300 MW while operating at +/-500 kV. If there is sufficient ampacity in the Bipole I conductors, its capacity could conceivably be increased by 446 MW to 2300 MW by upgrading its terminal equipment (converters) to operate at higher voltages and to carry greater currents.[17] Such an upgrade of Bipole I plus the spare capacity in the existing system would provide 738 MW of capacity, more than the 695 MW needed for delivering Keeyask. Another 300 MW of transmission capacity could theoretically be obtained by upgrading the rating of Bipole II from 2000 MW to 2300 MW. HVDC transmission line capacity can be increased with installation of new valves, higher rated conductors, and other features.[18]

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[16] According to several sources, such as NFAT Chapter 2 at 4, Keeyask's net generation will be 630 MW, rather than 695 MW.

[17] There is likely considerable ampacity available because the design was based on some level of losses. However, using that ampacity may mean excessive sag, and higher voltage may not be possible without first upgrading towers and insulators.

[18] In order to provide one with a sense of what Manitoba Hydro may be able to do with Bipoles I and II, it is worthwhile to examine what has been accomplished over the period since the early 1970s on the HVDC line of the Pacific Northwest-Pacific Southwest Intertie ("PDCI"). This HVDC line extends 846 miles from the Celilo Converter Station on the Columbia River in Oregon south through Nevada to Sylmar, near Los Angeles.

The PDCI was initially designed as +/-400 kV and 1800 amps, a transmission rating of 1440 MW at the sending end. The original mercury arc valves were up-rated to 2000 amps after a few years of operating experience.

The next step was to raise the operating voltage from +/-400 kV to +/-500 kV by adding a 4th valve at each end in order to achieve a 2000 MW transmission rating. Not much in the way of modification was required on the transmission line because it had originally been designed with plenty of insulation margin.

By 1989, the Bonneville Power Administration ("BPA") proposed adding parallel thyristor converters at both ends of the line to raise PDCI's rating to 3100 MW. See http://en.wikipedia.org/wiki/Pacific_DC_Intertie

~~Apparently, the firm transmission capability of the HVDC system is not critical to Manitoba Hydro's exports to the United States, as described in the response to CAC/MH II-075a (emphasis added).~~

> ~~Manitoba Hydro's firm export contracts require Manitoba Hydro to provide firm transmission service on the AC network to facilitate energy and capacity transfers according to the system criteria associated with firm transmission service" [e.g., continued deliveries after loss of the single piece of equipment which most limits transfers – a loss referred to as the "most critical contingency"]. However, Manitoba Hydro is not required to provide a similar level of firmness of transmission service on its HVDC system.~~

THE PREFERRED DEVELOPMENT IS INEXTRICABLY LINKED TO, AND DEPENDENT UPON, BIPOLE III—THERE IS NO STANDALONE RELIABILITY FUNCTION OF BIPOLE III

The rationale given for building Bipole III was that Manitoba Hydro has too many eggs in one basket with 70% of its hydro-electric generating capacity being delivered to Southern Manitoba via the Bipole I and Bipole II HVDC transmission lines. Manitoba Hydro asserts that, because Bipoles I and II share the same corridor over much of their length, the existing transmission

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On February 29, 2012, **Power** reported that

> The Bonneville Power Administration (BPA) last week proposed a $428 million upgrade to the Pacific Direct Current Intertie, an 846-mile overhead transmission line that delivers hydropower and wind power between the Northwest and California. The line is one of the world's longest and highest capacity transmission links.
>
> The BPA said the upgrades would modernize equipment that was "cutting edge when installed more than 40 years ago," but which has since become so outdated that the public service organization had to source parts to repair the line from online auction website Ebay.
>
> The upgrades would also increase the line's capacity from 3,100 MW to 3,220 MW and help it avoid outages and "strengthen it against weather and other threats," the BPA said. Over the past several years, it said, older equipment at Celilo Substation, the northern terminus of the DC Intertie in The Dalles, Ore., has failed with increasing frequency.

system is vulnerable to a common mode failure such as catastrophic outages of either or both of Bipoles I and II. See NFAT at Chapter 5 at 25 of 61.

Manitoba Hydro's concern goes further. It contends that an outage of both Bipoles I and II could be a long-term event necessitating reliance on its thermal generation, remaining hydro-electric generation and import capacity in amounts that are insufficient to meet its demand during many times of the year. In Chapter 2.2.1 of its EIS to the CEC, it portrayed the consequences in dire terms:

> The potential consequences of such an outage of the existing HVdc transmission system are exacerbated by the very long estimated repair times. Wide front windstorm, fire, or tornado damage at Dorsey Station could cause an outage that shuts down the HVdc system for up to three years because of the time required to repair or replace equipment of such complexity. The duration of a similar outage of the Bipoles I and II lines, although not as severe and dire as a failure at Dorsey Station, could still easily cause an outage of six to eight weeks.
>
> In the event of an extended HVdc outage, supply would be restricted to the generation connected to the ac system and the possible imports on the ac interconnections with the United States and neighbouring provinces. Such a restricted supply of power would be significantly inadequate to meet provincial demand, particularly in the winter, and could necessitate rotating blackouts for months. The potential shortfall has been growing steadily over the years, as increased demands for power from new and existing customers have increased the system load requirement.[19]

There are several major flaws in Manitoba Hydro's arguments for the reliability need for Bipole III. They are as follows:

A. Under industry reliability standards, utilities do not need to design their systems to withstand a catastrophic event, such as loss of four elements of a transmission system at the same time (such as a total loss of Bipoles I and II), which is considered an N-4 event under North American Electric Reliability Corporation standards.

B. If Manitoba Hydro's major concern is the length of outage of both existing Bipoles, then it could plan for outages by clearing brush and placing equipment (such as

[19] The Riel Station, scheduled to enter service in 2014, is designed in part to preserve Manitoba Hydro's system import capability if there is a major outage at Dorsey. See NFAT Chapter 5 at 24 of 61. This upgrade mitigates one of Manitoba Hydro's major reliability concerns with the present configuration of Bipoles I and II.

cranes, other construction equipment and replacement towers, wires, switchgear, transformers, valves, etc.) in areas along the length of the lines and at the converter stations, so that reconstruction could begin immediately. Switchgear, transformers and valves should be protected from physical damage at their present location. The cost of staging equipment and supplies for Bipoles I and II would be far less than the cost of building Bipole III.

C. If Manitoba Hydro first built a second 500 kV interconnection to the United States, it could import more power during outages of one or more of the Bipoles, which is cheaper than building Bipole III. [20] Furthermore, the cost of building a second 500 kV interconnection has been estimated at approximately the same cost as would be saved by deferring Bipole III for twelve years.

~~A. Transmission Planning Standards~~

~~The North American Electric Reliability Corporation ("NERC") is responsible for developing standards that ensure the reliability of the bulk power system in North America. For transmission planning, NERC has established various standards, including the ability of a transmission system to withstand the loss of a single element (N-1) so that none of the equipment exceeds its applicable ratings and the system does not inappropriately drop firm load. If there is a loss of two elements at the same time, or one right after the other (an N-2 or N-1-1 event), the bulk power system may reach emergency ratings for short periods of time, and load can be dropped in a planned or controlled manner.[21] An extreme event, such as a catastrophic failure of both Bipoles I and II would involve the simultaneous outage of all four single poles of Bipoles I and II (called an N-4 event), and utilities need only evaluate such scenarios for risks and consequences.~~

[20] In the Manitoba Hydro Bipole III EIS, December 2012, the cost of an additional 1500 MW interconnection to the United States was estimated at $1.5 billion. See Section 2.3.4 at 2-12. The cost of 500 MW of gas-fired generation was estimated to cost $750 million. Bipole III was then estimated to cost $3.28 billion. See Section 2.3.2 at 2-10.

[21] See Standard TPL-001.01 at http://www.nerc.com/pa/Stand/Reliability%20Standards%20Complete%20Set/RSCompleteSet.pdf

~~Loss of a single pole of a Bipole is considered an N-1 event which has a less-than-1% probability of occurring (i.e., less than 1 X 10^{-2}). See the response to CAC/MH II-013b.[22] Although industry reliability criteria require that Manitoba Hydro continue to serve all firm load obligations after the occurrence of any single contingency (an N-1 event), those criteria do not require that it continue serving all firm load after an N-2 event, let alone, after an N-4 event.~~ Nevertheless, Manitoba Hydro contended before the CEC that the risk posed by the contingency loss of both poles of both Bipoles I and II was an unacceptable risk justifying the expenditure of $3.3 billion.

Manitoba Hydro's contention before the CEC was never tested because of the CEC's limited mandate and terms of reference in relation to Bipole III (which the Manitoba Minister for Conservation and Water Stewardship clarified did not include an NFAT review).[23] However, while the Bipole III hearings were ongoing, the Manitoba Government announced that it had "asked the Public Utilities Board to conduct a Needs For and Alternatives To (NFAT) review of upcoming Manitoba Hydro projects including the Keeyask and Conawapa generating stations and their associated transmission facilities."[24] Despite this public commitment, and the reality that Bipole III is clearly an associated transmission facility for Keeyask and Conawapa, Bipole III was subsequently scoped out of the NFAT process for the PDP which is currently before the PUB.

The MMF has repeatedly raised concerns about the need for Bipole III, its selected route down the west side of the province that dissects the Manitoba Métis Community's "breadbasket" as well as the project's non-mitigatable impacts on the Métis community's rights, culture, economy and way of life on the west side corridor of the province (which have not been addressed).[25] As

[22] An N-4 event involving four independent events would have a probability of 1 X 10^{-8} or one chance in 100,000,000. However, Manitoba Hydro proposed to build Bipole III to guard against a common mode failure such as tornados or severe ice storms affecting all four poles which its studies determined could be expected to occur once every 17 years. In a common mode failure case, loss of each pole is not considered an independent event.

[23] See letter from Manitoba to CEC Chair dated August 23, 2012 with respect to the conduct of a NFAT in relation to Bipole III. Letter available at: http://www.cecmanitoba.ca/resource/hearings/36/Motion%20Decision2%20-%20Coalitionandencl1.pdf.

[24] Manitoba Government http://news.gov.mb.ca/news/index.html?item=15563.

a result of the Manitoba Government's approach, Bipole III has been segmented from the PDP and other plans related to Keeyask and/or Conawapa and was not examined in an NFAT proceeding. This creates a significant gap. Moreover, Manitoba Hydro did not and has not engaged in meaningful discussions with the MMF about mitigation of the impact of, or Métis benefit from Keeyask and/or Conawapa despite their being inextricably linked to and dependent upon Bipole III. Consequently, the need for Bipole III as well as the social and economic cost of the PDP on the Manitoba Métis Community remains unknown and has not been addressed in any process.

~~Manitoba Hydro has confirmed that it generally designs its system to comply with standard industry reliability criteria but appears to have considered and accepted laxer criteria with respect to the HVDC system upon addition of Keeyask and Conawapa. For example, Response to MMF/MH II-016a states:~~

> ~~Manitoba Hydro adopts the NERC reliability criteria and definitions which apply to both the ac and dc system. Loss of a DC pole is considered as a single contingency (N-1). Manitoba Hydro system is designed to meet the NERC reliability performance criteria.~~

~~As noted previously, Manitoba Hydro's existing transmission HVDC system does not meet this N-1 criterion. If Manitoba Hydro loses one of its DC poles, it can no longer transmit all of its existing hydro power from the Nelson River. Indeed, this is why it appears that some (if not all) of its export contracts allow the exports to be dropped under system emergencies. Response to MMF/MH II-016b admits that loss of just one Bipole is a multiple contingency event:~~

> ~~Loss of a bipole is considered as a multiple contingency, or N-2 (category C) event. Loss of both bipoles is an extreme event (category D). Manitoba Hydro system is designed to meet the NERC reliability performance criteria. NERC does not specifiy [sic] performance criteria for extreme events but requires that such events be evaluated~~ for risks and consequences.

[25] For documents outlining the MMF concerns on these issues, see MMF Closing Argument and Affidavit of David Chartrand in CEC hearing on Bipole III at http://www.cecmanitoba.ca/hearings/index.cfm?hearingid=36#3. Further, following the Minister of Conservation and Water Stewardship's issuance of a license to Manitoba Hydro for the construction of Bipole III, the MMF appealed the Minister's decision and the issuance of the license under section 28(1) of the *Environment Act*. This appeal remains pending.

Indeed, NERC criteria state that no firm load should be lost at transmission levels following a single contingency (N-1), while firm load can be dropped following an N-2 contingency (a multiple contingency). Scenarios involving N-4 events (such as loss of both Bipole I and Bipole II) are expected to be catastrophic. Manitoba Hydro is not required by industry standards to design its system to meet such catastrophic N-4 contingencies. However, Manitoba Hydro expressed a concern about living with months of rotating blackouts, which is more of a capacity reliability issue than a transmission reliability issue. Manitoba Hydro chose to address that concern by building new transmission within Manitoba Hydro rather than by building stronger transmission ties to its U.S. neighbors or gas-fired generation near its Winnipeg load center. In its planning, Manitoba Hydro should be seeking the ability to draw upon a more diverse set of generating resources (e.g., those in MISO), not just more reliable access to pre-existing on-system generation.

Other information illustrates how Manitoba Hydro has begun to change its criteria for its transmission system. For example, the response to MMF/MH-II-016e states:

> Manitoba Hydro has historically adopted the "a de-pole reserve over load criteria" stated in the 1986 Transmission Planning Criteria (H&TPD 86-1), as quoted "The present Criteria is to maintain a de-pole reserve toward meeting the Manitoba Firm load demand in conjunction with existing southern system generation under median flows". This criteria was applied to the development of Limestone generation.
>
> The reserve criteria is under continuous review by Manitoba Hydro. The past operating experience (significant outages of HVdc valve groups) and increasing economic benefit received from power exports have led to the criterion of maintaining "on-line valve group spare over generation" to cover value group outages. This "spare valve" criterion is considered to provide optimum reliability and economic benefits. The reserve criteria is currently under further investigation for the split Northern Collector System associated with Conawapa.

Now that it has secured approval for construction of Bipole III, Manitoba Hydro has greatly relaxed its concerns with risks posed by a contingency outage of a single pole of a Bipole, an entire Bipole, or both Bipole I and II. It now contends that

> The loss of 900-1000MW pole is a low probability event (< 1%) as stated in Appendix 13 of the NFAT submission, therefore it is not considered to be an economically attractive

~~option to cover for this loss with an additional spare HVdc capability when evaluating the firm transfer capability of the HVdc system.~~

~~See the response to CAC/MH II-013b.~~

Manitoba Hydro admits that the odds of such an event (simultaneous long-term loss of Bipoles I and II) are low. Ordinarily, utility systems are designed to meet load except for one day in every ten years, the 1-day-in-10 year loss-of-load-probability standard. The risk of losing both existing Bipoles is much lower. At Chapter 2.2.2 of its EIS submission to the CEC, Manitoba Hydro stated:

> Studies (Teshmont 2001) have shown that with respect to Dorsey Station, there is a 1 in 29 year probability of outage due to fire and a 1 in 200 year probability of outage due to wide front winds. While mitigation measures have been put in place, which partially address fire vulnerability at Dorsey, there is little that can reasonably be done to mitigate vulnerability to wind and other weather events. The same studies (Teshmont 2001) revealed that the probability of the loss of the Interlake corridor is 1 in 17 years from a tornado, 1 in 50 years from icing and 1 in 250 years from wide front winds.

In other words, Manitoba found it necessary to expend $3.3 billion on the spare HVDC capability of Bipole III in order to lessen the consequences of an N-4 contingency outage of four poles of Bipoles I and II, which has a probability of one occurrence in seventeen years[26] but has now determined that it is not "economically attractive…to cover . . . with an additional spare HVdc capability" the contingency outage of a single 900-1000 MW pole of any Bipole, an event which has a failure rate of 5.75/year with an outage duration of 1.21 hours (Bipole I), or 6.02 failures per year of 2.16 hours duration (Bipole II). See NFAT Appendix 13.1 at 11.

B. Length of Outage

As described above by Manitoba Hydro in the proceedings before the CEC, Manitoba Hydro's main concern centered on the length of a possible outage of both existing Bipoles. Manitoba Hydro contended that an outage of the Dorsey Substation could last as long as three years, while

[26] Please note that the one in 17 year expectancy is for a tornado, which would not be expected to occur during Manitoba's peak winter months when loads are highest.

outages of the corridors themselves could last from six to eight weeks. However, multiple actions could be taken to reduce the risk of lengthy outages of either the Dorsey Substation or the transmission corridor.

It is notable that the firm that provided the probabilities of losses associated with outages of Bipoles I and II, as well as the Dorsey Substation, has ties to Manitoba Hydro and the Bipole projects themselves. Teshmont Consultants acted as the Owner's Engineer on each of the Bipole projects on behalf of Manitoba Hydro, and has already been hired as Owner Engineer for Bipole III.[27] Therefore, Manitoba Hydro asked the consultant that actually designed the original Bipoles I and II to critique its performance in relation to catastrophic events, and then hired that same consultant to design and build the project that was ostensibly justified via that same consultant's report.

In any event, the probabilities of catastrophic contingencies described by Teshmont are all less than the industry's loss of load probability standard of one day in 10 years. The worst outage for the Dorsey Substation was listed as a 1 in 29 year event for fire, while the worst outage for the Bipoles I and II transmission corridor was a 1 in 17 year event for a tornado. The Interlake corridor was also estimated to be at risk for an icing event of 1 in 50 years.[28]

And for each of these catastrophic events, Manitoba Hydro could take steps to reduce risks for far less money than it would cost to build Bipole III. For example, fire risk could be handled by removing brush in and around the fence of the Dorsey Substation, as well as the transmission corridor. Furthermore, the substation could be reinforced to withstand tornado forces, and Manitoba Hydro could acquire long-lead-time replacement components that cannot be protected and keep these parts in reserve. Equipment necessary in case of icing or wind storms could be purchased in advance, and staged at areas along the transmission lines in order to hasten the recovery of the facilities. Each of these activities would be far less costly than building a third Bipole that will traverse land important to First Nations and Métis people.

[27] See http://www.teshmont.com/expertise/hvdc-systems

[28] Manitoba Hydro EIS on Bipole III to the CEC, Chapter 2.2.2.

Finally, adding Bipole III plus Keeyask and Conawapa would put even more eggs in the Northern Hydro basket which would be vulnerable to a single event taking out all three Bipoles of all Northern Hydro generation (i.e., a "common mode" failure such as tornados or ice build-up) or the loss of Bipoles I and II while Bipole III is out of service for maintenance. Today, the simultaneous or overlapping loss of Bipoles I and II would deprive Manitoba Hydro of 3562 MW of Northern hydro generation whereas loss of all three Bipoles would deprive it of 5587 MW of Northern Hydro generation once Keeyask and Conawapa are placed in service. Although constructing Bipole III on a right-of-way ("ROW") separate from that used by Bipoles I and II reduces the risk of a common mode failure of all three Bipoles, some of the common mode events could be widespread enough to take out all three Bipoles.

C. A Second 500 kV Line to the US Provides Reliability

The shortfall that would result from losing both Bipoles I and II was depicted at Chapter 2.2.3 (at 2-6 and 2-7) of Manitoba Hydro's EIS submission to the CEC as about 1500 MW in 2017, growing to 2000 MW in 2025, as illustrated by Manitoba Hydro in the graph below:[29]

[29] The 1500 MW deficit in 2017/18 would occur at the time of Manitoba Hydro's winter peak demand which would be unlikely to coincide with a tornado or a brush fire. The load duration curve for 2017/18 shows that Manitoba Hydro's demand can be met with both Bipoles I and II out of service in 68% of the hours of 2017/18. See the Manitoba Hydro EIS on Bipole III, Chapter 2.2.3, Figure 2.2-2.

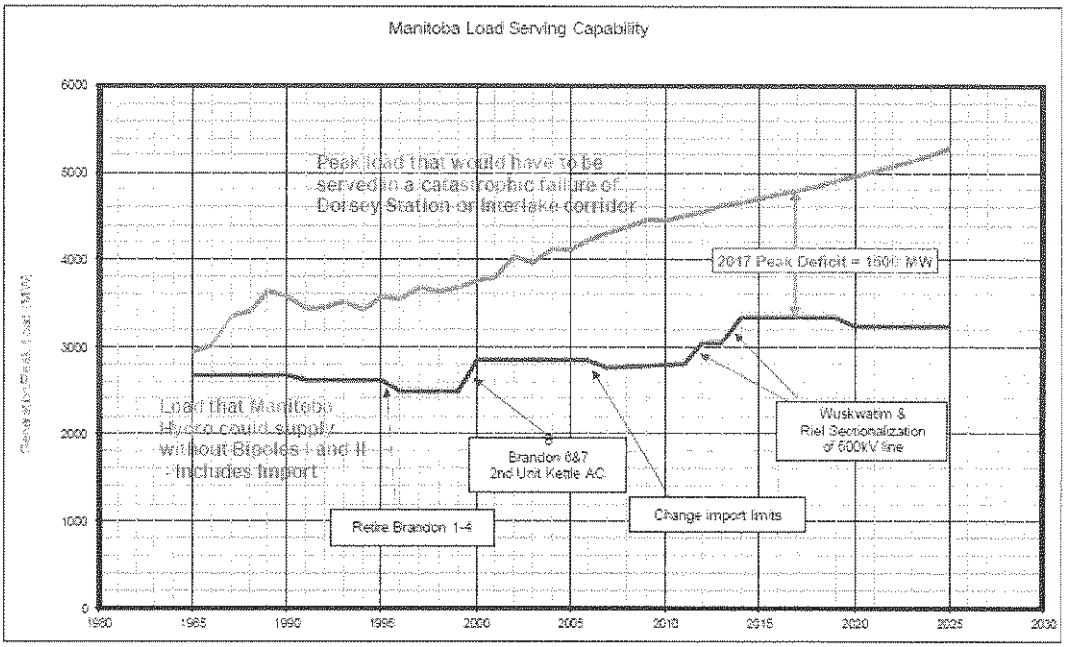

Figure 2.2-1: Load Serving Capability without Bipoles I & II

It appears from Figure 2.2-1 that Manitoba Hydro has been exposed to its alleged susceptibility to loss of Bipoles I and II since 1985 yet it will take more than 30 years to mitigate the impact of such a loss. Manitoba Hydro reports that, at the time of a September 1996 loss of both Bipoles (the only time such a catastrophic loss has occurred in over 35 years), it was able to arrange 985 MW of imports to cover the shortfall,[30] more than the 700 MW existing firm import limit from the United States and other Provinces. See NFAT Chapter 5 at 16 of 61.

Having identified the supposed need for addressing a low-probability event in its presentation to the CEC, Manitoba Hydro proposed two alternatives to building Bipole III (EIS submittal at Chapter 2.3 at 2-9):

2. The addition of up to 2000 MW of gas turbines in southern Manitoba.

3. The addition of up to 1500 MW of new import tie lines to the United States (USA) to provide access to US generation, which is assumed to be comprised mainly of natural gas-fired generation, plus the addition of another 500 MW of natural gas-fired generation in southern Manitoba.

[30] See Chapter 2.2.2 of the EIS for Bipole III at 2-4.

Both alternatives to Bipole III were rejected because of cost, but the rejection was not based on an apples-to-apples comparison. The addition of Bipole III brings with it no additional generating capacity, except for a reduction in losses of approximately 90 MW (see NFAT Chapter 4 at 44). That is, Bipole III only provides between 2000 MW and 2300 MW of backup transmission access to already-existing Northern hydro-electric generation in the low-probability event of simultaneous loss of Bipoles I and II. By comparison, each of the two alternatives would have provided 2000 MW of ADDITIONAL generating capacity. The alternatives were determined to be more expensive than Bipole III in large part because they included either (i) 2000 MW of additional firm gas-fired generation in Manitoba or (ii) 1500 MW of firm purchases from the United States plus 500 MW of additional gas-fired generation in Manitoba. Clearly, the two alternatives would have offered 2000 MW more long-term generating capacity value to Manitoba consumers than Bipole III will. In order to make the three alternatives comparable in terms of generating capacity, Manitoba Hydro should have added the costs of Keeyask and Conawapa to the cost of Bipole III, which likely would have made either alternative more attractive than Bipole III in combination with the additional hydro generation.

There were further flaws in Manitoba Hydro's analysis of the alternative that called for building an additional 500 kV AC transmission line to the United States. For example, there would be no need for Manitoba Hydro to line up 1500 MW of firm purchase commitments to cover a simultaneous outage of Bipoles I and II that was estimated to occur no more frequently than once in 17 years. Nevertheless, this alternative was rejected in large part because Manitoba Hydro contended that reliance on additional import capacity would require that, in addition to Manitoba Hydro's building the line to the United States, it would need to line up 1500 MW of costly long-term firm power purchase contracts tied to the cost of gas generation. The imported generation, combined with the 500 MW of gas-fired generation in Manitoba, was estimated to cost $2.99 billion. See the Bipole III EIS at Section 2.3.4 at 2-12.

In my experience, that contention is inconsistent with industry custom and practice. The right of Manitoba Hydro to rely upon interconnected utilities for support during contingencies – especially such extreme contingencies as outages of four poles of the Bipole HVDC system -- is

implicit in the interconnection process and is almost always made explicit in the bulk power contractual arrangements that accompany and govern such interconnections. There are numerous instances in which owners of large blocks of nuclear generation in North America experienced long-term outages or construction delays and obtained replacement power in bulk power markets. Manitoba Hydro could expect to pay a premium in some markets for such power but should obtain some protection from price gouging by MISO oversight of its markets and FERC regulation of interstate commerce in wholesale power.

In addition, any outage of both Bipoles I and II would require Manitoba Hydro to trip or back down the 3,562 MW of existing hydro-electric generation at Kettle, Long Spruce and Limestone, (NFAT Chapter 5 at 9 of 61), but this loss of generation represents a relatively small percentage of the 135,000 MW of generation in the MISO market and 167,000 MW of generation in the PJM market to which MISO is strongly interconnected.[31] Furthermore, apart from the position it took in its presentation to the CEC, Manitoba Hydro's position on the value and function of interconnections is consistent with the industry custom and practice I described. That is, Manitoba Hydro relies on its interconnections for just such events as loss of both existing Bipoles. As noted in the NFAT at 5.2.3 Reliability Benefits of Interconnections:

~~Manitoba Hydro's interconnections provide significant reliability benefits in several ways:~~

- ~~sharing of generation contingency reserves~~
- ~~sharing of capacity resources due to load diversity~~
- ~~importation of energy during drought conditions or extreme supply loss in Manitoba~~
- ~~ability to supply cross-border load when this load is isolated from its system.~~

~~Moreover, NFAT Chapter 5 at 18 states:~~

[31] As noted at NFAT Chapter 5 at 40 of 61:

> MISO's July 2012 historic peak load for the market footprint was 98,576 MW; registered generation capacity in July 2012 was 131,581 MW. About 63,000 MW or 48% of the registered generation capacity is coal-fired generation.

Entergy has recently joined MISO and added 23,000 MW of generation. NFAT Chapter 5- at 39 of 61. MISO has strong interconnections with PJM which Wikipedia summarizes as

> More than 830 companies are members of PJM, which serves 60 million customers and has 167 gigawatts [167,000 MW] of generating capacity. With 1,325 generation sources, 59,750 miles (96,160 km) of transmission lines and 6,038 transmission substations, PJM delivered 682 terawatt-hours of electricity in 2009. [Footnote cites 2010 PJM Statistics]

> Imports may also be required for reliability purposes during major supply loss events such as the loss of the entire Interlake HVDC transmission corridor.

Furthermore, Manitoba Hydro has long-established relationships with the opposite parties from the United States in its interconnection agreements. Over the decades since Manitoba Hydro began development of its Nelson River hydro-electric plants, those opposite parties have benefited greatly from their purchases of low-cost power and are well aware of the risks posed by the configuration of Manitoba Hydro's bulk power system. Quite apart from their contractual obligations and industry custom and practice, it would be imprudent of those opposite parties to deny Manitoba Hydro access to reasonably-priced replacement power in the event of a simultaneous contingency outage of both Bipoles I and II. Manitoba Hydro would be in a position to deny those opposite parties' extensions of their present favorable bulk power supply arrangements.

Indeed, the benefits of interconnections provide a basis to include a second interconnection to the United States. And Manitoba Hydro examined the benefits arising from two possible sizes of transmission facilities to the United States. One interconnection upgrade would enable Manitoba Hydro to export an additional 250 MW, while the other would create "750 MW additional transmission interconnection import/export capacity between Manitoba and Minnesota and Wisconsin with an ISD of 2020." See the NFAT Overview at 2 of 13.

Clearly, the 750 MW planned addition to Manitoba Hydro's import limit associated with the second planned 500 kV line to the United States would enable it to cover half the 1500 MW shortfall it could experience in 2017 from loss of both Bipoles, leaving it exposed to a shortfall of capacity in only about 10% of the annual load cycle. It also seems likely that Manitoba Hydro could increase that 750 MW addition to its import capability by adding reactive support to its interconnections with the United States.[32] Nonetheless, Manitoba Hydro rejected that alternative.[33]

[32] The response to MMF-MH I-037 states that "Adding series capacitors to the Richer to Moranville 230 kV line might increase the import limit by 50 to 100 MW." That response also states that the present 700 MW import limit is based on preventing voltage collapse in the United States following loss of the existing 500 kV line between Dorsey and Forbes, suggesting that the 700 MW import limit could be increased by adding reactive support to both

These data suggest that Manitoba Hydro could have achieved the desired level of backup transmission capacity by building the 500 kV Manitoba-Minnesota Transmission Project (with voltage support suitable to avoid voltage collapse in connection with substantial import levels), instead of building Bipole III and - as discussed below - at a cost lower than the $3.3 billion cost of Bipole III. The total cost of the proposed 500 kV Manitoba-Minnesota line is projected to be $1.05 billion, of which some U.S. utilities would pay a share.[34] As noted, the Bipole III EIS estimated the cost of a 1500 MW increase in import capability to be $1.5 billion.

~~In referring to the Manitoba-Minnesota Transmission Project, the NFAT Executive Summary at 6-7 of 42 states:~~

~~This project is still in the study and negotiation phase. Manitoba Hydro will be responsible for the Manitoba portion of the interconnection, which is estimated to cost $350 million. Manitoba Hydro will also be responsible for some portion of the capital and ongoing operating costs associated with the U.S. portion of the facilities. For the Preferred Development Plan, it is assumed that Manitoba Hydro will be responsible for 40% of the capital and ongoing operating costs associated with the U.S. portion of the 750 MW interconnection facilities, with the remainder of the transmission costs to be borne by MP and WPS. The total cost of the U.S. portion of the 750 MW interconnection is in the order of $700 M (2020 base dollars, not including interest).~~

~~CONCLUSION~~

~~Manitoba Hydro's Preferred Development Plan has not been supported by Manitoba Hydro's NFAT submission and, if approved and built, will impose unnecessary and excessive risks on ratepayers. Manitoba Hydro's pursuit of a gas-fired alternative and/or imported power~~

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the existing and planned 500 kV interconnections with the United States. The cost of reactive support is typically far lower than the cost of a new 500 kV AC interconnection.

[33] "The [230 kV line to Rugby, North Dakota] project increased long-term import capability to 700 MW, and increased the export capability to the U.S. interface system operating limit of 2,175 MW, which is still in effect. It should be noted that 225 MW of the system operating limit is utilized for delivery of operating reserves and transmission reliability requirements and is not available for export purposes." NFAT Chapter 5 at 15 of 61.

[34] The N-2 loss of two 500 kV transmission lines would cause a blackout (or maybe not if an SPS is used and is successful) while the N-4 Bipole outage may or may not cause a blackout, but is primarily of concern because of the possibility of months of rotating blackouts (i.e., two very different kinds of impacts). A blackout is over in a few hours. Rotating blackouts for months are more severe.

~~(supported by enhanced import capacity on its interconnections with the United States) would be far lower in cost in the years through 2040, and lower in risk, than would pursuit of its PDP. The PDP would exacerbate the concentration of its generating resources along the Nelson River hundreds of kilometers north of its Manitoba Winnipeg load center and put more eggs in that basket.~~

In addition, Manitoba Hydro should cancel – or at least defer – construction of Bipole III. Manitoba Hydro could more cost-effectively guard against a simultaneous outage of Bipoles I and II by enhancing its import capacity through upgrades of its interconnections with the United States.

Schedule "C"

Manitoba
CLEAN·ENVIRONMENT
COMMISSION

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August 20, 2012

Honourable Gord Mackintosh
Minister of Conservation
Room 330 Legislative Building
Winnipeg, MB R3C 0V8

Dear Minister:

I am writing to seek clarification with respect to the Terms of Reference for the Manitoba Hydro Bipole III Transmission Line Project, specifically in regard to the review of the "need for and alternatives to" the project (NFAAT).

On August 16, 2012, the Commission considered motions presented by registered-Participant groups in advance of the hearings. During the presentation of positions, it became apparent that a clear and wide divide exists among Parties as to how deeply the Clean Environment Commission should go in reviewing NFAAT matters during the hearings.

On the one side, the Proponent, Manitoba Hydro, is of the view that, since the Terms of Reference issued to the Commission in December 2011 do not specifically identify a review of NFAAT, the Commission has no authority to enter into such considerations.

On the other side, at least two Participants are of the view that the NFAAT review should be a full PUB-style deliberation, considering whether or not the project is necessary.

Both sides may be looking to the Wuskwatim review in 2004 as an example.

The Wuskwatim project involved two separate, but obviously connected, proposals: the generating station and a transmission line. In an effort to streamline the regulatory process, it was decided that, rather than subject the projects to separate and potentially lengthy reviews by both the Public Utilities Board and the Clean Environment

Commission, the two would be combined into one proceeding. To that end, two members of the PUB were cross-appointed to the CEC. Terms of Reference were issued by the Minister of Conservation, which specifically addressed both sides of the review.

The Participants may be of the view that the Wuskwatim precedent is the "new normal", calling for a full-NFAAT review; while Hydro takes the view that, in the absence of specific directions on NFAAT as in Wuskwatim, there should be no such review at all.

While an NFAAT consideration is a requirement of environmental reviews conducted under the federal *Canadian Environmental Assessment Act,* it has not been a part of provincial reviews. Except for the Wuskwatim example, the Commission, in past proceedings, has not undertaken NFAAT reviews.

The Panel is caught in a dilemma on this issue. In order to resolve this, we ask that you clarify your intent in regard to the Commission's review of NFAAT, as it relates to Bipole III.

Minister, time is of the essence. Without resolution of this matter in short order, there could be significant impacts on the scheduled hearing and its timely completion. It will be necessary to issue decisions on the August 16 motions by the end of this week.

Sincerely,

Original signed by

Terry Sargeant
Chair

cc: Bipole Panel

AUG 23 2012

MINISTER OF
CONSERVATION AND WATER STEWARDSHIP

Legislative Building
Winnipeg, Manitoba, CANADA
R3C 0V8

August 23, 2012

Mr. Terry Sargeant
Chair
Clean Environment Commission
305-155 Carlton St.
Winnipeg MB R3C 3H8

Dear Mr. Sargeant:

Thank you for your August 21, 2012 letter requesting clarification of the Terms of Reference for the CEC's review of Manitoba Hydro's Bipole III Transmission Line Project. In response to your specific question about a Needs For And Alternatives To (NFAAT) review, the Terms of Reference, which were issued in December 2011, do not include instruction for the CEC to conduct an NFAAT.

I trust this clarifies this matter.

Yours sincerely,

Gord Mackintosh
Minister

CC. Fred Meier
Dan McInnis
Tracey Braun